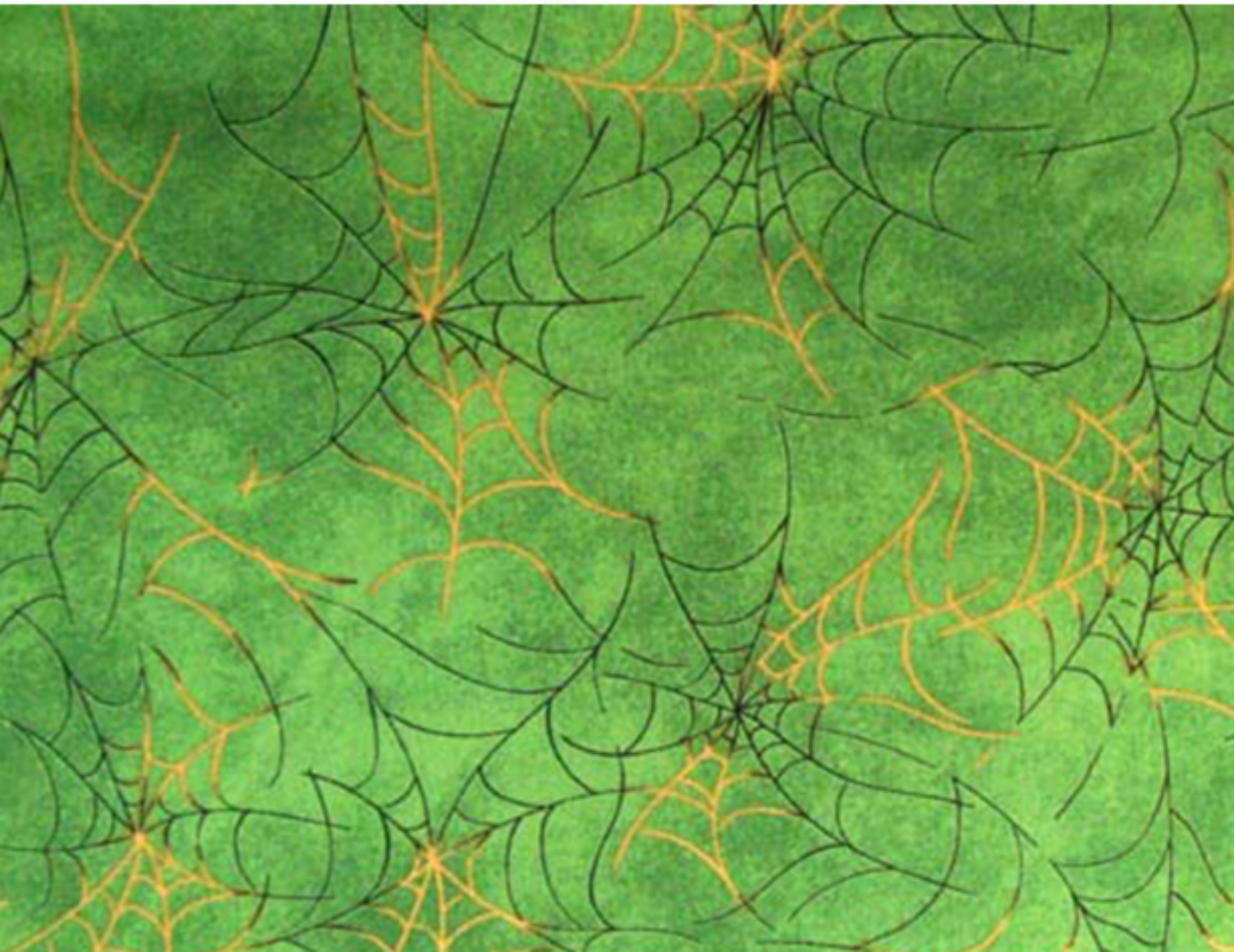
Healing Trauma And Pain Through Polyvagal Science

Peter Levine, Ph.D., Stephen Porges, Ph.D., and Maggie Phillips, Ph.D



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HEALING TRAUMA AND PAIN THROUGH POLYVAGAL SCIENCE: AN E-BOOK

Peter Levine, Ph.D., Stephen Porges, Ph.D. and Maggie Phillips Ph.D

Introduction

The genesis of this e-book was a 3-session webinar that was recorded and broadcast in November, 2014. Each chapter represents the material of one of the three sessions; the question and answer session transcripts of all 3 are included as an appendix at the end of the book.

Stephen Porges and Peter Levine met back in the late 1960's. As Peter says, "We went to kindergarten together." They have been study partners in the emerging field of polyvagal science, which has revolutionized how we conceptualize and treat trauma.

One of the leading proponents of the Polyvagal Theory of nervous system evolution, and author of *The Polyvagal Theory (2011),* Stephen Porges has made groundbreaking shifts in our understanding of neurophysiological foundations of emotions, attachment, communication, and self-regulation. Peter Levine, is one of the world authorities in somatic approaches to the treatment of trauma, and creator of Somatic Experiencing,™ a gentle, highly effective model for the treatment of trauma and restoration of balance and wholeness. He is well-known for his applications of polyvagal science in his work.

Peter and I have taught together for more than 30 years on various topics related to the treatment of trauma and more recently to that of pain. Our recent explorations led to the creation of *Freedom From Pain: Discover Your Body's Power to Overcome Physical Pain (2007), a book with a CD of audio exercises published by Sounds True.*

The three of us first worked together in the Innovations in Trauma Treatment, an online conference presented live and on-demand between January – August, 2014 (for more information, write peggy@maggiephillipsphd.com). The three of

us were presenters in the conference and I had the great pleasure of interviewing both of them about the essence of their work.

We decided that our next project would be the November webinar on how polyvagal science and theory actually hold the answers to the best practices in healing and resolving pain, as one of the most challenging forms of trauma which has been locked into the nervous system, sometimes since early life. We are proud of the results and are happy that you are joining us. The e-books offer a more integrative version of the audio/video versions with edited manuscripts. You might be interested in the other formats as well to enhance your learning visit http://maggiephillipsphd.com/.

We hope you will find this an exciting addition to your resource library as we extend the "cutting edge" connections between trauma, neuroscience, social engagement and the defensive functions of the nervous system, and the creative applications of polyvagal neuroscience, Somatic Experiencing,™ and other body-focused approaches to successful healing and integration.

The Sympathetic/Adrenal (Fight/Flight) System and Effective Interventions

Peter Levine and Maggie Phillips

Chapter One

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

The Sympathetic/Adrenal system, which we will explore first in this course, has to do with mobilizing. Its actions are known best in the form of fight or flight reactions and behaviors.

The autonomic nervous system used to be seen as something that just goes on autonomously and had nothing to do with how we feel, certainly nothing to do with our consciousness. In reality, it's a reflex, like when the doctor takes the hammer and gives you a little tap below the knee, the leg kicks. That is an autonomic reflex.

Experts now are trying to bring forth the idea that what goes on in the basements of our nervous systems, the autonomic nervous system, really affects the entirety of consciousness and feeling. When you are talking about the autonomic nervous system, you are not talking about an *autonomous* system. It is a highly integrated system. Integrated somatically, perceptually and cognitively, it's a profound regulator of our energy systems. Here is where we can bring together the different systems that comprise the ***polyvagal*** system, which is the primal core regulatory system.

The Polyvagal as an Integrated Regulatory System

There are three primary systems involved. The first most recent system is related to the mammalian system—i.e., this system only exists in mammals and becomes more elaborated, more refined in higher mammals and primates. It is called the social engagement system, or the ventral vagal system. It's a system that is 100 – 160 million years old. Mammalians go back 160 million years. Its key function has

to do with the fact that we are social animals. Our survival depends on our ability to connect socially and communicate socially. This is the most refined system.

Hypothetically, if you are angry with a person, you don't go and try to strangle them, as in the fight or flight reflex. You will most likely go to the person and say "there's something we need to talk about." We engage face to face. This should be our default system because we are not living in the jungle any more.

There's a second system that that goes back probably about 280 million years and this goes back to the reptilian period, and actually even to fish. From the reptilian period forward there is the sympathetic adrenal system. This has evolved over a period of about 300 million years, perhaps a bit more. ***This system has to do with mobilizing fight and flight responses but also has to do with bracing, holding, protecting and flexing.*** This is the sympathetic /adrenal system. From reptiles upwards, it has the dual function of the sympathetic nervous system and secretion of the adrenal glands. So the adrenals have only really occurred in the reptilian era 280 million years ago.

Once the sympathetic has evolved, it's not so easy to bring things back to equilibrium, because the organism has become "wired up" rather than used to down-regulate activation.

Here's an example: A person is sitting in their car when someone hits them from behind. Both drivers get out. Both are angry and get out their licenses, insurance, etc. Then they begin to discuss the situation and they're actually feeling really good, actually kind of high, thinking that they're really getting a lot accomplished. Yet, others are noticing that their behavior is really strange. It's a manic kind of experience, and again it's something that takes time to come down from. We really don't want to go into that system unless we really have a high probability that we need it. That's where the *ventral vagal system, the social engagement system*, which we'll review later in this course, also plays an important function in down regulating, or slowing down the sympathetic nervous system fight or flight responses.

These two systems, the ventral vagal and sympathetic adrenal, were followed by what Stephen Porges calls the *dorsal vegal* or the *myelinated vegas nerve*. This is the nerve that goes from the back of the brain stem, down into the body and

connects to all the viscera. Many believe all the viscera, especially the heart, lungs and guts, stomach and intestines – this system has to do with shutting down. It goes back 500 – 600 million years, very primitive.

One principle of evolution is that *we don't outgrow one system and go to the next.* That early system gets carried forth. Looking at that system at the very beginning of its evolutionary development, we find the jawless fishes that we see in National Geographic and Cousteau programs. The function of the vegal system is to shut down metabolism. You can see that in sharks and rays. If there's not enough oxygen the organism doesn't want to use it up. We shut down. It's called "energy conversation withdrawal." We have that system and if it takes over, that system shuts down the more recent system or suppresses it in some way.

The dorsal vagal **system suppresses the sympathetic system**, especially the social engagement system, **just as the sympathetic system inhibits the social engagement system, and the social engagement system has the capacity to down-regulate the sympathetic system**.

What happens when we perceive a threat in our environment? We go into these primitive self-protective and defensive responses of fighting or fleeing. The first choice usually is to remove ourselves from the situation if that is possible.

But if we need to stay, if that's the only choice, or if the individual perceives that it is much stronger than the threatening animal, then he or she responds with a fight. But in order to do this, we mobilize tremendous amounts of energy. All of our muscles are tuned to a high pitch, like a violin string. We tune it to the highest pitch, ready for action, and when we're ready for action, the autonomic nervous system, that is to say the sympathetic system, prepares the metabolism, and our muscles for action.

Let's first give an example that shows how powerful the sympathetic effect can be. There are many cases that document mothers who weigh 90 pounds lifting a car to save their child. A car! Think of the energy that takes. If we perceive threat and we don't go through it, we don't mobilize and then express and discharge, the defensive energy continues to grow and grow.

So the muscles are tense, the sympathetic nervous system is pumping, the heart is pumping, the blood vessels in the extremities, the hands constrict, so our hands become cold, and the same with the belly. This has tremendous value in survival; for example, if injured, we are less likely to bleed to death.

When we become chronic in the sympathetic state, we don't regulate ourselves downward, because the sympathetic continues to get the muscles activated and they act – the muscles tense in the sympathetic system and result in a positive feedback with negative consequences.

Here's an example: You and your spouse have an argument around bedtime. You go to bed but neither of you will have a good night's sleep. The sympathetic system gets going and tends to roll like a rock rolling down a hill.

When working with clients who are in a chronic sympathetic state, it's difficult to help them begin to regulate. Our own presence and "settledness" actually provides a bit of a container for the client to be able to feel, to sense those activated sensations. When they feel and sense them, and don't fight against them, the sympathetic arousal normally starts to come down.

It's a combination of an innate system for an action and de-action, or activation and deactivation, charge and discharge, and also the fact that the social engagement system has a regulatory effect in itself. As therapists we want to bring those together because that is really what helps clients who are in sympathetically dominated states begin to re-regulate.

In order to regulate high sympathetic activation states, we need to be with another person who is able to help contain us and co-regulate with us. There are two approaches to get self-regulated. That's why it is so important for therapists to have a regular practice. Whether it's yoga, Tai Chi, biofeedback, neurofeedback, anything that really helps us settle so that we can become the containers that our clients need us to be to be able to regulate the sympathetic arousal, to bring the heart rate down, to let the hands become warm again. It's essential for any therapist working with trauma to be able to regulate themselves. At times you must regulate yourself in the moment when the client is most dysregulated.

As a therapist, when you're working with someone in whom the distress, the emotional and physical pain they are experiencing is really related to some kind of trauma that has gotten locked in the system and not released, it's difficult to determine what clues to look for. When the pain in itself, particularly when pain that's not going away is so profound a stressor, we often think, "what came first – the trauma or the pain?" In a way it really doesn't matter.

Looking at the sympathetic system again, every muscle in our body is prepared for action. We normally move our hands and they gesture and so forth, that's controlled by what is called the alpha motor neuro system or the voluntary motor system. The gamma system has to do with the involuntary. We don't have control over that, or at least conscious control. That's the system that prepares every muscle in the body by tightening, literally from head to toe.

This condition can become chronic, which it does if one does not resolve the acute stress response. When it becomes chronic, one starts to experience more and more pain. Consider the person who goes to see his doctor or chiropractor and his back is just in unbelievable pain. The person is convinced that he's going to need to have back surgery. The Doctor asks what happened and he says "absolutely nothing – I went to pick up a piece of paper and my back went out." The Doctor then asks if the patient was having problems before and hears "no."

This person has been experiencing such muscle tenseness that when they went to pick up the paper, everything went into spasm. One piece of the camel's hair broke the camel's back. That's the state we find people in. It's really easy to see how when you go into pain, acute and then chronic pain, that pain also causes fear. This pain the causes more sympathetic arousal. It's a vicious circle.

Many doctors are realizing this situation is one that cannot be fixed surgically. More are advising their patients that they don't need surgery that time will resolve the issue, and those that really care about their patients often send them to therapists to work out the stress. People are often not aware of how their whole body is in lockdown, because they've gotten so used to it, it's just the way it is for them.
An example is fibromyalgia. It does not have any kind of causation. It's not like you can see something out of this pathology that is now the cause of the pain. Although there are certainly hereditary susceptibilities, as there are for most

everything, it's a stress related response. The most important thing therapists can do is to look at what's happening.

If the person is in pain and they have a higher heart rate, you could say they are in sympathetic arousal. This is trauma-related, though most don't even prefer to use the word "trauma." It's a whole spectrum and we just have to find a way to break the vicious cycle.

Let's work with that tip of the iceberg that's underneath the water which includes bracing patterns, the holding patterns, and perpetual arousal patterns and find a way to regulate them. When regulated, the pain will go down. It's not unusual in an SE session to see a person move on a pain scale of 0 to 10, from a seven, even eight, down to a four, three, and two, even sometimes to a one or a zero where zero is no pain.

An example of this is Peter's work with Ray, an Iraqi soldier. He was in extreme pain and after the first session; a good amount of that pain was gone. He was able to find the right pathways, the right discharge pathways to discharge the trauma energy, and the pathways to regulate that high sympathetic arousal. It made all the difference for his life.

As therapists, people come to see us every day. We know, but they don't, that sympathetic/adrenal responses are perpetual patterns. Our job is to help find a portal into it, so that we can begin to slow them down and regulate.

Learning the source of their trauma is essential. When someone is highly traumatized, getting a history may take two or three sessions. And again, there's no question that there's a high correlation between childhood trauma and all kinds of chronic pain syndromes, including fibromyalgia. We have to be careful however. For many patients, if you say they are having this pain because they are traumatized, it somehow negates the person's suffering and brings up shame with a sense of shame. Then we have shame perpetuating the pain. Some even go into denial saying, "No, I had a perfectly wonderful childhood."

This is one reason Somatic Experiencing™ is so effective. It's gentle. You take a little bite size piece at a time. It could be nothing more than just asking what's happening in their body when they talk about this incident that brought them

here. You may hear their heartbeat is elevated, their breathing is shallow and rapid. These are the clues we work with. Many therapists will jump on board and say "Oh, okay, let's get your heartbeat down; or "Let's work with your breathing." This is not always the best idea.

When a person is in chronic pain due to sympathetic arousal, we normally do something like biofeedback to just bring the heartbeat down. This will have some positive effects, bit it misses the organismic response. **The sympathetic nervous system is just one part of this whole mobilization system that is meant to function as an integrated organismic whole. It must run through its cycles of regulation in order to really down regulate the whole system.** Doing just one component that is trying to bring the heart rate down or during a relaxation exercise with the muscles, which can also be of some value, is not enough.

It also depends on timing. Yet deciding "let's fix it, this is the problem, let's fix it this way" misses the point. This has a biologically meaningful course of action that must be completed in a titrated way. This is what Somatic Experiencing is all about. It's very much about rhythms. Many people no longer know what slow means. Working with a client, you might say "Okay, go ahead and move a little bit; now pause and breathe. Go ahead and move just a little bit more, pause and breathe." By the time they are finished with several rounds of that practice, regulation is there. Not only that, they've integrated it. They don't have that same constellation again. It doesn't have to be that breathing/pausing pattern, but there needs to be some effective way of titrating.

Often, clients will find pain in a movement. Even with the smallest movement, the pain may increase for a moment. But then it decreases, as part of that cycle of charging and discharging. That is titration. Most people don't really understand the difference between voluntary movement, or even slow voluntary movement, and inner, involuntary movement. Sometimes the way to help, or the language to help with, is something like "…when you slow it down so much that it really feels like it's almost not moving at all, like it's really actually moving from inside of you", that can bring the person into that level in which they begin to get titrated, discharged.

Pendulation as Regulation

Sometimes it's hard to get the person to focus on their pain because that's the last place the want to be. This is where ***pendulation*** comes in. This is probably one of the most basic concepts of Somatic Experience. Perhaps it's also a quality of many, many indigenous and other healing systems over thousands of years. It must be. But the idea is when a person has chronic pain, he/she obviously doesn't want to feel that more. Often what happens is their nervous system then goes into the dorsal vagal system, where massive shutdown occurs.

Later, where they really just numb out, yet assuming that the pain is still available enough, the moment they actually experience the pain, just touching into the pain, it will feel worse. It will seem worse. But just for the moment because for every contraction, there's an expansion. Here's the pain, trauma, sympathetic gamma system locked in and then what happens is we open, expand and then contract, and then expand and contract. When people get the sense of that rhythm, that's the key. When you are in the rhythm, moving with the flow, the pain cannot exist.

This is a very simple tool that anyone can do with their clients and with themselves, family members and friends. Sometimes it really helps to have the person identify some part of their body where they are not feeling pain or where they are feeling some pleasure and first shift back and forth, from painful areas to the less painful areas. That's actually not the pendulation. Some believe it is. It's the shifting between the two, which then allows pendulation. It can sometimes be staggeringly effective in working with pain. It's all about moving from pain, and noticing some element of it. When the person eventually experiences pendulation, their organism will naturally do what we are describing. At the beginning, you have to prime the pump. You have to give them experience of what it's like to go into the pain, feel it briefly and then have a plan to escape out of the pain and focus on somewhere else in the body that feels different. This is something therapists can do, and it helps to have some kind of a mindfulness emphasis in your work. SE training™ can be a valuable start.

One thing that happens when people start pendulating is what they will describe as trembling and shaking. It's not a spasm. The patient may get scared and think "Oh, my God, I'm having a spasm." You need to know what it is and how to work with it***. The shaking and trembling is how the organism down-regulates itself.*** People, especially the first time, are often freaked out. Then they brace against

that, which results in the pain becoming worse. Just educating our clients with this one piece of knowledge can help them release so much of their trauma because they've stopped fighting.

Not all shaking and trembling is effective; it has to go through cycles. Trembling occurs then settles. There's the deep spontaneous easy breath. Fingers get warmer, their color changes. The carotid pulse, you can see the heart rate slowing down. You do that one little bit of titration.

Containing Activation through the Social Engagement System

How do we help people contain trembling and shaking when they have had some other kind of therapy where they were encouraged to enhance it or even suppress it? First we need to realize that neither is a good solution. The person needs professional guidance. **Sometimes you can make a really big difference when you put your hands on their upper arm and shoulder with, not a heavy pressure, but a firm, noticeable touch. Don't use a very light touch, because that also stimulates fear receptors.** This is one way if you work with bodies and allow touch in your practice. It can be very helpful. But again, the thing the therapist must rely on most is their own centering, regulation, their capacity to engage socially, not to demand that of our clients, but to engage and to be there, and to offer eye contact, when the client is able to receive it.

The voice is also important. A lullaby voice, "rock-a-bye baby' tone. You are sending a message that they are not alone; you are there with them.

Peter shares his own personal story of being hit by a car when crossing the street. He's lying on the pavement, having shattered the window of the car and thrown to the road. Peter recalls he was in a highly dissociated state. He felt "out of body" looking down at himself. A woman came by and said "I'm a doctor, I'm a doctor, actually a pediatrician." He felt such relief. She asked if there was anything that he needed and his response was to ask the doctor to just stay and be with him. She sat by his side instead of standing, held his hand and with that touch, Peter was able to go inside. He could not do it before because he was dissociated. Gone. Terrified actually and he truly needed that contact. Peter recalls that he's been teaching how to handle trauma for 40 years, but without

that contact, the physical touch, he doesn't know if he would have been able to survive. There's no doubt he would have been traumatized, and he would have known to get help, but the simple touch of another made all the difference. You cannot overstate the salubrious function of presence.

A very important way to repair pain is through the relationship, whatever you've got, whether it's an EMT, doctor that happens on the scene, or your therapist. If you can't create a regulatory relationship in therapy, that's not going to help with your trauma.

It's essential that we have tools to help ourselves. A therapist can help a client regulate, but when the person is alone and dysregulated, it can be because the co-regulator is not there with them, which is a problem because often people haven't really developed object constancy. It is so important to guide and give people tools to use when needed.

It makes a difference when the pain has been chronic. The first time one experiences less pain, perhaps the pain is gone, they go out to the mall, clean their houses, because they haven't been able to do anything. They overdo. It's guaranteed to happen to your client. Think ahead and say "Look, I know how great that feels and you're probably going to overdo it physically. But know that it may bring back some of the pain. It's wonderful that you want to celebrate – go and spend the whole day in the mall."

Maggie once worked with a woman that was in a car accident and broke her pelvis. She shared pictures of the car she'd been driving and it was unbelievable that she was alive, let alone injured with only a broken pelvis. She's doing very well. But one of the things that happened as we started doing some of this very gentle titration and release and pendulation, is that she was feeling so much better. She said "you know I don't even think I felt this good before the accident." Maggie's first thought was "uh oh." The next week she was talking about going to a Bikram yoga. Maggie asked if she had attended yet and the client said "No, I thought I better talk it over with you." Maggie said "I'm so glad you did. I think it's great that you want to, that the desire is there, that's a good sign. But you may want to start with a very gentle restorative yoga. Maybe five or ten minutes at a time. That is where you need to start." She could not believe it, but that's the way it is. We don't learn to walk again in a few weeks, it's no

different from the way babies learn. That's the only way that we can incorporate learning.

Coupling Dynamics

Another more advanced application is **work with coupling dynamics**. Therapists need to at least have an understanding as a professional, even if they don't work directly with these dynamics. There's a distinct relation to pain.

With a high sympathetic state, gamma system activated, our muscles are in a preparatory state. What happens if one muscle goes into spasm? With all the muscles at this hair trigger point, one goes into spasm and the rest follow. Let's say it was the jaw, which is for people with TMJ. The jaw gets in spasm, then the neck contracts, then the contraction in the neck causes shoulders to contract. This is over coupling. The way we resolve that is by working with one tension at a time, using, again, principles of titration and/or pendulation.

Here's an exercise. Let's say you are experiencing temporomandibular jaw (TMJ) pain. Allow your jaw to open the smallest amount until you feel the first bit of resistance, not even more pain. Then let it close a little teeny bit and then just let it open a little bit more. That's it. You feel a resistance and then let it close. Do it a little bit more. How do you feel? Are your muscles starting to let go? **This is decoupling**.

Returning to Peter's experience with Ray, the Iraqi Veteran, Ray was blown up by two IED's in Iraq. When Peter saw him he'd been diagnosed as having Tourette's. The problem was *overcoupling* because of the bomb blast. The head and the eyes are trying to move in that direction to orient where the blast is coming from. It's too late because before you even start to do this, you are blown up. So all the contraction, all the flexing muscles contract to go into a ball. You are locked into that. Just by doing that exercise and one little other exercise, after the first session, 80% of his Tourette's was gone. By the end of the fifth session, it was completely gone. What could have been seen as a hopeless case, was improved by using this concept of over coupling, boom, he was able to really make this leap. Many experience a high degree of overcoupling because of the way our organism is created. Everything is interconnected. It's like a Calder mobile. If one part is moving and in spasm, then the whole thing is going to move somehow. You have

to think that way and help people understand about pain pathways. You could call them that. "Oh, I see where you are moving through a pain pathway right now. Can you tell me what comes next?" That is a way that people can accept it, if it's got a name. Sometimes names are the best containers. The language of whatever happens next indicates that *there is a next*. When a person is highly traumatized and in pain, they don't see a different future. They just see the same suffering.

During Peter's third session with Ray, the Iraqi veteran, Peter had him look at where he was "now", in terms of feeling good about his life. Where does he see himself in the future? Then, again the same question when his pain goes from 4.4 to 4.25. You could see his response, "Okay, I can see myself opening up." Language is so important.

When a client is in a shutdown state, social engagements are not online at all. They shut off. Your presence is minimal compared to working with someone who's in a sympathetically dominated state. We should not feel like we're being inferior, **but we should realize that we're in that state that can't make contact**. The contact has to again be apart from our presence and our containing, and to help them actually move out of that shutdown state.

Here's an example, almost a trivial example, but it actually is valuable. When you work with a client who's in a shutdown state, they are collapsed around the diaphragm, leaning over. You ask them, "Okay, close your eyes and tell me what you're experiencing." When you're in the shutdown state, you have to do something first to get them out. <u>One of the simpler ways is to have that person –</u> because in therapy, most of the time you're sitting <u>– get up and walk together with you at their side so they know you're there.</u> You are not forced to make social engagement, which often causes even more shutdown. Just walk beside them. This is called walking meditation. Then describe a little bit how it feels in their bodies when they are walking together with you. That can often be enough to help a person out of the shutdown.

<u>There is also the special trampoline technique that helps connect with this rhythm</u>. When you are sitting, you are not getting much proprioceptive information. When you stand, the anti-gravity muscles require you to get this proprioceptive information. Now you are getting even more enhanced

proprioceptive information. This is what takes people out of the shutdown. When they come out of the shutdown, they tend to go into hyper-mobilization. You don't want the person to come out of the shutdown too quickly because they'll likely go into a very high hyper arousal, and it will be difficult to regulate them. This is the wisdom of titration, the utilization of titration.

Another example is working with a therapy ball. When sitting on the ball, you can't collapse or you're going to fall off the ball. You have to have some organized proprioceptive feedback in order to stay on the ball. You can play a bit with moving back and forth so you're getting a wave, a flow of stimulation. You can try slowly lifting one foot off the ground, and then the other foot, and try to stay balanced with that. It's amazing when this spontaneous movement comes.

Sanchez' tuning board is another example of a very simple device that brings these kinesthetic, proprioceptive channels online to take the person enough out of the shutdown to work the underlying sympathetic arousal.

Moving Out of the Shutdown and Into Activation

When people come out of the more shutdown response, and immediately and naturally move into this hugely activated response, what's the best way to help them contain that feeling without feeling like they're doing something wrong? Without being overwhelmed? The answer is: Titration, pendulation and education.

Some years ago, many people were presenting with anxiety. Those that were more shut down, were really depressed. In an experiment, they were asked "would you be willing, at least temporarily, to switch your depression for anxiety?" We examined all the implications of that, not just giving an answer. It's kind of a rhetorical question. If I felt more anxiety, what would happen? How would I deal with it? What would my life be like? LIFE! With depression, you're not feeling, people don't expect very much of you and you don't expect very much from yourself. It helps to see the value of depression, but also the challenge of learning to live with anxiety. Anxiety can resolve and does resolve. Depression doesn't resolve. It doesn't help in most cases. It depends on the nature of depression. But in chronic depression, going into the totality of it,

saying "Okay, just let's go into the depression and see what it's like…" is terrible. It's a black hole. One more part of you gets swallowed up in that black hole. At the same time that person who is depressed for long periods of time will experience anxiety for a period of time. Other times it may be rage they express. Very often it is rage and the fear of the rage. "If I feel rage then I might hurt someone. I might want to hurt somebody and myself." You have to really prepare the client for all of these kinds of possibilities, so when they come, they at least can say, "Okay, I understand this is expected as part of the healing process."

Maggie once worked with a client who had had a bad bike accident. Once they started thawing the freeze and the shock, the client started feeling itching sensations. Even before I even said anything, she said "Oh, itching is supposed to be part of the healing process. Isn't it?" Yes! Congratulations, there it is!

For those professionals working with someone who's in chronic pain and just struggling and not getting anywhere it's often good to turn to your resources for a refresher. When one thing that you try in the session doesn't work, you can turn that into a positive thing and say, "Okay, so this didn't work, but that's really important, because some things are going to work and some things will not. Some will work a little bit. If we can find something that works just a little bit – we're headed in the right direction. This gives a sense that there is a future, that there is something beyond the pain. There are many times, with this bit of hope for the future, people actually find their pain simply goes away. They forget about it, a truly amazing thing to witness.

The pain subsides, but is often replaced with a shift to emotional pain and anxiety. The therapist must be ready. Often, the person will say "Well, is there any reason for me to continue to work with you?" And you can say, "You know, I really think it does make sense to do a few more sessions because sometimes there are feelings that are locked in with the pain and it takes tools to resolve them." It takes time for those feelings to unlock and resolve.

Remember, for most people, pain is probably one of the scariest things in the world. We really have to appreciate how much fear there frequently is behind chronic pain and be very respectful of that.

Sympathetic Activation in Medical Trauma

Consider surgery and medical trauma as well as abuse. Emotions can definitely get locked and produce a sympathetic like hyperactivity. Anger and fear – but anger that's suppressed, results in a high level of sympathetic activity and a suppression of the mobility. You are leaving the ANS, and the sympathetic system "all dressed up with nowhere to go"… it's really important to remember that many times chronic pain is related to anger and aggression issues.

Being able to move forward in life is so important. Let's say you are undergoing surgery and you're really frightened and when you're really frightened what happens? Sympathetic arousal. Now the sympathetic adrenal system is an antagonist for the anesthesia. The person who's in a sympathetic adrenal state will need more anesthesia to go under. They are in this hyper aroused state. Their heartbeat is going crazy, and of course in surgery, you're measuring all of that so you can see it. The surgeon and anesthesiologist then increase the depth of anesthesia, and the patient finally goes under. But this time too deep, and they go into a shutdown state, and you see the heartbeat is very low. This results in a lowering of the anesthesia level, and again the person goes into a sympathetic adrenal state. You can see how the sympathetic adrenal system gets really coupled, exactly, with a surgical trauma, with medical trauma. If you are aware during or even partially awakened during this period, you go into this super sympathetic adrenal state. Bouncing up and down. Anesthesiologists are becoming a little more aware of what's happening when this happens, but they don't see the fear that the nurses do when working with the patient.

Peter has observed many of his patients who've had surgeries in the last 10-15 years have an almost like psychosis, like a post-psychosis. You can work with these patients, but there are usually pieces that are out in the ether, and it really becomes quite a challenge. When Peter asked if he could talk with the doctors of these patients, one thing that seemed to really correlate was the use of a benzodiazepine called Versed rather than an anesthetic. It's used a lot. It seems about one third of the people had a basically neutral experience with Versed. They felt relaxed. Another third flipped out completely. They experienced severe PTSD, and a profound difficulty in sleeping. **We are finding that if someone is not**

traumatized, Versed usually works okay. But the solution for traumatized people? It may be to have those people list Versed under allergies. Thankfully, more and more anesthesiologists are recognizing this condition and acting accordingly.

Touching upon emotions again, emotional pain is very much as important as physical elements. Both use the same brain system, same pathways, etc. People who are locked into the physical system don't have or are not aware of anger and fear, and that's one of the reasons why we encourage this group of clients to explore through the body. If you just ask the person as a curiosity the question "What is your relation to anger like? How would you describe the relationship?" or "How is anger handled in your family?" you will likely see their reaction through movement.

Another example is Maggie's work with the patient who had been in a severe bike accident. He would go into dissociation as he was talking about something that happened to him. This is not related to the accident directly, it was related to his trying to get his life back. He's attending classes and finds he can't sit in the position that they want you to be in the classrooms like everybody else in the class, and he doesn't raise his needs. When asked why he didn't take this issue up with the teacher, he dissociated. He said "I don't know why but I feel really dizzy and confused right now." You need to bring the person back… I said "Well, what I know in the past has been true, is that you've felt shame if you aren't like everyone else, if you feel like you are disabled." Then it clicked for him. He said, "That's it! That's why I could not ask, instead of going with what I needed, I dropped down into confusion and being in lockdown."

Therapists need to work hard to be able to recognize when someone is in severe pain. Those experiencing a nine – ten on the scale. They are very preoccupied by pain. **This is a situation where they're flooded versus dissociated. That tells us that they're in a sympathetic arousal, because they are so overwhelmed.** How do we get them to connect with their experience? When they are in that overwhelm state, it's to connect more from a place of compassionate observer.

Awareness of Bracing and Other Muscular Patterns

The thing that does seem to relieve and be effective, because it gets at the root of the pain, is to be able to have the person gradually become aware of the muscular pattern, the bracing pattern or the retracting pattern, that's underneath the pain. When they focus on that, it's kind of like a figure ground relationship. At first the pain is the only thing – that's in the figure. And then the tension pattern is way in the background, almost imperceptible. But then when they're able to bring the tension pattern out and observe the tension pattern, the pain tends to move into the background. An example is the figure/ground card, the one where you either see a vase or you see two ladies' faces looking at each other.

Because we talk about bracing patterns, yet if you haven't, for example, done some kind of somatic training – including somatic experiencing, you may not know what that really means. Is it more than muscular tension and if so, what else is there in bracing?

Bracing is a muscular pattern with purpose. Let's say we injure our arm back in the day of the early hunger-gatherers or the cave people. If you broke your arm, there was nobody to set it. Basically you would die because you wouldn't be able to use the arm. But perhaps, it makes sense evolutionarily, that the muscles actually formed like a cast, formed like a brace to keep the bones in place to get some kind of knitting. Afterwards, this bracing pattern may remain a little bit, but at least you've survived.

When we've been immobilized for a period of time, we tend to stay immobilized. Most of us have had a cast on, so if it's been on for six weeks and then comes off, you notice you're not having that same range of movement. That's the residual bracing. It appears that the bracing is meant to, in a way, reduce the pain, but now it's actually causing the pain. If the person is having pain in their forearm, you can very gently extend the hand at the wrist and then move it a very little bit in the opposite direction and do it back and forth very slowly. Then boom, all of a sudden, there's a release of energy, of heat, of vibration when that bracing pattern releases. By just playing with the passive movements that are around the area of the pain, again the person has learned not to move to prevent more of the pain, so you have to encourage them to move, and to explain that this is different. This is a mini-movement, a micro-movement. When it's done this way, it may increase the pain, but it's only momentary. Then the pain almost always becomes

less after that, sometimes quite significantly, with just a very simple intervention like that.

The point is that many people think that bracing has to be something striking, that you're going to see, but that's not the case. It's much more subtle than that. People will report tightness and tension that will give you some clue, but it's the micro-movements that are related and maybe help the person come out of that bracing pattern.

The Presence of the Therapist

How do we handle someone who has multiple, fairly serious traumatic events? They tend to want to stay in the story and the interpretation of what happened and really resist slowing down and taking one step in the event at a time. It's really frustrating when we're unable to get a person to slow down. It's important to take a few minutes to center and to collect yourself. Then you have the possibility of joining, of getting some kind of alliance with the person. Once you have that alliance, then you get more traction when you say something like, "Well look, this has been there for a long time and I know you're really wanting to get at this stuff because it's been troubling you. It's been interfering with your whole life, maybe even ruining your life." When working in this way, less is often more. Just hearing those words, you see the person go "Ahh… - relief" We need to touch into the experience. Whether it's a particular memory or just what's going on inside of you, which is even better, right now in the here and now. Just to touch it and then work with it. Clients want to be tricked by us, because they know at some level what they've been doing hasn't been working. First we form a presence and an alliance. Just saying, "Let's just try this and see what happens and lets just give it a whirl and see if we can get some results that you'll find helpful."

Simplicity as a Tool

Not only is less more, but so is *simplicity*. A simple tool can be so much better for people than something that is so complex that they just can't do it. Try the approach of asking the client to pause, wherever they are, **and take just one**

normal breath, with no intention to change anything. Just breathe in and out and just notice what that's like. In most cases those results result in the person having the space to feel more, and that will include sensations beyond pain.

Chapter One Summary

This chapter examines the Sympathetic/Adrenal branch of the polyvagal system and some of its interlocking patterns with dorsal vagal shutdown and social engagement. The Questions and Answers session manuscript that occurred after this webinar session is included at the end of this book, which may give you further understanding and answer some of the questions that came up in your reading.

In the next two chapters we explore the ventral vagal/social engagement system with Stephen Porges and then the dorsal vagal system with Peter Levine, Ph.D., Stephen Porges, and Maggie Phillips.

Social Engagement/Ventral Vagal System, Pain and Relevant Interventions

Stephen Porges and Maggie Phillips

Chapter Two

In this chapter, we use the polyvagal system as a kind of neural map to explore pain in a very different way than it is usually discussed. The polyvagal theory is an obvious way of organizing information. But with that way of organizing information, it creates a decoding method to understand the human experience and to help start treating pain and trauma.

Evolution of Polyvagal Theory: Hierarchical Patterns

The polyvagal theory is really an understanding of the recapitulation of our own evolutionary history. For mammals the evolutionary history is actually called *phylogeny,* which considers the nervous systems (or their features) that we've inherited from our ancestors. In this case, he ancestors are reptiles, amphibian, and fish. As vertebrates we have inherited a lot of circuits. As these circuits change, they resulted in functional neuro-platforms for many of the behaviors we as humans express. ***One thing we have forgotten or didn't understand until the polyvagal theory enabled us to have the reconceptualization, was our unique transition from reptiles to mammals.***

In that transition from ancient reptiles to even the primitive mammals, there are certain things that occurred. Those things are about enabling co-regulation in a sense, enabling one mammal to help regulate the physiological state of another mammal. That required cueing, or the social engagement, of another with signals of safety and the, with those signals of safety, to enable two of the species to be comfortable in each other's presence.

The whole history of mammals is about being comfortable in the presence of another or another appropriate mammal. It's really what gets disrupted with trauma. When trauma occurs, people are no longer able to co-regulate with

another, since often the trauma has been inflicted by another human being and their nervous system now does not invite the other person into their presence.

The polyvagal model really has three polyvagal states, including the most primitive system that we've inherited, which is shared with virtually all vertebrates. It goes back to cartilage that fish have, that is related to the ability to immobilize with fear, and to use immobility as a defense system. This becomes one of the critical points – that is, individuals who have gone into a collapse or a death feigning, have changed because they've acquired access to this very, very ancient circuit.

Genetically, the next stage that evolved was the mobilization system, which we all know as fight-flight. But fight-flight also has certain wonderful advantages, because as long as we keep moving, we're not going to be vulnerable to shut down or collapse. You see those symptoms in many people who have trauma histories.

Being in a physiological state of fight-flight, is not very good for one's body. It leads to diseases. It's also horrible for social interactions, because we want to cue others to, in a sense, stay calm, co-regulate, and share experiences. We could use the term inter-subjective experiences. We want to share thoughts and ideas and actually be present with another.

With the advent of mammals, a newer circuit came on, and this is what we're labeling either the ventral vagal circuit, or the social engagement system. The social engagement system was actually linking the neuro-regulation of all the muscles, the strident muscles that control the face and head – including the muscles of vocalization, the muscles of listening, the muscles of cueing in the face, and the muscles of how we articulate the prosodic features in our voice with the vagal regulation of the heart.

We basically are always wearing our face on our heart and we're conveying our physiological state in our voice. We are detecting the physiological state of others, through their voices and with their faces.

When we watch someone, we pick up cues on the speaker's face, listening to their voice and deciding, is this a comfortable person to hear? Or should I just

think about the words or should I think about the feelings that the words convey? So the social engagement system is really what makes humans human, or actually makes mammal's mammal.

Your dog has a really well developed social engagement system and many cats do as well; they convey their feelings in their vocalizations, in their facial expressions, in their gestures, and even how they move their heads.

The social engagement system is this wonderful ability to convey to another what our physiological state is. **What the polyvagal theory puts together is the view that these circuits are hierarchical. Hierarchical means that newer circuits have the capacity to inhibit the older ones.** What that means is social engagement can down-regulate fight-flight and can calm us down just as fight-flight can keep us out of shutting down.

There are three levels and each one inhibits the more primitive system below it. The word that was used to describe this is a word called "dissolution," which comes from scientist John Hughlings Jackson, who was very interested in brain processes and in this inhibition of brain circuits, so that they become more primitive and reactive when we have brain damage or illness. So the autonomic nervous system works the same way. **Our newest circuit calms us, our older circuits can be used for defense.**

What allows social engagement to occur while the defensive mechanisms of fight-flight are being disabled? Stephen uses the term ***"feature detectors"*** **that basically assumes that our nervous system evolved to detect features in the other, to help us identify safety and to calm us down. So those feature detectors are part of the construct he calls "neuroception."** You cannot talk about the social engagement system without talking about ***neuroception*****.** ***Neuroception*** is the mechanism through which our nervous system detects safety and then enables the social engagement system to work. It detects this without awareness. It is a very special system because it is not the cognitive awareness we are in safe surroundings.

Our nervous system is detecting the level of safety, then the physiology responds. One can be very aware of their physiology. Much like going to a lecture, we go in and we say "Well, the words sound good or at least if I were to

read it, it would be good, but you know, there's something about that person that I don't really feel comfortable with." Everyone has had those issues. It is hard to label, but we feel uncomfortable, maybe it's a lack of prosody in that person's voice, the lack of engagement. We could say it is the lack of being really sensitive or having the sense that the other is being a valid person. It's really that the words are there but the feelings underneath the words may not be. That is what our bodies are responding to. *We respond more profoundly to attenuation of voice, than we do to what is said by the person. When our body responds, we feel it and then develop our own personal narrative. That's how we either feel that we can be close to people or we feel that we should be really distancing.* ***The underlying theme here is, there is no social engagement, unless our neuroception picks up the features of safety.***

How the Nervous System Detects Safety: Prosody

Specifically, how does the nervous system detect these elements of safety? It's far more specific than we give our nervous system credit for. We think it's a complex process--you need to go to school to learn it, you need to look about micro-features in the inner parts of the eyes, or you need to do frame-by-frame analysis.

But in general, our body's picking up profound things like the intonation of voice. The best example used is Bill Clinton. Clinton's voice was extremely prosodic. There used to be these stories going around Capitol Hill that, not about the women, more interesting is actually the **stories that came back from the Republicans who had come to the White House. They would have a good time, they would be interacting with Bill Clinton and they would leave not knowing what they had agreed to. They were picking up these cues and they had totally down regulated their defenses.** This becomes a real interesting thing.

The other alternative is **George W. Bush. He did not modulate the frequency of the intonation. He modulated loudness. So, he appeared to be barking at you and talking with emphasis. This had the effect of pushing people away. For both of them, it had little to do with the content.** As intellectuals, we say it had everything to do with the content, but really it had a lot to do with how they were able to communicate.

Our nervous system is detecting the prosodic features (the set of speech variables including rhythm, speed, pitch, and relative emphasis that distinguishes vocal patterns), and this is powerful. Although we can close our eyes when we don't want to look at something, we have difficulty closing our ears. This portal is so powerful especially for people with trauma histories. They have difficulty making eye-to-eye contact looking at someone, but **they can't turn off their nervous system's ability to interpret prosodic features of voice. It's hardwired in.**

For a person with trauma history, a hand gesture can be misinterpreted. If you have a dog, and a stranger comes and puts a hand over the line of eyesight, the dog is going to respond. We have to think that humans have some of these features. We want to see what's in front of us. We don't want to see things behind us. If we become at all uncomfortable in the physical situation, we come hyper-vigilant about what's going on behind us and we're uncomfortable with the interaction.

Social engagement is dependent on the way we regulate muscles of our faces and heads. If we say that if we're physically and physiologically processing information as safety, our face becomes spontaneously engaging. As opposed to a false smile, which emphasizes the lower part of the face. But it's the upper part of our face that's giving us the cues to safety.

We're reminded by the contemporary culture that people use Botox to dampen their wrinkles, but the wrinkles are a way of telling us that people are really interested in what we are saying. The Botox may get rid of the wrinkles, but it also creates a problem.

As an aside, if you deal with parents or children or adults who have autism, one of the comments that we hear is "Well, my son he looks so young he doesn't have a wrinkle." What they are misunderstanding is that many of the wrinkles are really a manifestation of neuro regulation of the muscles there below the skin, especially the orbital muscle called the *orbicularis oculi*. So, the first principle is not merely that we can stage our muscles, but if we're in this physiological state then the spontaneity occurs and there's a big difference between spontaneous smiles and forced smiles. Our nervous system detects this rapidly and that's part of why we don't feel comfortable with certain types of people. Just like during

election time, the false smiles of individuals really is a big turn-off to our nervous system.

Stephen uses a slide in his talks that shows an ancient Chinese mask and one of the pictures is a picture of the mask of happiness. The way you know that its happiness is that it has really big crow's feet on the side. So, this was used as an unambiguous cue to the audience of happiness. The dermatologists are not schooled in this information and people don't want their wrinkles. In fact, if we think about it, people put make-up on, especially women, and I guess men do some of this now too, in a very static mode, they hold their face up. But it's not the static mode of the face that's attractive. It's the dynamic aspect of the face. That gets lost in the culture.

The Role of Oxytocin in Safety

There are so many ways to approach this issue. One of them is the role of *Oxytocin* and what role it has both in social engagement and in the inhibition of pain.

Stephen is always cautious about talking about Oxytocin because of the other part of his family – his wife Sue Carter is the one who discovered the importance of Oxytocin in terms of social behavior. He explains that his interpretation of Oxytocin is not always identical with what Sue says, and offers his own interpretation.

Oxytocin is a neuropeptide. It's very common throughout the body. What's important is what areas of the brain stem it influences. Oxytocin influences the area of the brain stem where ***the source nucleus***, the source of the dorsal vagus, is. So it actually influences even the *vagus*, or the *ventral vagus.*

The dorsal vagal complex contains many different receptors. We can cope without collapsing. So the dorsal vagal complex co-opted the ability of the dorsal vagus to be used, not as an immobilization with fear, but as an immobilization strategy without fear. If you think about ***reproductive behavior, which involves Oxytocin, it's the ability to immobilize without fear,*** which is very critical. Whether you're an active sexual participant or you're fall asleep afterwards, is not

the issue. ***It is that you're safe in the arms of the other. It's the ability to immobilize without fear.*** So the linkage of Oxytocin first is with the immobilization bit. However, research has demonstrated that *if people have reasonably functional ventral vagal systems, they tend to respond to Oxytocin by increasing the social engagement system in the ventral vagus.*

It's not that Oxytocin affects everyone uniformly. Paradoxically, one might say for those who don't really need it, it's more effective. So in a sense the system is more organized to use it. There are some studies with a typical clinical population that show if you give participants Oxytocin, they don't become more social, they become more defensive. And part of it may be linked to the fact that Oxytocin may end up enhancing *selective* relationships, not generalized relationships.

We have to be very careful when we try to use drugs or chemicals to think that we are helping social behavior, because that model would be making people promiscuous and that's not really what the goal was. The answer is the body is smarter than the people doing the research and the body is really saying, "I like you, then Oxytocin will help me to like you more and I will be more pah, pah, pah…"

But if you have difficulty liking people, if you feel unsafe with people, Oxytocin may not work at all. In my conceptualization, I use the term, "expanded autonomic nervous system," which I think includes, not merely the autonomics, but what people call the endocrine, and others the immune system.

The Expanded Autonomic System

The expanded autonomic nervous system *is* a more complex system that really enables us to either be safe or be defensive. The polyvagal theory demonstrates that you can have two different defensive strategies: you can mobilize and fight – metabolically costly – or you can just shut down and conserve whatever resources you have. Both are defense. But Oxytocin is going to be related to always reducing metabolic output in safe situations.

However, Oxytocin has everything to do with safety and trust. Yet, it's a complex system and ***here is where it gets really tricky, because under fear-induced***

stressful situations, where you normally would want mobilization and fight-flight, there's a surge in Oxytocin as well.

There are two possible interpretations of Oxytocin from this perspective. It could protect the dorsal vagal complex from having a surge and shutting down, so that we can continue to mobilize without going into collapse. Then, the other idea, is consistent with and true to the polyvagal theory, where we have our older circuits and our newer circuits. Since we co-opt older circuits, we may have a receptor in our brainstems that is both sensitive to Oxytocin and to vasopressin, because that's what reptiles have.

Vasopressin in the brain helps us mobilize. It literally keeps our sympathetic nervous system driving at a higher rate before we have natural feedback to help us calm down and shut down. It's called the ***baroreceptor reflex***. You get your blood pressure up. If it goes too high, we get it down. *But vasopressin allows blood pressure to get higher and higher, so we can fight more.* I think Oxytocin, being a mammalian neuropeptide, can affect those older receptors.

Actually, no one has studied this, but we believe those receptors may be sensitive to both Oxytocin and vasopressin, depending on the context of what's going on. So the short of the story is there's no such thing as a biomarker for love and trust. We are a biological system. Biological systems have adaptive functions. Under certain settings, our nervous system will try to do whatever it can to calm and be safe and to co-regulate with another. It will utilize what other mechanisms it has, so it's not a one-to-one relationship. ***I think there is where the literature and the expectations and understanding have been confusing. We also have a similar issue with the concept of cortisol, where people have basically operationally been defining cortisol as a measure of stress. It's far from that.*** It's a very important hormone of our body that enables us to efficiently mobilize. It doesn't mean that we're mobilizing out of fear. We have to understand the biology of the system to make better interpretations of the neural or physiological platforms upon which behavior is super-imposed.

Faulty Neuroception of Danger and Pain

Let's discuss how neuroception of danger can occur, both in terms of external environment as well as to the internal environment. *How can faulty neuroception contribute to pain in both those cases?*

It takes three levels: External, internal and then the pain level. So from the external perspective, our bodies literally are tuned for certain physical cues in the external environment, like low frequency sounds or rumbles, which are embedded in our nervous system to detect predators. When we are in environments that have noise, primarily low frequency sounds like shopping malls, restaurants, sounds of vacuum cleaners, airplanes or trucks, our body has difficulty relaxing.

We see this literally amplified in any psychopathology. If we look at autism, kids just can't deal with acoustics at all. But if we talk about *people with trauma histories, they will try to restrict their social environment, based upon the acoustic environment that they have to enter. They don't want to be in noisy environments and they'll even have difficulty processing human voice.* That's because the nervous system changes in neural regulation of the striated muscles of the face in the head, including the muscles regulating the middle ear. And when those muscles become relaxed, they become basically amplifiers of low frequency sound which is really adaptive for predators, but we can't hear human voice.

The issue is that sound really is extraordinarily important. When we get into a physiological state that facilitates hearing a predator, our body becomes tactically defensive and we become hyper-vigilant, which is really the appropriate adaptive behavior in that state. Because if we are hyper vigilant, we're already prepared for fight or flight. So, that's the external context.

Now, *internal context becomes a little bit more complicated in understanding, but most of the sensory information that we get is actually below our level of consciousness. Much of it comes from below our diaphragm* - comes through the sensory part of the vagus, really representing how our body feels. And **now we get to your question, is that when we start getting those visceral feelings of pain, are those feelings often coming up through vagal pathways that we're not supposed to be feeling?** In a sense, the body is supposed to be doing its job. In a

way*, **that job is not feeling, especially sub-diaphragmatic pain**,* and it's often sometimes in the chest but primarily sub-diaphragmatic, pains. It's supposed to be automatic when that starts coming through, with gastric distention and all these issues, which I'm sure most the therapists are familiar with, because clients are going to come into therapy with it; that sub-diaphragmatic area is really representing the old, shutting down, collapsed, vagal system, now being used as defensive system.

If we put it all together, ***sub diaphragmatic, visceral pain is really related to pelvic floor areas*.** Even symptoms like irritable bowel, gastric distention, oscillation between diarrhea and constipation, are related to a gut that is really communicating to the person--a signal saying, "Hey, I'm not safe, because if I were safe, I would be really running your factory real well. Things would be simple- you take the food in, it comes out. You wouldn't worry about it."

But something has happened and so the system now is "out of balance." But in a physiological state of defense, using an autonomic system is supposed to be supporting health, growth, and restoration. So, to re-conceptualize this - ***it's only when we feel safe that we can utilize the spontaneous features of the social engagement system. It's only under those conditions that the sympathetic nervous system and the unmyelinated sub-diaphragmatic vagus work to support health, growth and restoration.***

We lose our social engagement systems, which is usually the outcome of illness, whether it's physical or mental illness. And this is constantly the case with trauma cases. Then other autonomic circuits, the sympathetic and the sub-diaphragmatic dorsal vagus, become used as defense. ***One of the consequences is that all the sub-diaphragmatic problems including visceral pain, are used as defense.*** **What implications are there for treatment in that case?**

The obvious answer is, "Of course, if you don't utilize the sympathetic and dorsal vagus as defense systems, then you don't have a problem." Now, if we reverse this into a treatment model, the treatment model would say, "***How do I engage the social engagement system? How do I give the nervous system features of safety, and if I do that what will happen to the defense strategies of both sympathetic and dorsal vagus***?" And the answer is that they should be *dampened*. ***The secret in treatment models, is to utilize an understanding of the***

nervous system including, the feature detectors, which we talked a lot about in terms of prosodic features, as being a profound way of triggering the nervous system out of defense. I mean, think of a mother calming a baby who doesn't have the tools of language, and even think of an older child who's terrified and the words aren't going to calm the child, but the soothing voice will. Here's an interesting aside - autistic children often are fearful of the father's voices. While their mother's voices may be calming, the father's voices may trigger a sense - a biological sense - of predator. So, the answer here is, can we engage the social engagement system and what effect will that have?

How to Engage the Social System to Dampen Defense

I'm going to talk about two other things now to give you and listeners another set of hints. One is the power of breath, respiration or breathing. And breathing is a wonderful neuro-biological system, because it's not only automatic but it's also voluntary so you're breathing as we're talking. I'm breathing while I'm talking. I'm not thinking about, "Wow, I'm going to have to take a breath because my phrase was too many words. I'm going to pass out." No, our body is automatically calibrating and adjusting to this. However, we can regulate our breathing. We can push our diaphragm down. We can inhale with deeper breaths. We can modulate the ratio of inspiration to expiration. So all these parts of breathing have been parts of ancient practices. They're incorporated now into Somatic Experiencing.™

But they're also part of pranayama yoga. They're part of Japanese traditions. They're part of continuum. Even mindfulness meditation has some of this. There's a biology to this, and if you understand the biology, then you can kind of rephrase it and you can use it for your own use as a therapist or even as a client. And that is the vagal brake, the mileaid vagus, the calming vagus, your friend... your friendly vagus.

The effect of breathing is amplified during exhalation, and is attenuated during inhalation. So one of the exercises that I do, when I do workshops, is basically have people breathe with different styles. And look at each other and try to evaluate their perception of the world. *So if you extend the duration of your inspirations and reduce the duration of expirations - so you shift the inspiration-expiration ratio to an inspiration bias - you'll see the world as being very*

evaluative and critical. Because what you've done is dampen the vagus, which now functionally allows the sympathetics to express themselves more. So suddenly you come into an evaluative, aggressive world. But as a therapist if you look at people breathing, if they start breathing in the upper part of the chest, you know that they are getting into a very high state of anxiety. Another way of viewing is that they are unconsciously manipulating their body to be in a physiological state that will dampen their ability to understand what you are saying. They're basically blocking the connection and they are mobilizing their defenses.

I mean you can't just say to a client, "Hey, look, the way you're breathing you are not going to learn anything, we are not going to get anywhere..." **But the issue is you can help them see it so they can learn to use soothing, calming strategies. So as you extend the duration of your exhalations, the world becomes seen as more positive.**

So I was looking at the literature on pain perception and on types of pain, and there's a mixture in there, but there is a predominant finding. ***And that is that this visceral pain is reduced during slow exhalations.*** So now, the answer to that is really very simple: ***During the slow exhalation you're increasing the myelinated vagus activity and that's basically calming you down.***

There are different theories about pain. One is that if your muscles and your body are tight, you're going to feel more pain and the idea is **how do you relax the body?** Even if you're getting surgery, how do you make the tissue relax so that - you literally can be cut without bleeding as much and not fighting it?

The answer is slow exhalations will help if you're feeling safe and comfortable. So slow exhalations have been within part of the history of humanity for hundreds of years. Whether we call it religious traditions or folk medicine, it was always part of it.

The other part of breathing where people inhale, and when you inhale, you can immediately see your hands going like this, if you hold it. Now, that's a very powerful defense method, but it doesn't deal with tissue injury in the same way.

For example, if you want to get an injection in your arm, tensing the muscles makes that injection more painful.
Stephen is now reviewing the literature because there may be sensory systems that are reduced during inhalation. So there may actually be two different processes acting. He comments, "it's a good challenge to be honest, to be interviewed on something you're still working on." ***It's clear that relaxing people by extending the duration of exhalations will help chronic conditions. And so from a medical point of view anything that enables a person to relax and reduce the muscle tension will be very helpful. So, slow exhalations will work.*** However, with the issue of acute reactions, even this notion of tensing when we get the needle may have some adaptive function which has yet to be discovered.

One important caveat for therapists who want to use the slow exhalation technique is make sure that it truly is relaxing to the individual client. There are ways that people teach breathing that are just so mechanistic that it robs the person of the value.

We will be moving further into the practice of breathing in the next and last chapter of this ebook.

Chapter Two Summary

This chapter explores the hierarchical patterns of the polyvagal system and how the newest system, the ventral vagal system, calms us and creates safety while the older circuits provide for defense. Porges discusses how *neuroception* helps us to detect safety in multiple ways that we are unaware of. One example is voice prosody that includes pitch, rhythm, high tones of intonation. Another is the muscles of the head and face that indicate a spontaneous, trustworthy smile. Porges also indicates the importance of neuropeptides, especially oxytocin and vasopressin, in the creation of safety through the ventral vagal system. The slow exhalation breathing approach is offered as a way to dampen the defense systems and increase myelinated ventral vagal activity.

Dorsal Vagal, Freeze, and Dissociative Pain and Effective Polyvagal Solutions

Peter Levine, Stephen Porges, and Maggie Phillips

Chapter Three

As we discussed in chapter 2, the primary role of the dorsal vagal system, in humans, is to regulate organs below the diaphragm. However, that's not the only role. Let's put it in perspective. Genetically, the dorsal vagal pathway of the autonomic nervous system is basically very similar to what's been seen in bony fish and even cartilaginous fish. By the time it evolved to mammals, its role was really relegated primarily to below the diaphragm. This means it regulates basically all those visceral organs that we are really not aware of. However, there are some tracks, or pathways, that are still, in a sense vestigial, old systems that go to the heart and to areas like the esophagus. If you were to stimulate the furthest, deepest part of your esophagus, that would be regulated by the dorsal vagus. Of course, what happens if you stimulate that part of the esophagus? You regurgitate.

Regurgitation is, in a sense is a dorsal vagal response. The system is really going down and this is a very adaptive strategy for getting rid of toxins and other things that may be occurring. To begin with, when we talk about the dorsal vagal system it originates in the brain stem area called the *dorsal motor nucleus of the vagus* or more commonly now known as the **dorsal nucleus of the vagus**.

Some of the pathways actually migrate through the nucleus ambiguous and then come back down through the vagus and some of those that migrated actually end up being part of the nucleus ambiguous or the ventral vagus. By the time you see it coming from the brain stem you basically have a unified integrated nerve. A lot of people think that they're two separate nerves, the ventral vagus and the dorsal vagus; however, they're really all in one conduit and we have to visualize that.

There are only about 15% of the fibers in that conduit. 15% to 20% of those fibers are actually efferent fibers meaning going down from the brain. Of that 15%, actually 80% of those are going to the dorsal vagus, and very few are going to the

ventral vagus. So really, the predominant features of our vagal system are actually dealing with sub-diaphragmatic organs. **The important part that we really want to get to when we start discussing pain, is this role of the afferents, of these systems, being the sensory part going back to the brain.** So the dorsal vagus comes from an area that is dorsal to the nucleus ambiguous, which is ventral to the dorsal.

The Role of the Dorsal Vagal and Pain

Retaining those specific details is really not important because they're really irrelevant to understanding the function. The function that we start understanding is that ***the nucleus ambigus vagal fibers are linked with the face and affect that we normally have, while the dorsal vagal fibers are more predominantly linked to areas below the diaphragm***. Gastric pain, irritable bowel, all these things that are really symptoms of other syndromes that many people who suffer trauma have, are really indicators of atypical regulation of the dorsal vagus. This becomes really important because within the model of the Polyvagal Theory, both the sympathetic nervous system and the dorsal vagus can be recruited as defense systems***. When the ventral vagus is really functioning at a high level and regulating well, then the sympathetics are merely part of the homeostatic processes. They support health, growth, and restoration. They also support movement without being a defense system.***

Importance of Ventral Vagal Activity to prevent Defense and Shutdown

Similarly the same metaphor works for the dorsal vagus. The dorsal vagus is critical; it's not a bad system but ***it's not healthy for that system to be used or recruited as defense. That becomes really, the primary issue and the Polyvagal Theory gives you the hierarchical model. It says, as long as the ventral vagus is literally in command or running, then your sympathetics can dance any way they want in a more homeostatic way*** to promote blood flow and promote healthy growth and restoration. *It's only when the ventral vagus gets retracted that we then get into this vulnerability of a sympathetic defense system.* When

that doesn't work, well, then the dorsal vagus is the only thing you have left and that shuts you down. You start seeing the hierarchical way that things work.

What is really important is the role of the vagal afferents from the gut, from the sub diaphragm. Their role in the modulation of pain is part of this chapter's emphasis. Peter notes the fact that the vegas nerve, the largest nerve in the whole human body is 80% afferent, when we look at what happens when people get stuck in the dorsal vagal system*. Steve has emphasized its regulatory function, both the dorsal vagal and the sympathetic, and of course the ventral vagal. But there are many situations, particularly trauma and pain - where this regulation is not really homeostatic, where it's maladaptive.*

Strategies to Shift out of Maladaptive Defense States

One of the ways that we can switch out of those maladaptive states, due to trauma or pain, is through stimulating these afferents. There are several ways--one, for example, is the use for example, of vibrating a sound, right from the visceral area where you seem to be stimulating those afferents. Sometimes you'll see a person go from shut down and into equilibrium.

Sympathetic hyper arousal is part and parcel of this autonomic somatic pattern of bracing, of constricting, of holding. This leads to pain and that pain itself causes further bracing and further activation of the sympathetic system. *When the bracing pattern and the pain itself have become more and more acute, the body shuts down more into what Steve has talked about as a metabolic retreat, a state of energy conservation. At the same time, presumably, that enhances the release of endorphins, which are the body's own opioid pain relieving system.*

Moving out of Shutdown and Working with the Sympathetic Responses Underneath

In a sense, a person shifts from acute pain, to acute moving towards chronic, and that's the **sympathetic arousal/bracing pattern**. Then, over time, it goes into the shutdown. In order to help people, once they've been in the shutdown, **we have to find a way to help get them a little bit out of the shut down and then use the sympathetic reaction under that**. As Steve was saying, a lot of that regulation

comes from that *ventral vagal social engagement system, by the therapist really being present and being able to guide them through those arousal sensations.*

Stephen and Peter agree on the ***important intervention of belly breathing or abdominal breathing.*** Many of the very powerful afferents related to breathing for the ventral vagal system, are actually embedded in the diaphragm. The issue is, we can use a voluntary system, meaning control of the diaphragm and breathing, or at least voluntary breathing, to push the diaphragm down and to extend the duration of exhalations as well as to improve or increase abdominal breathing. That, in a sense, increases the ventral vagal flow. Again, the basic underlying theme here is that the sympathetics in the dorsal vagal system will work in a wonderful homeostatic way as long as the ventral vagus is really functioning. ***Peter has shown in a very concrete way that you can get some of this control back through a voluntary breathing strategy.***

Because what that is doing is functionally triggering the ventral vagus to enable the dorsal vagus and the sympathetics to go back into a homeostatic situation. Bracing, which of course, is increase in in motor tone, is a sympathetic mobilization and that has short-term effects. As Peter suggests, "If I'm clenching my fists and preparing, I am basically saying to my ventral vagal system, 'Go away because I'm in a defense mode.' Now, if this doesn't get rid of the pain, since I'm in a hierarchical system, or I *am* a hierarchical system, I've already thrown away, discarded the ventral vagus as an option. If this doesn't work, what does my nervous system do? It goes down to its lowest level."

We cannot say that all the dorsal vagal responses are negative because there is a degree of analgesia and sometimes there is dissociation and no feeling of pain. But the cost to social interaction is a catastrophic price to pay.

As Peter notes, when working with a client, it's important to honor and respect the need for that particular defense system and then gradually help the client to move out of it to a less, more hierarchically contemporary system, a here and now system.

Maggie points out that a lot of therapists devalue the freeze response and are almost phobic about it. They don't want the client to be in a freeze state. It's

important to know what kind of psycho-education we can give clients about how the freeze has been valuable to them.

Peter adds that the freeze is an adaptive response, meaning that it has adaptive function and that's part of the psycho educational component. When people start to understand that their body has reacted, literally, in a predictable and adaptive way, it's not voluntary behavior. You can say "Gee whiz, I if I didn't want to shut down, I shouldn't have shut down." But shut down is not a voluntary system. The body is doing things outside the realms of awareness. Even though we are not aware of the triggers that put us into these physiological states, the afferent feedback of our physiological shifts certainly are within the realm of our awareness.

The issue is how do we label those physiological responses? Do we tell ourselves that we did something wrong or do we try to say, "Look, my body's doing something. It may have been very effective for an acute adaptive response, but obviously in the chronic one, the body needs to be reeducated to say 'Hey, it's safe, come out of there.' Another important factor is that when someone comes out of the shutdown, you typically hear, "I didn't hurt that much before." When the dissociation and the analgesia dissolve, there's pain both physically and emotionally. As professionals, we have to use education that basically explains it that way. Then we have to be present and available to help them then work through the pain. Nothing is resolved – ***pain and trauma issues do not resolve when the person's in the shutdown--that will only happen if they have to come out enough to be allow them to be energetically accessible.***

Peter agrees that therapists are often uncomfortable with the shutdown stage. This is likely due to a few factors. One is if therapists are frightened of the freeze in themselves, of their own internal state. Another is that they simply do not know what to do. Most therapists are compassionate, they're caring and generally well-tuned in for the clients. If that's all they do, however, it's not going to be sufficient for someone who's in a shutdown state.

The Importance of Breathing and Movement

There are different ways to work with that, through the voo sound and immobilizing the jaw. For example, the type of breathing that Stephen and Peter are talking about, is to use something like “Voooooooo.” When the client is asked to make the "voo" sound with you, you’re connecting the gut and then mobilizing the jaw to help release the shutdown and freeze. Often in therapy, the clients are basically slumped over like this. Even if the therapist says “Let’s just walk around the room together”, sometimes that’s enough to ship them out of their shutdown enough to start making contact again. Stephen was talking about getting regulation that’s supposed to be a harmonious by shifting between sympathetic and dorsal vagal and ventral vagal. To say it another way, we help clients to have the experience of being in the now.

Stephen adds another dimension, which is working with facial muscles. This is a part of what he calls the integrated social engagement system, which is giving tremendous sensory feedback to the brain stem area, regulating the ventral vagus. It involves using laryngeal, pharyngeal, trigeminal, and facial muscles plus listening. It’s a very integrated system.

Breathing

Stephen explains that what is really wonderful about breathing is that we don’t think about it when we do it. "We can think and do it differently, so it’s like a system that we can literally reach into our body and change a spontaneous physiological system. If you watch client’s breath, or watch an anxious person, or a depressed person or a person who is totally dissociative, you can actually see different breathing patterns. Peter has actually spent his lifetime observing these types of things. We can watch as a person gets anxious, the breathing moves up their chest and so they’re really getting very shallow breaths, but what happens is losing the opportunity of getting the significant influence of the abdominal afferents going upwards to the ribs. More importantly, the person is reducing the duration of the exhalation in the breath. It is during that exhalation that the ventral vagus can have a soothing effect.

When Peter's doing his breathing using voo sounds, he is emphasizing the exhale because otherwise you would not have the sound; he's not sounding on the inhalation, he's sounding on the exhalation and he's encouraging his clients and the therapists who use this technique to extend the duration of their sounds. Extended duration of the exhalation means from a polyvagal perspective, we extend the impact of the ventral vagus."

Afferents

Peter explains the difference between afferents and efferents by explaining that the term "efferent" means that these are the nerves that are going from the brain, the brain stem in this case, down to the viscera. "For example, if I voluntarily tell this hand to go into a fist, I'm doing that through *efference.* Now I'm closing my eyes and I'm conducting Beethoven's Fifth Symphony and then boom, 'Please help me God,' I could not do that without afferents. Afferents are sending information from my muscles and my joints and also from the viscera that informs me of my internal state. This cannot be over emphasized in feelings of goodness and wholeness – how profoundly they are related to our internal state. These receptors that are in the organs, that are in the muscles that are in the joints they are coming back from the periphery into the centrum, the brain and the brain stem. This gives us knowledge of who we are inside ourselves."

Stephen adds that the afferents from the sub diaphragmatic area are rarely recognized. "We are aware of it when it tends to be on the negative side. Sub-diaphragmatically, when things are going great and the afferents and efferents are doing the appropriate regulation, we're unaware of it. Our awareness comes with pain and discomfort. The part that I really want to emphasize is where we have a wonderful vocabulary of external sensation, we have a very limited vocabulary for the viscera because we don't have the specificity of the visceral receptors. It's not really that we don't have all the words, we don't have all the discreet feelings. When we say 'I feel full after eating,' some of that is not even a visceral response. Some of it is actually the stretch on the skin of our abdomen which is not coming from inside our guts, it's coming from the outside."

"The first year of Somatic Experiencing is learning about those hundred, or thousands of different kinds of internal sensations and what they mean," Peter responds. "We're learning to navigate them in the inner landscape and of course

pain and trauma and shutdown profoundly moves you away from that process. It gives you this one experience of distress in the gut instead of the hundreds of nuance sensation based feelings that emanate from a core visceral sense of ourselves."

Inflammation

Inflammation plays a big role in pain. This section of our presentation considers how the autonomic nervous system regulates pain and inflammation.

Stephen starts by asking participants to think about the vagus nerve having receptors, some of which are affected by *cytokines,* the immune system for inflammatory activity. When some of the receptors triggered by localized cytokines, release, this actually informs the brain to release those same types of chemicals centrally. It's kind of a switchboard, so you have a receptor down below to pick up something and it sends the message "upstairs." It doesn't actually travel up the nerve in the sense of the chemical traveling up there. It's actually a code.

When talking about inflammation in the autonomic nervous system, the term "ANS" may be too restrictive. Stephen now uses what he calls the ***expanded autonomic nervous system*** (see chapter 2). That term incorporates neuroendocrine and immune and even the constructs that people use in terms of neuropeptides, like oxytocin and vasopressin. The reason these structures are included in the expanded ANS is that they're utilizing similar brain stem areas for regulation. The partitioning of these disciplines, whether through psychoneural immunology or psychoendocrinology or psychophysiology indicate separation with separate dependent variables, but if you look at the regulations systems, they're all overlapping.

The HPA (Hypothalamic Pituitary Adrenal Axis)

Peter reminds us that the part of the brain that's a kind of driver of all of these autonomic and endocrine systems is what has previously been called the *hypothalamic pituitary adrenal axis (HPA)*. When you have shifts in autonomic activity, you also get parallel shifts in this hypothalamic pituitary adrenal axis

(HPA), which affects not only inflammation through the corticosteroid system for example, but almost all of the internal metabolic and endocronological activities. It's really important to understand this clinically. When you work with a client and you're working primarily with their autonomic signs. When they get regulation there, very often people with autoimmune diseases or weak immune responses will shift. Once we work with this central axis all kinds of things can happen. W.R. Hess, who won the Nobel Prize in 1949, showed that the hypothalamus actually affects virtually every part of the brain and the nervous system in the body. It is astonishing that people don't talk much about that anymore.

Hess won the Nobel Prize in 1949 for his work on the central regulation of the viscera. In the first paragraph of his speech, he describes how everything is interrelated to everything else in the body. What he is saying is that the interaction among the components is much more than the sum of the little components. Peter and I are big believers in his work.

The Dorsal Vagas and Nociception as a Cause of Pain

Stephen explains there's a lot of embedded research floating around in neurophysiology on the relationship between the afferents of the dorsal vagus and *nociception* (the encoding and processing of harmful stimuli in the nervous system, and therefore the body's ability to sense potential harm). One of the things uncovered in the literature is that ***the sensory part of the vagus interacts with a spinal pathway that's involved with nociception***. That becomes interesting in terms of constructs or concepts like fibromyalgia, which tends to be linked very much with people who have experienced profound shutdown and are literally floating between a dorsal state and a sympathetic state. They're shutting down. If you only tracked their colon you'd probably see the same phenomenon. In a sense going between constipation and diarrhea, you'd find the same metaphor at a lower level. What you want to understand is that a couple of things get really triggered due to the changing in the afferent regulation of the autonomic nervous system while in a dorsal vagal state.

That means that the system that regulates blood pressure regulation, the *baroreceptors,* gets disrupted. People often get dizzy and pass out. They become "vasovagal sympathetic," they fall, and this is due to vagal afferents. It's a system

that is not linked, so only part of it is working. People exhibiting these problems often may have *posterial hypotension or hypertension.* It's the blood pressure regulation. *Hess found the link between chronic fatigue syndrome and blood pressure regulation problems, that they are part of the same system.*

We may have three syndromes linked together in terms of symptomatology. ***One is chronic fatigue*** which is going to be a symptom of many people who have trauma or who have experienced prolonged periods in dorsal vagal states. ***The second is blood pressure regulation***, not hypertension, but literally getting dizzy when standing up. This is not the kind of dizziness where things are spinning but where the person really starts hitting the ground. ***The third link is fibromyalgia.*** These are all the same system---fibromyalgia, chronic fatigue, and blood pressure regulation--- that has gone hypotensive. This is all part of the dorsal vagus system, in the sense, being the last resort and being used in a defensive mode.

These 3 difficulties are facets of the same syndrome. A psychiatrist from the U.K. sent Stephen a letter regarding a client whom he said "appears to have a polyvagal syndrome." Stephen decided to deconstruct these symptoms so that we can talk about all these symptoms and how they would be describing fibromyalgia, blood pressure regulation, and chronic fatigue. If the person is spending too much of their neuro-regulation time in a dorsal vagal state that is not protected with the features of safety we cannot immobilize without fear.

Fear and Depression, Polyvagal Science, and Pain

Peter wants to emphasize fear and depression in terms of polyvagal science and pain. Very often when the pain becomes chronic, the adaptation to *allostatic load* (the wear and tear on the body due to chronic stress) is to shift towards shutdown. This occurs because there is fear associated with the load and depression that tends to reinforce itself. Normally in animals that are threatened, or under life threat won't move. They appear to be dead. Just like a gazelle that's going to be taken down by a cheetah. There's no movement but then moments later the animal just hops up and goes off on its way. Because those states are normally time limited. But when you introduce fear into the immobility circuit, it not only maintains immobility or freeze, but maintains it robustly.

Let's take a guinea pig for an example. When you take the guinea pig and hold it in your hand, it becomes immobile. Then in a few moments, seconds to minutes, it pops up and goes off. But if you frighten it each time it goes in, it stays longer. What could be five minutes or seven seconds, with the fear added on, can virtually keep it indefinitely. Peter did an experiment like that in Brazil and had the animal stay in that state for 24 hours. Sometimes animals will actually die.

Risks and Benefits in Coming Out of Immobility

When a human being begins to come out of immobility, clinically, there's a rush of hyper arousal. Stephen was talking about the sympathetic and dorsal vagal system being in this kind of flip-flop. ***What you have to do is help the person contain the sympathetic system, by keeping them engaged socially in the here and now.*** Then, there is regulation and the immobile person is able to come out of the immobility, out of the dorsal vagal shut down, because they're not reactivating themselves. If the pain becomes more acute, you have to say "Okay. If that pain becomes more acute and you just begin to notice that a little more, you notice if it's continuing to increase, if it's starting to decrease or if it remains the same or if it changes to something else". With this kind of invitation, clients get the sense that time moves along and boom, before they know it, they've exited from the immobility state.

Stephen goes on to explain that some mammals, through phylogenetic development, are able to go in and out of polyvagal reactions as adaptive functions. Small rodents also do this: however, even in going into the dorsal vagal response for a small rodent, there's a risk of dropping dead. The same is true with the guinea pig, *there is a chance just dropping dead from the immobilization response.* This likelihood tends to occur with mice and other small rodents. ***What appears to be adaptive can also be lethal***; as mammals, we need lots of oxygen, and when we go into shutdown states, we're not supporting our life needs as well as our body needs.

Another part to remember is the notion of *when the animals come out of dorsal vagal states, they shut down and they get highly immobilized*. There is also a sense of a highly mobilized state for many adaptive reasons, and one is merely to escape. They are trying to get the blood back into their muscles, back into their bodies so that they now have the appropriate metabolic resources to move the muscles. You have these twitches and other things that are occur4ing as you

refuel the body. Then, the regulation starts occurring. As long as individuals who have previously experienced shut down are mobilized, which means that they are in a state of panic or chaos, they are not going to shut down. You have to see these reactions as having adaptive features. They are not really features of good social interaction, but they keep them out of shutting down. Our nervous system has evolved, exquisitely and eloquently to shift between mobilization and social interaction. That defines how mammals function and evolve and survive, because they had to identify rapidly, who was safe and who was not safe.

The Dorsal Vagus, Goodness, and Help with Pain

Peter follows up earlier discussion to talk more specifically about the fact that many therapists, when they learn about the dorsal vagal system, and its central role in trauma and in chronic pain, will see it as the enemy. It's almost like "well, if we could cut it out, why wouldn't you just cut it out?" Why not cut out those afferent and efferent connections? The reason is that the dorsal vagal system in mammals or humans is really central to basic feelings of goodness and also supports feelings of connection through the ventral vagal system. When you feel warm and happy, you can get a longing "God, it'd be wonderful if we could get back to our walks on the beach and so forth." Feelings of gladness and those feelings, they come from the gut. They come from the diaphragm and they come from the heart. What we're talking about is a system that is so vital for our own functioning, yet can so readily become maladaptive and therapists have to understand and hold together both sides of this.

Similarly, Stephen has had therapists ask "Can't we ablate it? Can't we depress it?" He believes that they are missing the whole understanding of what's going on and that's why if that system is used as a defensive system, it cannot be a system that supports our homeostatic needs.

The same is true for the sympathetics. To conceptualize this, there's a term that wasn't liked much called "Autonomic Balance." Autonomic Balance referred to the fact that in a sense you have enough sympathetics, and enough parasympathetic. Instead Stephen emphasizes that "If the ventral vagal circuit is really functioning well, then subdiaphramatically you have [organically] autonomic balance between the sympathetics and the dorsal vagus." This is is the kind of balance you want to be having and this promotes good feelings. He notes

what Peter was emphasizing was a feeling of well-being and how that moves up the afferent vagus from the gut and really dominates our ability to access different areas of our brain. We must not forget this massive flow of sensory information that is primarily coming from below the diaphragm that is actually changing the accessibility to various parts of our brain. It's a monitor.

The real issue is the ability to keep the sympathetic and dorsal systems out of defensive roles. They're going to be used for defense at various times as well as for their adaptive functions and if they're acute the balance probably will be just fine especially the sympathetics. If it's prolonged, and if the sympathetics don't work to get us out of danger, we get into this dorsal defense system. That is really where we get into problems.

Maggie raises the question of how dorsal vagal responses, when they're not being used defensively, can be used to help with pain?

Peter explains that our anatomy automatically shuts things down. If we're not in a defensive mode, the pain is not caused by something organic. That very often is when you can have the person connect with some visceral feelings of goodness, of okay-ness of wellbeing, to shift back and forth between those sensations and the area of the body where the pain is. *"Ah, so you feel that pain in your shoulder, in your right shoulder, but then you also feel that feeling of warmth and expansion in your belly. If you let yourself shift between these two sensations, notice what happens, what changes, and then what happens next?*" You can definitely enlist those good feelings. But again, if the body is really in severe pain and it becomes chronic, the client going to be in a shutdown state.

Stephen wonders if there's a science behind this because there are quite a few studies that view the stimulation of vagal afferents as moderators or modulators of somatic pain. What Peter is suggesting is that we can shift our visceral feelings to deal with the pain. Let's take a feeling that involves a sub diaphragmatic gut response that changes the afferent flow, changing our bodily state to make it easier to deal with the pain. Just as if we were going to get surgery (I'm sharing my own set of experiences here) in a very trusting way, our tissue is really much more pliable. We won't scar as much and we'll heal sooner.

The issue is trusting and feeling comfortable, having good feelings. Using those psychological constructs in specific physiological states, different sensory afferents are modulating our pain receptors and modulating the receptors of defense on the tissue level. We have defense on multiple levels. The body reacts hierarchically from, in a sense, social communication of components of the body, just like the polyvagal theory. Then it goes down as it protects its elements and then finally it implodes. It goes into a life threat mode and implodes.
Stephen shares that his friend, Bob Naviaux, who is a physician who runs the metabolic mitochondrial clinic at U.C. San Diego, introduced himself by calling me and saying "Look, bacteria follow the Polyvagal Theory." He says, "When things are good and when it's all clear" is the metaphor he uses. "They talk to each other, they're interactive. They are socially engaging." Now present a threat to the system, and it basically creates its own defenses. Then you can shut them down, then they implode and they die off. **The metaphor of safety socialization is in a sense a metaphor of the human body in all levels.**

What Bob is doing is part of his studies of the micro bile. This gets us back to the gut and the afferents. If you signal that the digestive system is going to shut down, animals start dropping their heart rates, and go into a shutdown reaction – this happens with mice. The signal of the gut is now conveyed up the vagus to the brain stem saying "Hey, this is a bad situation!" Now we're discussing methods of reversing acute trauma, by basically sending signals up the gut saying "Hey, everything's clear." There are pharmaceutical or pharmacological methods of sending an "all clear" response through the gut, through the receptors of the gut.

We're going to literally do a study that applies an acute trauma to the prairie vole, through restraint and predator. We basically put him in a restraint, which is bad enough. Then we put his natural predator, a ferret in front of them. Some of their basal heart rates are 400, some of them just get tachycardia. They go up to 600. But others go down to 150 beats per minute. Some shutdown and look like they're dead. But there is also species diversity.

In a sense, this creates the adaptivity of a species to survive, notes Peter. The issue of what we want to study is once that vole has gone into shutdown, what happens to their social behavior, their parenting behavior? We want to reverse it by sending a gut response up to the brain, "Say, hey, your gut's all good." Will that be sufficient to turn them around?

Stephen remarks that there is a drug that stimulates the normal signaling of the gut that everything is okay, yet that's not the sole solution because it's a multi-faceted problem as trauma is. He's also using features of treatments that he has developed with acoustic stimulation giving cues to the vole because the voles are vocal and they vocalize as a signal of their own autonomic state. If they're stressed out, the prosodic feature of the vole vocalization demonstrates that.

Practical Ways of Shifting Out of the Freeze

Peter has found that sometimes it's possible to do different things with mobilizing. He has a device that looks like a small trampoline, yet it's completely different. It doesn't use any springs and it has elastic bungee cords. Now when someone stands on this, one gets to a place where he/she starts to, in a way, have an interaction with the trampoline. It feels like, between the two of you, that the trampoline wants to move you a little bit, to bounce you a little teeny bit and as you feel that bouncing, you're getting new proprioceptive information, mobilizing information from the joints, from the muscles. Peter works with people in severe shut down, and believes that doing verbal therapy could go on until the next century! Just getting these little movements on this trampoline takes them out enough so that they're accessible to mobility and you can work with them. It's good to remember that there are non-verbal and movement oriented ways of doing this.

Stephens's perspective is always to deconstruct what seems to be working to give it a physiological validation. Where intuitions seem really on target, can we give a reason why? There are two things***. One is rocking. A lot of individuals who have these experiences will often do things like this, and they have to understand that they are stimulating vagal afferents and trying to regulate blood pressure through the movement of their body in space. It's not just body and space. They are actually stimulating the carotid baroreceptors.*** It's soothing for people to rock. We have to see it as a neural exercise, as an attempt to rehabilitate a system that has been down regulated.

Another way raises the whole question of the pelvic floor. A lot of individuals who have trauma experiences realize that many of these trauma experiences are going to be surgically related, especially abdominal surgery or sub-diaphragm surgery. The pelvic floor is going to, in a sense, stop working. We have to

understand that the pelvic floor is, as a metaphor, a diaphragm. Just as our diaphragm is to our lungs, the pelvic floor is to our bladder and colon. It creates a negative pressure. The pelvic floor contracts, so everyone who has had pelvic floor issues is told, “Do Kegel exercises.” But Kegel exercises are sphincter muscles. The pelvic floor is not a sphincter muscle, it has sphincter muscles traversing it. The issue is how do you get the pelvic floor to adjust and work? You do that through shifting balance or balance challengers. This is like the approach with the trampoline. We might also use the BOSU which is half of an exercise ball.

Peter agrees that just sitting on a gymnastic ball and making little movements, and then getting help to find the feeling of surrendering the pelvic floor into the ball can really shift things. If the person allows the ball to support the pelvic diaphragm, then the diaphragm just relaxes into the ball. You see this often with sexual trauma, abdominal surgeries, and so forth.

Stephen noticed that Peter closed his eyes when describing this process. His eyes started to droop and close. That reminded Stephen of the fact that he had had surgery and I did not like what they told him to do, to deal with the pelvic floor issues, so he created his own model. He also realized that if he closed his eyes it was more difficult and challenging, and it was working better because he was not using the visual cues. It’s best to work with clients with their eyes open and something to hold on to. It creates a connectedness if you are with another person. You can even give them your arm to hold on to so that when they come out of shut down, there you are.

Somatic Resources of the Dorsal Vagal

From Stephen's perspective it’s a difficult question. In a sense, it’s our core or our base of being alive and the issue is that when we try to use it as a resource, it’s almost like using it as a defense. Instead, we have to, in a sense nurture it. When we nurture it, it serves us and this is where the afferents are coming back saying, "all clear". The “all clear” afferents are the same afferents that support our ability to engage others and our ability to access other areas of the brain that are both social and creative. If the signal from the dorsal vagus is, “I’m in trouble” it’s going to down regulate everything else. It’s a support system, a resource system, where by giving, we get, as opposed to a sense of exploitation from it.

Maggie suggests going back to Peter's suggestion of standing on one half of an exercise ball and having something to hold on to and having someone there. Doesn't bringing in safety change everything?

Stephen agrees: ***safety and trust change into a neural exercise of growth as opposed to a shutting down defensive reaction.***

Getting Started with the Dorsal Vagal Shutdown

The final topic for this dialogue is, what advice would you give to therapists who are working with clients with chronic severe pain that appears to be related to the dorsal vagal shutdown defensive response? Where would you suggest they begin?

Peter comments that clients in the dorsal-vagal shut down response are looking down, looking anywhere else. You can just tell they are going into a freeze because they are rigid, and very de-focused, we all know what it looks like.

Peter suggests saying "It seems like it's really difficult for you to talk right now. If that's true, how about the two of us just walk around the room a little." When I lived in Colorado full time, and on the river, I would take clients out into the yard on the property and walk around the river. You could just see things shift. *Movement also evokes curiosity. But even if they can become curious about the shutdown then you've enlisted them as an ally. They observe themselves as an ally. If someone is in a shutdown, it's not just freeze.*

It's a bit more related to the sympathetic although it has components of both. I think the critical thing here is ***that when the person is in collapse, as soon as you can't use your cleverness to get the person to move, or breathe,*** and many times when a person has been very traumatized, especially sexually, to make a voo sound at the beginning would be too much. ***Walking around the room is likely to be okay.*** Maybe even jumping a little bit on that trampoline that I spoke about. Again, you can be there and hold their hand while they're doing it and then when they show excitement, say "Wow, that's wonderful, seems like you are really feeling more energy." You need to make contact. If it's worries they have, they want to talk about their worries. If its pain and what effect it has on their life,

then let them talk about that for a while and then get to "Okay, so now let's begin to do something about that; are you on board with me?"

Stephen notes that it's easiest for him to deconstruct from Peter's clinical insights. *As long as you get them moving in a way that is not a fight-flight movement, they are going to stay out of deep dissociation or shutting down because, as we've said, there's a hierarchy in physiological states and* ***if you move you can't shut down.***
If you can move now in a socially supportive environment, you're now performing a type of neural exercise, and one where the person is gaining the ability to move more in the context of play than they were in fight or flight. ***As long as you can stay in a moving state, without going into flight/flight, then there is the opportunity of recruiting the social engagement systems and the ventral vagus, because that's the portal we have***. We don't have a good portal of going directly out of dorsal vagus. What we have is a portal that if we're mildly mobilized, we can push people or trigger people into more social engagements.

Maggie points out that without the social vagal system being online in some way, at least in relation to you as a professional, then the client may not be able to move out of the dorsal vagal response, especially since there is no direct portal to come directly out of shutdown and immobility defenses.

Stephen reminds us that the other point that's really critical is that when people are in defensive states, they're going to read neutral cues in your face and in your behavior as negative. ***You have to be very careful about losing contact, not being present and turning away, doing trivial things that normally would not matter***. Clients may, in a sense, overact and become highly reactive and then disappear again on the psychological level.

Peter mentions that everything is kind of biased towards false positives**.** That's why perceived threat is a survival response. You always have your perception. I was just writing about this, on the memory book. Laura and I were editing this section of the book and we took a break, walking around. We were in Zurich, one of the most beautiful of parks. We're walking and holding hands, and all of a sudden, we're poised to alertness. We're not enjoying each other's company, No more holding hands and walking, now, both of us are looking and scanning – it's as though there is some fearful threat. Then we noticed about 20 bamboo

branches; the kids are waving them around and not obeying the normal Swiss norms.

Now remember, we are feeling that Zurich is the safest place in the world. A park like this is probably about the safest park in the safest place in the entire world. Nevertheless, we are programmed to expect the worst. We are programmed to expect threats. As soon as we realized what it was, we laughed and went back along our way. But if you've been threatened and hurt by an individual, any teeny little thing about their face that reminds you, even remotely is going to trigger them. You can't avoid it completely so you may sometimes ask, "It seems like something I said or didn't say, seemed to get in the way, or affect you?" Again, you're helping them articulate some of this, which also is a way of helping to bring the frontal brain online and the social engagement system online.

Stephen notes another part of Peter's experience is the acoustic environment. People tend not to emphasize that. When you're in a hyper-vigilant state, your hearing gets biased towards low frequency sounds or high pitched ones. It loses its acuity in the range of prosodic features of human voice. We lose in understanding, or we dampen our ability to understand other people's affect around us because the low frequencies are triggers of predators. The high frequencies are triggers of someone in pain. When those bamboo grasses, which weren't grass but 20 feet high – when they were moving Peter, there was probably a low frequency hum that was coming from them. That, to all mammals, is predatorial. The body is programmed to react automatically to predators.

Chapter Three Summary

This chapter has presented a dynamic discussion of the dorsal vagal component of the polyvagal system and its complex interactions with the ventral vagal social engagement system and with the sympathetic/adrenal fight-flight system of defense and regulation.

One of the most important principles that was emphasized multiple times in different ways is the importance of bringing in safety through ventral vagal social engagement. In the treatment of trauma and pain, this must be accomplished by

steering the healing relationship through what Stephen has termed “biological rudeness” as social cues are misinterpreted, acoustical sounds are perceived as dangerous and predatorial, and both members of the relationship are triggered to withdraw.

Although this is extremely challenging work, there is much hope in the strategies offered here. The gift of simple presence can help defense and shutdown shift to connection and healing. Belly breathing and “voo” sounding extends the exhalation and the soothing feeling of ventral vagal engagement. Simple movement like walking around the office can help clients who have great difficulty with social engagement through eye contact and other connection. We can help sympathetic containment by teaching vocabulary to our clients so they can stay connected to their own body experience and to us. Encouraging movement on an exercise ball or special trampoline that is safe and increases social engagement is hugely healing. Gentle rocking movements can similarly be a safe and enjoyable way to enter the ventral vagal system while beginning to move out of shutdown. Finally, tending to the acoustic environment and enhancing prosodic qualities of the therapist’s voice can also expand the ventral vagal engagement so that all 3 branches help move the organism into homeostasis and wholeness.

Appendix

Chapter 1 Q&A

MAGGIE	Let me get that going. There we go. So, welcome you to the questions and answers now about the sympathetic adrenal system, pain and interventions. Peter, I hope you enjoyed our dialogue as much as I did. I thought it was--
PETER	I did. I thought it was fun.
MAGGIE	A lot of fun, yes. Who would think you could have fun with the sympathetic adrenal system [laughter]?
PETER	I wish that somebody told my physiology professor that.
MAGGIE	Exactly. There is hope. There is hope. So, those of you on webcast, we are counting on you to type in what you want to ask us.
PETER	To spur us on.
MAGGIE	Hopefully you can ask us about things we did not go far enough in to. You can ask us about working with clients. We are very open to that. In fact, we like those kinds of questions. Those of you who would like to talk with us directly, you can at any time switch over to the phone. You can stay connected through the webcast and ask your question on the phone, and then jump off again and go back to the webcast. So, there are lots of choices here. I think while we're waiting-- Here we go. We have a few more coming on now. While we're waiting for someone to type in, whatever they would like to ask or any comment you would like to make about the video that you saw, why don't, Peter, you and I-- I'd like to revisit one of the questions that I didn't think we got to go quite far enough. And if you feel like there's something we didn't really talk about that you feel belongs with the sympathetic adrenal, then this is your chance to add on.
PETER	I do. I do have some thoughts.
MAGGIE	Good. You have something?
PETER	Yeah. Well, I mean, a couple of things.
MAGGIE	All right. Good.
PETER	They're both sort of related to the question about after surgery and medical trauma as well as abuse, but also about emotions. Emotions can definitely get locked and produce a sympathetic like hyperactivity. Because remember anger and fear-- but anger that's suppressed, again you have a high level of sympathetic activity and a suppression of the

mobility. So again, you're leaving the ANS, the sympathetic system all dressed up but with nowhere to go [chuckles]. I think that that's really important because a lot, a lot of times chronic pain are related to anger and aggression issues.

MAGGIE Yeah, that's right

PETER [The forwarding?] of being able to move forward in life, so that's important. And then the other thing about surgery-- I haven't presented it quite like this before, so bear with me, bear with me. You're undergoing surgery and you're really frightened, and when you're really frightened what happens? Sympathetic arousal. Now, the sympathetic adrenal system is an antagonist for the anesthesia. In other words, the person who's in a sympathetic adrenal state, will need more anesthesia to go under. So there they are in this hyper aroused state. Their heartbeat is going a mile-- and of course in the surgery, you're measuring all of that, so you can see it. And I have. I've been in surgery and just seeing exactly that. And so then what happens, the surgeon, the anesthesiologist then increases the depth of anesthesia, and the patient finally goes under. But this time they go too deep, and they go into a shut-down state, and you see the heartbeat is very, very low. And so, what do they do? They have to again release some of the anesthesia level, and again the person goes into a sympathetic adrenal state. You can see how the sympathetic adrenal system gets really coupled, exactly, with a surgical trauma, with medical trauma. And of course, if you are awake during or even a partial awakening, you go into this super sympathetic adrenal state.

MAGGIE That's awful.

PETER Yeah, exactly. It's bouncing up and down. And I think that anesthesiologists are becoming a little bit more aware of that, but they're not aware when a person is terrified often, though the nurses frequently are.

MAGGIE Yeah, the nurses tend pick up on that.

PETER Right. I think this could make a big difference in surgical outcome, if there was more attention paid to that. But what do I know?

MAGGIE You know a lot as it turns out [chuckles]. Yeah, but I'm glad you mentioned that because we didn't really have as much time as we would have liked to talk about the sort of medical trauma issues. Because I think they still get overlooked - there's more awareness - but we're still not where we should be on those. I don't think.

PETER Yeah, no absolutely not.

MAGGIE While we're at it--

PETER There's a lot to go.

MAGGIE --you have some strong feelings about a certain anesthetic as falling more into that kind of trap. Do you want to say anything about that?

PETER Well, this is not specifically for the sympathetic adrenal. Well, but it could be.

MAGGIE Could be?

PETER It could be. Well, I observed a lot of people I would work with. They've had surgeries in the last 10 or 15 years, 10 years. It's almost like a psychosis, like a post-psychosis. I would work with the person to stitch the things together, but there were pieces that were just out in the ether, and it really became quite a challenge. I started to ask and find out and ask them to ask their doctors. The one thing that seemed to really correlate was the use of-- it's not an anesthetic. It's actually sort of a benzodiazepine, called Versed. It's very, very, very common. It's used a lot. If you go to some of these - what do you call them? - Blog posts, where people talk about their experiences-- I thought, "Is this just me?" And then somebody said, "You know, there's such a thing as the Internet." So I went on and I found one that had hundreds of entries. About a third of the people had a basically neutral experience with the Versed. About a third of the people had a really positive experience. They felt really relaxed. And another third flipped out. They had severe PTSD, severe pain, a profound difficulty in sleeping after that. So, if somebody's not traumatized, probably Versed is okay. But the compilation that we're talking about are largely traumatized people. So, what I'd do and what I suggest to my friends to do, is to just list - as under allergies - list Versed.

MAGGIE Yeah, that's right. And, certainly, I think if you do have a trauma history - and many, of course, of people we see do - I usually try to help the person find a way to bring that up to either the anesthesiologist or the surgeon or both. And even if the surgeons and anesthesiologist aren't actively going after that information - they won't initiate, in other words - but it's gotten to the point, in my experience, where if they're given information they will use it wisely.

PETER I think so. I talk to many anesthesiologists that are recognizing it, that some people just do very poorly.

MAGGIE Absolutely.

PETER And the medication that works really, quite well, especially to this kind of twilight is this [crosstalk], which has recently got a little bit of a bad name.

MAGGIE I was going to say.

PETER No, it's an excellent, excellent alternative.

MAGGIE All right. Good, I'm glad. I hope all of you will take that to heart and mind. We have now a couple more people still coming on, so I want to

remind you, people on the webcast, please type in your questions and comments. We really welcome these. It makes such a big difference to Peter and me when we get your input. Also, we have some people on the phone now, so if you want to call in - let's see - I will repeat the phone number. I should have it right here somewhere. Shoot. It's one of those times when things are moving slowly in a technical world. Hopefully you've got it on your email or you wouldn't be here. Please, please, join us, please. Give us ways to help you apply some of the things we talked about. We're standing by, hopeful to the end [chuckles]. The other thing, I want to go back to the emotions for a minute, because I think we said this, but emotional pain is every much as important as physical elements.

PETER They use basically the same brain system.

MAGGIE Same pathways, yeah, the same system. A lot of people who are really locked into the physical system they don't have or they're not aware of anger and fear, and that's one of the reasons why we encourage you to explore through the body. Because sooner or later-- and I gave this example of a woman who just all of a sudden shot her arm out as if to strike someone. She hadn't even mentioned the word anger, but it was in her body experience.

PETER Often if you just ask the person as a curiosity question, "What is your relation to anger like? How would you describe the relationship?

MAGGIE Yeah, that's good.

PETER Or even, "How is anger handled in your family?"

MAGGIE Same with fear.

PETER Because a lot of times if you're just tracking, you're not going to get that information.

MAGGIE Yeah, you may not. My experience is you'll get it mainly through movement.

PETER Through movement, but also from questioning.

MAGGIE And questioning, right, what they say. I think you want to have an awareness about how you're going to move back and forth between emotional and physical pain. I had somebody who - I'd been working with him for a while - had a very bad bicycle accident. I don't know why, but I have multiple bicycle cases right now. They really can be awful because there is so little protection. And so, what happened with him is that he would go into dissociation as he was talking about something that happened to him. This is not related to the accident directly, it was related to he's trying to get his life back now. He's going to some classes, and he finds he can't sit in the position that they want you to be in - to be in a regular class, where you're sitting in these uncomfortable chairs. His issue is, there's so much shame involved in

not being able to be like everybody else in the class, that he doesn't raise his needs. When I started to talk with him about this, about why he didn't ask the teacher about getting into a more comfortable situation, he dissociated. He said, "I don't know why but I feel really dizzy and confused right now." You kind of have to bring the person back and sometimes guess. I said, "Well, what I know in the past has been true, is that you've felt shame if you aren't like everyone else, if you feel like you're disabled." Then it clicked in for him. He said, "That's it. That's why, I couldn't-- instead of going with what I needed, I dropped down into confusion and just being in lock-down."

MAGGIE Again, we welcome your comments and questions about anything we're saying. I think we have to learn how to go on a campaign to elicit questions on Saturday morning, Peter [chuckles]. People I guess would rather be listening to us, I think, rather than--

PETER Well...

MAGGIE Maybe. I don't know. But your questions are valuable. I really do want to encourage you along those lines.

PETER Yeah, yeah, yeah, it's important. I think you mentioned it, but also if there are things from the webinar you just saw that you didn't understand, and you want to have clarified, please ask that.

MAGGIE Please ask.

PETER We're not getting any questions. We either did a fantastic job, or we did a terrible job [laughter].

MAGGIE Yeah, there is not much in between usually. But, anyway, I'm pulling up the questions here. We can take a look at them. I know everybody was sent these questions as the study guide. So, I would still say - let's see here - if I were going to have questions, they would be about how do we recognize when somebody is in severe pain. And by severe pain, I'm-- you know, they're reporting, and you can sense it from them, a nine to a ten on a scale. And they're very preoccupied by pain. This would be a situation where they're flooded versus dissociated. And so, that tells me right there that they're in a sympathetic arousal, because they're so overwhelmed. And so, how do we get them to connect with their experience? But I would say, when they're in that overwhelm, it's more from a place of compassionate observer. Do you know what I mean, Peter?

PETER Of course, absolutely. I mean, in a way that's the only stance to pain that really helps significantly, is to be able to-- but of course--

MAGGIE So can you talk about how do you get--? Go ahead.

PETER Well, I mean, somebody who is in pain almost to even suggest that, can conceal the meaning.

MAGGIE Yes.

PETER What do you mean just observe it? You try this pain and see if you can just observe it. Point well made.

MAGGIE Right [chuckles]. Then you'll get some anger. You'll get to work with that probably.

PETER The thing that does seem to relieve, be effective, because it gets at the root of the pain often, is to be able to have the person gradually become aware of the muscular pattern - the bracing pattern or the retracting pattern - that's underneath the pain. When they focus on that, it's kind of like a figure ground relationship. At first the pain is the only thing - that's in the figure. And then the tension pattern is way in the background, almost imperceptible. But then when they're are able to bring the tension pattern out and observe the tension pattern, then the pain tends to move into the background. That's in the ground, the one where you either see a vase or you see two ladies' faces looking at each other.

MAGGIE Yeah, right. I remember that one.

PETER We've all seen that one.

MAGGIE Yeah, indeed. This might be a good one to talk about a little bit, because I think people may need a step-by-step. Because we talk a lot about bracing patterns, but yet if you haven't, for example, done some kind of somatic training - including somatic experiencing - you may not know what that really means. What does it mean? Is it more than muscular tension, and if so, what else is there in that? Can you add something to that, Peter?

PETER Well, it's muscular tension with a particular purpose. Let's just say we injure our arm. Let's just say this was back in the times of the early hunter-gatherers or the cave people. If you broke your arm, there was nobody to set it, and basically you would die because you wouldn't be able to use the arm. What I think happens - it makes sense evolutionary - is that the muscles actually formed like a cast, formed like a brace to keep the bones in place to get some kind of knitting. Afterwards, this bracing pattern may remain a little bit, but at least you've survived. And I think one of the-- really, I'd love to do a study on this sometime. I have talked to some of the, for example, the Navajo because they have a tradition, they call them bone-setters. And what they'll do is they'll actually put their hands around on both sides of the break, and probably generate some kind of electric field. And then they'll also, out of bark and reed, they'll make some kind of a brace. But how that slowly came in.

PETER Then of course, when you've been immobilized for a period of time - we all know this - when you have been immobilized, then you tend to stay immobilized. Think about it. Most of us have had a cast on, so if

it's-- especially if an adult. So let's say it's been on for six weeks, and then it comes off, you notice you're not having that same range of movement. That's the residual bracing. Now, you hopefully see a physical therapist or a SC person or a [?] person or a [?] or whatever. And then they help restore the tissue to it's previous setting. So, I think again that the bracing is meant to, in a way, reduce the pain, but now it's actually what's causing the pain. Very often these little movements-- and you can just try that. So if the person, for example, is having pain in their forearm, you can very, very gently extend the hand at the wrist and then move it a little teeny bit in the opposite direction and do it back and forth very, very slowly. I think we talked a little bit about that before. Then boom, all of a sudden, there's a release of energy, of heat, of vibration when that bracing pattern releases. By just playing with the passable movements that are around the area of the pain-- again the person's learned to not move to prevent more of the pain, so you have to encourage them to move, but to explain that this is different. This is a mini-movement, a micro-movement, a mini-movement.

MAGGIE Micro-movement.

PETER Yeah. And when it's done that way, it may increase the pain, but it's only momentarily. And then the pain almost always becomes less after that, sometimes quite significantly, with just a very simple intervention like that.

MAGGIE Yeah, that's great. I think the point I want to make is that a lot of people think that bracing has to be something very striking, that you're going to see in the-- that's not true. It's much more subtle than that. People will report about tightness and tension and that will give you some clue, but really as Peter was saying, it's the micro-movements that are related and maybe nearby, that help the person come out of that. So, hopefully we'll be able to get to that in some part of the rest of the webcast, is how to work with those micro-movements. We have more people on the phone now, so I'm going to suggest if you want to ask us a question - and we only have time for about one question from you at this point - would you please press *7. It works best if you're on a landline, and just start talking. Just tell us your name, "This is Mike," and blah, blah, blah, blah.

PETER "I'm from... and here's my question."

MAGGIE Exactly, that's what would help us. We have one while we're waiting for that. We have one person, Christine, who called in and said she didn't get the video. I'm not sure if you meant you weren't able to access it. I'm not sure what happened for you that it didn't work, because I tested it several times and it seemed to be working fine. Can you catch up afterwards? Absolutely. This material will be available at least through the end of January, February. So, it'll be up there long enough so that you can go back to it again and again.

PETER	Exactly, review it.
MAGGIE	Yeah, because there's a lot there, and that may be another reason why we're not getting questions this morning Peter, is just that there's so much material there.
Caller 1	Can you guys hear me?
PETER	Yes.
MAGGIE	Yes, now we can. Who are you?
PETER	My name is Alex. Hi, how you doing?
MAGGIE	Hi, Alex. Great to hear from you.
PETER 24:58	Where you from?
Caller 1	Santa Barbara area in California.
PETER	Right.
Caller 1	Hi. I have a question, can you talk about-- I'm working with somebody who has multiple traumatic events, fairly serious. They tend to want to stay in the story and the interpretation of what happened, and really resist slowing down and taking one step in the event at a time. So I'd love if you can talk a little bit about ways of approaching that. That would be fantastic.
PETER	Sure. Well, I think the first thing is your presence. Because you might be feeling frustrated that you're unable to get the person to slow down. So it's really important to take a few moments to center and to collect yourself. And then, you have the possibility of joining, of getting some kind of alliance with the person.
MAGGIE	Yes, that just what I was thinking, right.
PETER	And then once you have that alliance, then I think you get more traction when you say something like, "Well look, this has been there for a long time and I know you're really wanting to get at this stuff. Of course because it's been troubling you. It's been interfering with your whole life, maybe even ruining your life." But you know that my experience particularly in working with this approach is that less is more. Sometimes just hearing those words, you see the person go, "Ahh" - relief. What I mean by that, is that the important thing is to just to touch into the experience. Whether it's a particular memory or just what's going on inside of you, which is even better, right now in the here and now. Just to touch it and then we'll work with that. I think basically, our clients want to be tricked by us, because they know at some level [chuckles] what they've been doing hasn't been working for themselves. So again, I say first your presence, because again there's a frustration. There's a helplessness - how can I help this person? We all want to help our clients. Then the second is presence. And then

	developing an alliance, and just saying, "Let's just try this and see what happens, and lets just give it a whirl and see if we can get some results that you'll find helpful."
MAGGIE	I would add to that, that I think sometimes, not only is less more, but so is simplicity-- can be much better for people than something that is so complex, they really just cannot do it. So one of the approaches that I use is what I call Just One Breath, and I'll ask them to just pause, wherever they are, and take one normal breath, not changing anything. Just breathe in and out and just notice what that's like. If you did that right now, what do you think you might answer? That would be my question to you, the caller.
Caller 1	Yeah, that's a great--
MAGGIE	What happened for you?
Caller 1	Yeah, it just, it pauses the momentum and the stream, and it gives you the space to feel more.
MAGGIE	Right, but if you just take that breath right now, Alex.
Caller 1	Right.
MAGGIE	Tell us what changes.
Caller 1	Well, what I just described is the-- because I was thinking about the situation, and instead of feeling the impetus of the treadmill of the story, it was being in the present, right now.
MAGGIE	There we go.
Caller 1	Which makes a lot of sense. I think that for the--
PETER	That's right, that's right.
Caller 1	And I think that for this individual, it was so new for this person to be able to tell the story - they had never been able to tell this story before - that I think that for the first pass, they just needed to get it out. I tried to slow it down as it was happening, but it was so--
MAGGIE	Compelling.
Caller 1	-compelling, in the sense, and the freedom of being able to actually tell this story was so major, that he just had to do that. I think that probably in future sessions and work they will now have that baseline from which they can probably slow down. I think that these ideas make a lot of sense.
MAGGIE	Also maybe just saying to them the magic question, which is, "As you tell me that, let's have you pause and see if you can go inside in some way and find out how your body's responding."
Caller 1	Right.

PETER	Even for just a moment, even just a moment.
MAGGIE	Right, just a moment. Even just a moment.
Caller 1	Yeah, and we did that and that was definitely helpful, because it finally connected to...
MAGGIE	Yeah, some things there. So thank you, Alex. If you would press *6. We have a couple of more calls we'll take in from the webcast quickly, before we sign off. It seems like people had to get warmed up a little bit. Are you familiar with the work of Dr. Hamer and German New Medicine? He talks about two phases of disease, following the trauma, or trigger we run in the sympathetic fight/flight. And only when there's a resolution or turning point, can we go into the second phase of healing, which is where we would experience musculoskeletal pain in regeneration, Hamer describes as the parasympathetic phase. And he's saying, "I'm interested in understanding how you see the pain of muscle happening in regeneration, such as a bodybuilder might heal during a rest period." So he's interested in that whole model. I don't know anything about it, Peter, do you?
PETER	No. I have heard of-- he's considered to be controversial. I think it's-- one time somebody even gave me an article of his. I think it does fit in with the work we do and with our static load, and so forth, accumulated stress. He's a very interesting guy, actually somebody was supposed to try to set up a-- was it a meeting with him or with one of his protégé?
MAGGIE	Well, we might want to follow up on that.
PETER	Yeah.
MAGGIE	But Sammy, who asked the question, I think there are a lot of models of disease. I think it makes some sense that he's saying you'll go from the sympathetic fight/flight, and then when there's a resolution or turning point, the issue is resolved, then you can go to the restorative part which is--
PETER	That's right.
MAGGIE	--where you feel the pain and be able to resolve that. So I think we're in agreement with that. I think it's a little bit different, in that we don't believe that you have to get a resolution in the fight and flight - the sympathetic adrenal system - in order to move on into the next phase of healing. I would say, for me, it's much more of a interactive, interlocking method, model, where you [crosstalk].
PETER	Right, but still the general movement is from sympathetic to the resolution. Or when we'll be talking next week from the vagal shutdown to the sympathetic, to the arousal. But I think when you're young-- especially I mean pain because it's a chronic thing, the first reaction again is more of a fight or flight sympathetic adrenal. But then

as that becomes chronic the nervous system and the body goes into what's called an energy conservation withdrawal, which is probably the same thing as dorsal vagal system, and I think you have a similar parallel in different diseases.

MAGGIE — Yeah, and true that if you're still bouncing, as Peter was saying earlier with the sympathetic fight/flight responses, it is hard to feel much of anything in the body unless you're guided back there some time. It makes sense to me, what I read here, is that you go from sympathetic fight/flight, then there's some kind of resolution, and we go to a place where we experience pain, and then the para-sympathetic phase where there's restorative and regeneration. Yeah, it's roughly the same, but somewhat different. And we're going to have to stop there in terms of the time, but I want to thank you all for your question, Alex and Sammy. And I hope the rest of you will remember that the next webinar session is with Steven Porges on ventral vagal, and that is on Wednesday. You'll be sent a separate email about that, so you'll know how to access it. In the email that you get the day before-- and a lot of times we don't send it sooner, because we try to catch everybody in one email blast as much as we can. So that we send one out the night before and one that morning. In that email, you will get access to the video and you will get the link for the question and answer. So keep that email handy so you won't miss anything. And thank you so much for joining us this morning. And thank you, Peter Any last words?

PETER — Okay, Mag. No, just, hey, that's right, as usual, enjoyable, and again just really appreciate folks logging on to this and expanding their knowledge base, their clinical skills. That's great.

MAGGIE — Yes, thank you so much for everybody, and those listening later, we thank you too. Take care and we hope to see you Wednesday. Bye, bye.

Chapter 2 Q&A

MAGGIE	Hi, this is Maggie Phillips, and I'm with Stephen, and we are so happy to welcome you to our live question and answer session on the social engagement ventral-vagal system pain that is related to that system and relevant interventions. And we hope you enjoyed the video webcast, and Stephen and I are here, ready to take your questions and comments. Those of you on the phone, what you need to do is to press *7 on your touch tone phone. It works best if you have a land line. If you don't, you can try it anyway. And those of you on the webcast, you can type in your comments and questions at any time. We really, really appreciate them. I can't tell you how important it is for us to be able to tailor our comments to those of you who are listening, and we can't do it if we don't have feedback from you. So, Stephen welcome, again.
STEPHEN	Thank you, Maggie. It's a pleasure to be here, and looking forward to some interesting and challenging comments.
MAGGIE	I hope so. What's what we like, we really do. So far, we haven't gotten anything, so I think we will start us off. One thing that actually has come up when I have been teaching recently on the ventral-vagal system, is that some people don't understand why you may have changed that to social engagement. You're emphasizing that term more now. Can you say something about that?
STEPHEN	Certainly. The muscles of the face and head - the striated muscles that we use to engage others - the muscles that we use for facial expression, the muscles of vocalization, and the muscles even of the middle to listen to, are regulated in the brain stem in the area that regulates the myelinated vagus. In fact, it's an integrated system, so the use of those muscles of the face and head influence the vagal activity to the heart. And when the vagal activity of the heart is low, then those muscles tend not to be used at all, meaning that people have flat face, flat affect, and have difficulty hearing voice.
MAGGIE	I think what you're saying is that social engagement - I'm going to go a little bit broader here - social engagement is essential for attachment, and I think most people think of the ventral vagal system sort of globally as attachment. But you have made the point that no, it's really - in terms of the science which you just described - it's really about, can the person use their natural, organic prophecies--
STEPHEN	Let me even kind of--
MAGGIE	Yeah, go further.
STEPHEN	It's basically, the evolution of mammalian species, was all about the ability to convey that visceral state, and if that ventral-vagal system that was on board was acting, then the individual was safe to come

close to. So, the whole notion is not merely of receptive; it's also expressive in a system that's bi-directional. So, when we think about an integrated - and I'll use that word - integrated social engagement system, is the use of queuing, the ability to receive signals, and also the regulation of physiological state. This becomes critical in the clinical domain, because people tend to separate things like flat affect, difficulty with processing auditory signals, hypersensitivity to noise, high pitched voices as if they're independent or orthogonal to an ergonomic state, when really they can be a manifestation of that ergonomic state. And the other part, it gives you a portal of intervention. So the exercising, breathing, facial expressivity, and laryngeal of singing are functionally interventions in themselves that form neural exercising; exercising that vagal regulation of the heart.

MAGGIE I'm glad you mentioned that, because recently I've done something with a chronic pain patient that I haven't done before. It's been an edge that I haven't crept out into, but she loves to sing. So, we are using singing and she's experimenting to find out what types of pitches and what types of rhythms really are able to help her connect with herself better, and then to engage with her partner, for example, when she is in some difficulty with pain. And so far, it's been fascinating. It's been really interesting.

STEPHEN Well, I'm sure she'll discover some basic laws of nature, meaning that if she's prosodic or uses melodies like a mother's lullaby, it will have a functional regulation of the pain; she'll feel better. So she may start off with higher pitched tones, holding and then by modulating she'll start seeing the functional impact of this ventral system working.

MAGGIE It's so exciting to me, because that is already happening for her. That's her sensibility toward music anyway, but it's exciting because, goodness, we could be using this with almost every type of patient that we work with.

STEPHEN Yes. And in the singing, she'll also learn that if she extends the duration of her phrasing while singing, then the vagal break is more functional. So, she'll find out that longer phrases are more effective.

MAGGIE Wow. That's just fantastic. I wanted to-- go ahead.

STEPHEN Well, you'll let me know, because I need to be informed when some of these ideas actually start working.

MAGGIE I will certainly will. I'll be glad to do that. I want to talk to the people on the phone here for a second, because there are more of you than there are in the webcast, which is a little bit different. So please, we want to encourage you to just-- all you have to do seriously, press *7, give us your name - your first name - and we'll be right there with you for questions or comments. So, please do not hesitate, don't be shy. We really want to hear from you. Steve and I are happy to talk to each

other of course [chuckles], but we would rather talk to you in this portion of the program. So, please get ready for that.

MAGGIE — Now we have something. This is from Sylvia. How do you recognize facial features when an individual dissociates, other than feeling that one is staring into space? For example, the eyes aren't in the here and now. That's a good question.

STEPHEN — Well, I think you picked up immediately on what the features are. Basically, the upper part of the face, especially the muscles that go around the eye socket - it's an orbital muscle called the orbicularis oculi - and that's where crow's feet and exuberance, and that's what we look at when we look at people, that goes flat. And then the eyes goes someplace else; they may roll up or they just gaze forward. But look at the upper part of the face and look at the neural tone to the orbicularis oculi in that said orbital muscle around the eye socket. And of course, that's the one where people go to have Botox remove all the cues. But when the cues are gone, people will have difficulty responding to them.

MAGGIE — That's exactly right, yeah.

STEPHEN — The second part of the comment is that, the reaction to the dissociate person is a reaction that can often be anger as well to the person dissociating, because the upper part of the face is no longer engaging. They have basically offended, in a sense, what I call biological rudeness. So if someone is engaging and they just dissociate, they're basically turning away and walking away. In a way, they're doing that, but they're also doing it to the person who's doing the engagement behavior.

MAGGIE — Fascinating. That explains a lot, of course, why it's hard to work with highly dissociative people.

STEPHEN — Well, from a clinical perspective, it's difficult because it's very difficult as a therapist to be present with the person who is disengaging to you. So, our biology is to react to that type of cue, is for us to also walk away, or to get angry.

MAGGIE — That's right. And instead, I think what you're suggesting - this is not the only thing you're suggesting - but one strategy, is instead to focus on the sound of your own voice at that particular moment. I think a lot of therapists look for the eye contact as part of being able to do therapy, and in this kind of situation, you're not going to get that. I think what you've said is, well, focus on other ways of connecting. And the voice, it turns out in your research, has been hugely effective, right?

STEPHEN — Yeah. The prosodic features are going to get into the nervous system, and they bring the person back. Again, what I say is that the cue of a flat face to the person who's engaging the person with the flat face, is to become more defensive and reactive, because our biology views this

as insulting. But now, we as insightful individuals have to say, "Wow, we can't allow that to happen, because that will just create a cycle of chaos in the interaction." We have to now be like the mother, and basically speak as if we're singing a lullaby, and that will have the calming features and hopefully make the person feel safe enough to come back and re-engage.

MAGGIE — Right. I was working with a dissociative client - I think it was on Monday - and I noticed that this is not necessarily true of all people who are dissociative, but she was talking very, very rapidly and not looking at me, which is sort of-- it's a similar kind of challenge to stay connected.

STEPHEN — Well, I will tell you, she was also probably talking in a higher pitch voice, and her phrases, although they were running on each other, were probably gasped of breath. So, it's very short phrases with breathing, and so what she was really saying to you was, "Hey, I'm in a stay of fight flight. I'm being dominated by my [inaudible] nervous system, and if you engage with me with any cue of danger, I will dissociate." That's what she's saying to you.

MAGGIE — Exactly. I can really see that. What I did was, I focused only on my voice. Of course, I was looking at her as if she were looking at me, but I really focused on that quality and I slowed down and my voice was softer and a higher, more melodic pitch. And that did seem to help bring her back. I'd say ten minutes or 15 into the session, she was making very good contact. I want people listening to understand that that is just a really important strategy when you're working with people who have emotional and/or physical pain. We have to really work hard at this engagement piece.

STEPHEN — And we have to remember that the engagement is not a voluntary reaction. It's a spontaneous reaction of the reciprocal engagement. It's spontaneous, but based on the physiological state of the other and whether that nervous system can react as if the other person in the environment is safe. And that is picking the most profound and potent cues that happen to be the prosodic parts of the voice. I mean, the intonation, the melodic aspect of voice.

MAGGIE — That's right. And I think we have to be careful. Some patients would be, I would say, probably a little sensitive or wary at first if the therapist is changing your voice pitch, but it doesn't have to be-- I guess what I'm getting from this is that I think, I am thinking to myself like a mother singing a lullaby. And it doesn't necessarily mean that what comes out of my mouth is going to be a song or a lullaby.

STEPHEN — That's right. And actually people with higher pitched voices that are melodic have an advantage in this therapeutic setting with the types of people we're describing. So, a male with a big, bass voice is going to be very difficult. It's a bad fit. And so, what [inaudible] form a melodic voice.

MAGGIE Gosh, maybe we should be screening people with-- take their psychologist exam or some other exam and see what kind of voice quality they have. It's not a bad idea.

STEPHEN Or teach them to--

MAGGIE Or teach them, you're right.

STEPHEN So, what I was saying in the webinar was that when I talk publicly, I notice that my voice goes to a higher pitch and is quite melodic, compared to when I'm really talking one-on-one. It tends to go a little bit lower. And I'm really bouncing off the social engagement of the people in the audience. I'm looking at them, and I'm responding to them.

MAGGIE That's right. We have a very good question here from Irene. Her question is: You have spoken about prosody and facial expression in helping people feel safe, but what about movement, body posture, gesture, the rhythm and quality of movement, etcetera?

STEPHEN I think those are excellent questions, and often I don't talk much about that, because I almost view them as implicit. So the issue is, the parts of the brain that are picking up facial expressivity and intonation of voice are also picking up the movement of the head, the leaning forward, and even hand gestures. And those areas of the brain, in the temporal cortex, are actually the centers that evaluate the features to down-regulate our defenses. So, her points are actually excellent. We can see the gesture in clients or in therapists, whether or not it's truly-- let's use the word 'functionally engaging', meaning are they leaning forward, are they functionally engaging? Are they using their hands not as a defense - autistic children might put their hands up to block - but their hands are gesturing 'come closer', engaging gentleness of the hands. So, posture, hand movements, head movement are all critical features of engagement.

MAGGIE That's important. I'm glad, Irene, that you asked that question to give him a chance to be explicit, rather than implicit. We still haven't heard from anybody from the phone. *7 is all it takes to get to us. Let's see if we have another question here from the webcast people. So far, not.

STEPHEN And remember, every question is a good question.

MAGGIE Every question is a good question, and every question usually is something that other people are wondering about and they may not have gotten it to consciousness yet or they may be a little shy, so you will be helping not only yourself, but all of us to learn more. I want to go back to - since we're talking about face a bit, as well as voice - we talked about the pain face in the webinar, and you explained that there's a brain/heart face system, and it also is part of, of course, the ventral-vagal system. Do you want to say anything more about the pain face? What I'm getting at is, when people are in pain, I'm thinking

about how they express it, and this is usually unconsciously, facially. A lot of partners of pain patients will say, "I don't understand why she acts this way. I never know when she is in pain and when she isn't." Do you want to say anything at all about that?

STEPHEN I'll say a couple of things, that often pain is linked with a type of grimace, or at least a type of facial expression that is far from inviting in terms of social interaction. So, the narrative that individual comes up with who sees or experiences interaction with a person in pain can have different meanings. But let's think about it for a moment, and let's think if we're in pain, we generally do not want to interact with the world, whether it's physical or even mental pain. The issue is, it's a retraction-- you've been pricked, and the system pulls back. And it has to be respected for its own defensive approaches. So, if you're in physical pain and you have the grimace, you have chronic pain, it's certainly going to compromise your social interaction. It's going to compromise your access, literally, to different areas of your brain. It's going to affect your cognitive functioning, your ability to extrapolate that could be created and interactive. The body evolved, the nervous system evolved with this complex agenda, which was protect itself. And that's part of the response when the face pulls back.

MAGGIE Exactly. Thank you. I have two more excellent questions, so let's move on. Julie asked, what do you suggest in working with people who rapidly switch - this is not really appropriate for this call, but if you can say something briefly - who rapidly switch between sympathetic arousal and dorsal shutdown?

STEPHEN Yeah. I actually--

MAGGIE Do you want to save that one?

STEPHEN No, I saw that one coming [laughter]. I think this is really the metaphor for those of you who are trauma people, is really part of the shifting from aggressor to victim, and it's a destabilized situation. I have actually start conceptualize that as a specific stage within what I call polyvagal syndrome. And you get that moving back and forth when the ventral-vagal system is not functioning. It's just not functioning, so you're disinhibiting the sympathetics. And you get the shutting down effect when the sympathetics don't win the war, they don't win the battle. So you come out with swinging and fighting, and then you're supposed to stop swinging and fighting, but you don't have a social system. It's just not there. So, you lose the fight and your body says, 'What else do I have in it?' And that is disappear, to dissociate. So, it's a functional hierarchy, and that's part of what the polyvagal theory is about. But the vulnerability occurs when there's a predominance of the sympathetic nervous system being used as defense and not swinging back between defensiveness and social behavior, which is really in a sense, what we used to characterize as neurotic behavior.

MAGGIE Yes. And so now, I guess one point is to use our observational skills certainly, but also to - I think this is where psycho-education comes in a certain way - teaching clients to track, in SE terms, their own process when this is happening; to catch it when it's in the therapy room with you, if you can.

STEPHEN If you can. You see, this is what I think is really challenging for the client. Because I think the client is oscillating between two states that don't provide really good awareness of one's own behavior. So, when you're in sense mobilizing fighting, you don't have a true sense of body, and when you shut down, you don't even have a sense of context. So, the awareness bit. And again, the history of therapy was always concepts of insight: you should know this, you should understand this. I think you hit on what I view as the most important point of any form of therapy, and that's the psycho-educational component. And that is the understanding by the client, that the body will go into these defensive modes, and not to be so embarrassed by it. I think there's so much personal shame that people have when they go into these states.

MAGGIE That's right. I think it's the biggest obstacle we have really, in treating trauma.

STEPHEN Yeah. And then, they go through a world of denial, or at least a process of denial, which is how literally their personal narrative helps to protect them from their shame. I'm learning about this as I travel and talk and get informed and actually interact with many clients and people and therapists: being informed about the creative aspects of how we try to make sense out of these disruptions in our lives, and I think the whole goal of therapy - and even of life - is to try to make sense out of it. What the polyvagal theory is attempting to do, is to provide another set of constructs, another set of metaphors that we can understand what our body is doing without having to say, "I am personally responsible for that specific act at this time. But as I get informed, the responsibility is now shifting. I need to have a better understanding of what triggers it and how I can then control it."

MAGGIE I think you'd agree with me, but part of how you can help the person get the ventral-vagal system online when they're in that place of rapid switching between sympathetic and dorsal shutdown, is psycho-education. In other words, if you are offering information, I have found that it is so reassuring to clients. I can watch them and their facial expression will change, everything will change. All of a sudden, they're online again with me. So, I think we really do want to emphasize that piece.

STEPHEN Maggie, I totally agree. What I've also learned over the years, is that when people get informed through a psycho-educational model that tells them what their body can do, then those top-down processes, rather than focusing on denial and fixing it by-- actually starts understanding it and seeing both the advantage and disadvantage;

meaning that there may have been an advantage for an acute use of those strategies, but they can now see the disadvantage of when it becomes chronic.

MAGGIE — Exactly. We have one more question I'd like to get to, because again, it's a good one. This is from Serra. As a therapist, I'm constantly working to bring clients into greater regulation using our own ventral-vagal social engagement system, and of course, this is what we were just talking about. Yet as humans, we're sensitive to the limits of our attempts to control the situation through co-regulation, and inevitably there may be a moment when we're overwhelmed, such as in compassion, fatigue, and burn out. Would you say then, that our dorsal vagal complex has kicked in and overridden the ventral-vagal, because we've attempted to down-regulate ourselves too much? How would you explain this?

STEPHEN — I think it's a path, meaning that the first thing is to really be highly mobilized, irritable, and unable to literally be present and help regulate the other. Because physiologically and neurophysiological, the client has basically been biologically rude to our nervous system by disengaging. And each time a person disengages when we engage, it gets to us; we feel bad. And our nervous system is literally telling us, 'Why are we doing this? It's so uncomfortable. Why should I experience this discomfort?' So, the first reaction is to get the hell out of there. And a lot of therapists and a lot of parents and a lot of spouses disengage. However, you still need to make a living, you still need to take care of-- there's all these other, what we call cultural constraints. I think she's absolutely right. Then the system may just shut itself down, because that's all it has left. You didn't listen to the getaway response, you didn't respect that, and now what it's going to do is going to ride everything, and is just going to make you limit your capacity to interact.

MAGGIE — Right. I'm thinking about a woman that I just worked with a couple of weeks ago, actually. I was getting ready to go to Europe for my teaching trip. She just came in, I would say, loaded for bear. She was really in a sympathetic response. She was angry, very angry toward me. She didn't say anything at all about what she saw in me that might be going on in a system between us. I asked her directly, "You seem a little unsettled today. Is there anything that you are aware of coming from me that you're reacting to?" And she said, "No." It took us the next session to go back into it. In fact, what she had been doing while she was sitting waiting for me to come in, she had had this conversation with her father - very, very abusive father - and she said, "I'm not going to let you run my world anymore, and I'm sick of this," so she really was standing up to him in - I think - a very good way. And I was able to explain this to her, that there may be parts of her inside that became very scared, because of what would happen in the past when she stood up to her father, which was, she'd usually get beaten.

MAGGIE — We were able to work through that, but I think it was because - and I want to emphasize this too - it's staying in a place of curiosity. If you can't do anything else-- and sometimes - I completely agree with the question that was asked - is that, yes, this is when we do feel compassion, fatigue, and burnout. We've had it. We just can't respond anymore. But what brings me out of it more is curiosity. What could be going on here?

STEPHEN — Once you're in the state of asking the question, 'What could be?', and you're curious, you're no longer defensive. So, we have to understand that if we feel like we're being attacked - which is really what she was doing - if we feel that it's personal, then we shift physiological state, and we'll say, "Why am I being attacked?" And our response is - we have two of them - either we fight, argue, try to get out of there, or we just dissociate or shut down. And the part the therapist has a responsibility here in that, is to understand that the therapist isn't really the target. The person is functionally trying to regulate their state by expressing how they feel. Even if it feels to be abusive, it's really allowing that person to say things that they never felt they could say before to anyone.

MAGGIE — That's well said, Steve. I like the way you put that. We're going to have to stop. I wish we could go on. It seems like we get warmed up and the time is over. But certainly, all of you, thank you for joining us so much. I do want to remind you that we will be back. Peter, Stephen, and I will be with you on Friday morning. We look forward to seeing you again, those of you who can make the time to be with us live. But we also want to thank those of you who are joining us later when it's convenient for you. We hope you find this useful and helpful, and that you'll listen to it and watch it again and again if that's what you want to do, because I think it's very valuable material. And I thank you so much, Steve, for lending, as usual, your wonderfully informative and sensitive assets to what we're discussing.

STEPHEN — Thank you, Maggie. And thank you for everyone who's tuned in and who's watching. As I usually say, it's important to reach and translate the science into practice. And it's because people like you, Maggie, and people like those who are on the webinar that enable me to use a real sense, a sense of personal validation by being able to go beyond the frustration of basic laboratory science and see it have positive impact on humanity. So, thank you.

MAGGIE — Yes. Thank you so much. And we'll see you all, hopefully on Friday. Take care. Thanks. Bye-bye.

Chapter 3 QUA

Peter:	Particularly, when it comes to the shutting down - the energy withdrawal system. I think that's the one that therapists have the most confusion about.
Maggie:	I think that's great. I love the way you said it too, "The marriage between the theory and the clinical."
Stephen:	I'd like to add, there is both a theory and there's also empirical neurophysiological basis. We flowed, literally, among those three points of a triad - from biological basis, to theory, to clinical application. We also flowed with different ways we use in the way we speak. So often, when we speak in terms of biology, it's really a deconstruction without much feeling. But I want to make sure that people who have listened to us talk understand that if I go into a deconstruction on the biology, I haven't lost my sense of feeling or my sense of compassion for those who are experiencing those things. It just provides a language of explanation.
Maggie:	Right. My comment would be, as a therapist listening to this, that's one of the things that I most admire about you, Stephen. You never lose, as far as I've ever seen, any aspect of your humanity and your sensitivity to what's going on. So I think your attempts to integrate all of that as you deliver the theory or the science, you are right on. So thank you for that.
Stephen:	Thank you, Maggie.
Maggie:	You bet.
Peter:	I couldn't disagree with that [laughter].
Stephen:	The other thing--
Peter:	I said, "Couldn't, couldn't disagree with that [chuckles]."
Stephen:	But there's one other point that I didn't really elaborate on, and that is…
Maggie:	Please, yeah.
Stephen:	That is that my entry into this whole area of trauma was through Peter, was through his persistence, his…
Maggie:	Wow.
Stephen:	…actually his boldness in terms of engaging me in the 1970s, and basically confronting me with some of his questions. So I never appropriately thanked him during the dialogue in the webinar session, and this is, in a sense, the start of an amazing dialogue for both of us.
Maggie:	For both of you, I am sure.

Peter: Thank you so much, and I really look forward to continuing that and exploring different ways that we can feed each other.

Maggie: I think that the world will more than benefit from that, so I'm urging you on too [chuckles].

So let's inform people so they know, if they haven't done this before. When you're on the phone, you need to press star seven and immediately start talking. Just give us your name, then we'll get your question or comment, and we'll be glad to receive it - in fact, more than glad. We really welcome all comments. And those of you on the webcast, please, all you have to do is type in a comment or question on the screen. It's very clear. You can see it on the page that you were sent to with the link. So we're glad you're all here. We know there'll be many more people coming later.

I think, for me, going back to the questions that we covered. One of the ones, that I think is so important, is where we got to with how the dorsal vagal system is implicated in pain and also in feeling. Can either of you elaborate on that?

Peter: I'm glad to start. Review: Pain in itself, regardless of what originally caused it, when it becomes chronic, the nervous system experiences that prolonged stress, very much the way it processes trauma.

The origin of pain, and this is my belief -- When people originally have pain, the pain is usually due to an injury. And then, the bracing pattern - the body's biological bracing pattern, the innate bracing pattern - which then actually causes more pain. Then that causes more fear, which causes more contractions, which causes more pain. So when people get into that loop - that negative feedback loop, what can you do?

People will, of course, take pain medication. And then, the body starts to generate, in the absence of pain medication, its own mechanism of pain relief - of analgesia. And that has to do, largely with the shutdown system. So in other words, you're in pain. You want to do something about it, but then you're in pain, and in pain, and in pain. And the only out really that the nervous system has, is to just anesthetize, to shut things down, to increase numbness. So the dorsal vagal system then is, I believe, and Steve can probably say much more about that, that the dorsal vagal system function with pain is, in a sense, pain relief.

Now, once you're in this immobile state, with this energy withdrawal - energy conservation state, especially when there's pain on the other side of it and coming out - people tend to go deeper and deeper into the dorsal vagal, into the shutdown system. And then, when they come to see the therapist, often it's with this sense of despair and helplessness. They're kind of crushed between pain on one side, and then helplessness and despair on the other.

As we're able to help clients move out of the shutdown - out of the dorsal vagal mediated system. It's really important that we support them. Because as they move out into arousal, into the pain, we have to be able to have already taught them something about pendulation. So when they experience the pain, they can experience the increase in pain, but then open to the decrease in the pain. And when that rhythm gets established, and I really think it is a rhythm, then the nervous system automatically moves towards social engagement, towards connection. So again, I think of it as a stage process, where you work with a person who has had chronic pain, who has shut down. You help them find ways to move out of the shutdown, just the smallest amount - just what I call the titrated exposure, more is not less, less is more.

Then as they move into the sympathetic state, into the pain, to help them to open into the pain. Maybe that would be a good term to use, to open into the pain. And then, as the pain diminishes, you have, "My god, the pain can change." Very often, working in this way, if the person experiences, for example, they're not in the shutdown and the pain is at an eight, they often will come down to a four. And that gives hope. Because really, you have to help contradict the hopelessness. Because when a person is feeling hopeless, They're not even feeling. They're being swallowed, being drowned in hopelessness.

They start to experience hope. They start to experience the energy that's underneath the bracing pattern, that's underneath the pain. So again, it's a gradual process. It's a step-wise process. It's one of education. Also, it's one of helping the client when something happened, and it appears like they've gone back to square one.

Maggie: I think one of the things that we emphasize, and I'm sure you'd agree, is that through this whole process that you just described, it's hugely important for the therapist to be fully present - as present as he or she can be. Because that brings in the ventral vagal system. There are other ways of doing it too, but you want to make sure that that is very much online - as much as it can be.

Peter: Yes. You're absolutely right, absolutely right.

Maggie: Stephen, you want to add something?

Stephen: Sure. I would deconstruct it into the sense that - keep thinking about the autonomic nervous system and the Polyvagal Theory as being hierarchical. Once you're suffering pain, you're in defense. It's operational. You're there. And when you're in a defensive state, you compromise social engagement. But also, when you're in that defensive state, you only have one other option, and that is to shut down. So if the pain becomes too intense for too long a period of time, the system goes into this conservation and shuts down.

This raises a whole variety of thresholds, so there are a lot of adaptive functions to it. But it also ends up with a different cluster of emotions, feelings. Feelings of hopelessness, particularly, as Peter was saying.

And that's why what Peter is saying that you get the client to move a little. You're basically putting him back into a sympathetic state, and that is dampening that hopelessness in that dorsal vagal state, which never evolved to be your primary defense system. And if you get into a mobilized state, then you have opportunities to down regulate that with social engagement, with prosodic voice, because that's what we evolved to, to deal with. But we never evolve to deal well with this shutting down, so someone has to help us regulate, has to give us the features of safety, so that we get out of the defensive realm.

Maggie: That is it in a nutshell.

Again, now that more people are on the phone, I want to emphasize please press star seven. You can ask us questions about clients, how you would apply this. That's what we're looking for in the questions and answers, mainly. And if something wasn't clear to you in the webcast and the video cast, then please, please ask the question. Because somebody else will want to know it too, and just won't have the confidence to put it out there.

Just again, we're reflecting on this current webcast for a little bit more time, and then I want to move toward synthesizing and bringing together all of the presentation, so that we can give people a summary of what we hope they have learned. Then, of course, once they have that it'll be easy for participants to go back through and review the webinars and some of the other questions and answers in a way that will bring it more into integration for them. So does that make sense as a plan for us, for this time?

Stephen: Yeah.

Gina: Yes.

Maggie: Is somebody on the phone?

Maggie: Please, give us your name.

Gina: Hi, I'm Gina.

Maggie: Gina, great.

Gina: I came in late because I had a client, so I am probably going to repeat something here. But we could all use - I mean, I could use repetition [chuckles].

Maggie: Sure.

Gina: What I wanted to ask was a general problem I have with my clients. They will come in and they will have some physical pain. Because I'm also a body worker and a counselor, I see the pain could be solved by

osteopathic work, cranial sacral work, myofascial release work. I want to tell them, "Here are some recommended people to go to." I don't want to deal with those pains. Is that the proper thing to do, because sometimes it's just that they walked the wrong way, or they fell down the steps or...? That's not the same kind of thing as a chronic pain issue.

Maggie: Gentlemen.

Peter: I'm not sure I fully understand the question. So a client comes in with acute pain, is that what you're saying?

Gina: Yeah, acute pain like their neck feels out, or they have some back pain that I know an osteopath or chiropractor could fix.

Peter: I think, of course, if you have a good referral to help somebody with a particular problem, a particular issue, by all means. The only thing that I would add is that usually chronic pain is quite different than acute pain. First of all, with acute pain, you may want to have them evaluated by a physician, if there is some kind of actual injury. So yes, it's a first-aid kind of thing. They come in. They have pain because they've had a whiplash or something like that.

Most osteopaths tend to work very gently, which is important. And most cranial therapists, the same. Myofascial release, for many people that could be too much. They could be overwhelmed. And when you're overwhelmed - the person is overwhelmed - the nervous system almost doesn't know the difference between that overwhelmed and the overwhelmed that caused the trauma in the first place.

So I think it's really important to do. Now again, if you had somebody-- they're really monomorphic body, and they really need somebody to help release some of the muscle, then-- I don't know if the term "aggressive body work" might be helpful. But I really appreciate your interest in referring, because I think very often, therapists don't refer. And in that way, they're not delivering the best care.

Maggie: What I would add to that, Gina, is that as a therapist, I think you want to monitor the progress that your client is making with whomever you refer them to. That's really important to be checking in on that.

Gina: Okay.

Stephen: I have another point, and that is - I think, Peter was really emphasizing the difference between acute and chronic. Because sometimes with chronic pain, you can't identify the cause. And you don't know really, whether the client wants to give up that pain. Pain becomes part of who they are, and they're going to protect it. But acute, I think you should take care of that first.

Gina: All right, thank you.

Maggie: Thank you for the question.

Gina: Certainly.

Maggie: Thank you very much. So, to keep the noise minimal, press star six. Great. Anyone else? I agree, Peter; most people, most therapists want to jump in to try to help the patient, even if they're not sure what's going on. And it is important to have good referral sources - people whose work you know and it's stood the test of time, and they're open to working with you on behalf of the client.

Peter: Right.

Maggie: I would urge Gina and some of the rest of you listening - another possibility is to get training so that you know how to recognize acute versus chronic pain, and that you can learn more about chronic pain and how you - in particular - can intervene in that.

Let's see. What do we have here from the webcast? Do we have any questions from you coming in? I don't see any yet. I'm looking at the time. I'm thinking, unless there are more from the phone - and we'll find out as we go along, it might be good to look at how each of you see the hierarchical system - Polyvagal system - and how it interweaves with branch to branch, and what that suggests for our treatment of people who have pain.

Peter: I'll let you start, Steve.

Stephen: The first part is that we know that once a person is feeling acute pain or is going through even chronic pain and bracing, we know that that is a down-regulating potential vagus, and it's actually a physiological part of a defense system starting with sympathetic activation. When it gets prolonged, you start moving now into that dorsal vagal issue. Now, the real question here is that both the sympathetic nervous system and the dorsal vagal are very important for our homeostatic function - for basically, our vitality, health, growth and restoration. But when they're recruited as defense, that's when we get into trouble. The only way that they're not vulnerable to defense is when we get that ventral vagal system on board. It's a hierarchical system, and once - we have to visualize the ventral vagal system literally, as a state modulator or state regulator that enables the rest of the autonomic nervous system to functionally do its job - to optimize your health, growth, and restoration.

When you have pain - whether it is acute or chronic - it is telling the body, "Go into that defensive mode, or go into one of your defensive modes." So the way of getting individuals out - and this is really what our dialogue was about with Peter and me - and that is literally, utilize behaviors that trigger the ventral vagus. Peter has the vocalization. I emphasize breathing and expiration. There's also rocking or movement - the body back and forth, from head to toe which triggers the baroreceptors. These are mechanical methods of getting that ventral vagal system triggered. You can see these. Actually, this is a personal

story for a moment. I've had kidney stones twice in my life - not recently, not in the past 20 years or so. But they are painful - kidney stones - and you understand the word "writhing" once you have a kidney stone.

What you also understand is that **movement helps mitigate some of that pain**. This goes back to this whole understanding of movement. So if you get on the floor and literally, writhe with that kidney stone, the pain is not as bad as just going supine or sitting. The movement has an effect on the modulation of the pain. So what we're both saying is that an understanding of the hierarchy of the autonomic nervous system, in terms of how it reacts to challenges, give us insights into how to down regulate the defensive modes. Pain is operationally a defensive reaction.

Peter: I would add to that because you mentioned the kidney stone. This is an example. Somebody could come in to you with a severe backache, and you work with them. Maybe there's a little bit of a change, but then it goes back to just as bad. And if it's something like a kidney stone, we're wasting time that really should use addressing the proper treatment.

So it's really so important to have a relationship with, not only alternatives, I use that term to cover many, many different modalities, but you also need to have a good relationship with an internist and possibly with specialists, neurologists, gastroenterologists, and so forth. One thing in the Somatic Experiencing advanced level training, when we discuss syndrome, I talked to the students by saying, "Trauma can mimic almost anything in the Merck manual. Any disease can be mimicked by trauma. However, somebody can have trauma and also have a disease. Especially around pain, it's important to have that referral option in place, and also, if for nothing else, to cover yourself. If the person is experiencing pain and you're not really seeing the possibility that it could be something medical, then you're doing incompetent work."

Peter: So I'm just saying that it's so important. And then, begin breaking down the homeostatic functions of the trivariate (ie polyvagal) system. Really, it's the balance of those systems that gives us health, growth, and vitality. The idea that we should completely suppress or meditate out our arousal system, that really takes away our capacity to really engage in life. So we need to be able to mobilize. We need to not go into the sympathetic adrenal system all the time, but to be regulated by arousal systems. So the person with all systems operating in a coherent way, in a synergistic way, really gives rise to the experience that the person has when they contact themselves.

In a way, I think trauma is a profound portal to spiritual experience. I've said that in many different ways. But I think what Steve is saying really gives us that here-and-now entry into grounded, embodied spiritual experience because we feel in ourselves the help, the growth, the

restoration, the vitality. When we experience that, in a way, that's the basis of many, many spiritual experiences.

I think a lot of times in the West, notable, notable teachers accepting that there is an emphasis is in blandness, in being seduced by these interstates of consciousness and moving the cooperative residents of health, vitality, growth, and goodness - the feeling of goodness, the feeling of wholeness. Maybe I make a risky statement, but I think that's really the basis of all spiritual experience. Steve has said this. We both really notice this. The immobility response, in the absence of fear - the dorsal vagal system, in the absence of fear, can be quite illuminating. People report experiences like what you can ascribe as the eternal now. The now just expands in all directions, like a pebble dropped into a pond. And the wave goes on and on and on, even in a positive way. So that was the point I was trying to make.

So you can have these mystical kinds of experiences. But at the same time, you want to help the person move towards being able to feel what they're feeling inside and, at the same time, the outside.

So interact with the therapist, or if it's in a group, interact with other people in the group to use the social engagement system to bring in. Sometimes I also use the image of a magnet. The experiment that the teachers would do in junior high school, where you have a plate of glass and you put the iron filings on it. And then, you had the magnet underneath the glass. You move the magnet, and the iron filings follow the magnet. The magnet draws the filings towards it. And when people are able to feel these deep, internal states related to immobility, quite frequently, and be able to socially engage at the same time, I think is maybe the spiritual challenge for Western culture.

Stephen: Peter, may I add - so the immobilization without fear is really the loving state.

Peter: That's right.

Stephen: This is the ability to be still in the arms - I use the term, "safe in the arms of another," where your bodies comforted and there's no muscle tension. That immobilization, it's recruiting some of those same neural pathways that are used in shutting down, but they're being modulated - often, by neural peptides such as oxytocin, that enables the body to be compliant and flexible.

The other part of what you were saying, Peter, is that in craniosacral work, people talk about stillness. And that's really what we're talking about in immobilization without fear. The assumption with some of these other alternative strategies is that when you get into that state, your body does its recuperation. It starts working, taking care of itself - reorganizing. This is part of what we're saying. When the sympathetic and dorsal vagal are not defensive, then they're recuperative.

The final point I wanted to mention was with my own personal experience with kidney stones. I didn't tell you that I had it for 49 days. I didn't just have one experience of kidney stones. I learned the waxing and the waning of the pain, because it's not chronic. I was actually able to drive in and go to work. I could also sense when it was starting to get renal colic. So I could understand all the features. Some of them were periodic, and I could understand the time course of them. When pain becomes predictable, which it frequently is not, but when it becomes predictable, then some of that uncertainly and hopelessness is removed. I was continually being monitored by a urologist. Basically, how long I could take this before he'd go in. But the idea was, would it move on its own? And after seven weeks, it moved.

Maggie: Wow.

Stephen: Most people aren't that patient. And my view was, my body will reject it. What I started to learn from the X-rays was that I could start using gravity to help the stone move. So I started to sleep on my side, and then it, basically, passed within a week. But the point I'm really making on that is both in understanding of those visceral feelings, to take those visceral feelings and not be so afraid of them.

I think that's part of what's going on. And what Peter is saying, that through pain and often through trauma, we can bridge into literally another level of understanding. For me, going through the seven weeks of this gave me another understanding of pain and how to deal with it, and also to understand the biological significance of it.

So I think in understanding and predicting various outcomes from our own bodily cues, understanding of those biological processes, being informed by the biology empowers us to understand what's happening, and takes away a lot of the uncertainty that leads to this hopelessness.

Maggie: Right. And just to add one more piece to this or summarize it, what we're talking about is, as we've said, balance in the Polyvagal system. That's worth working for. That's what we're focusing on and - go ahead.

Stephen: But I want to make sure that the word "balance" only occurs when the ventral vagal circuit is there, because it is your balancer. It inhibits the defensive strategies of the other systems. So you can talk about balance, but you're really focusing on sub-diaphragmatic balance. What you're focusing really on is the power of that ventral vagal system and its linkage with all the attributes of human interaction and connectedness - the social engagement, the listening, prosodic voice, the facial expressivity and the response to gesture, whether they're hand or head gestures. How that helps to calm the physiology, to take the physiology out of defense and move it back to a more homeostatic level.

Maggie: Thank you for saying that. So really, all of you listening, there has to be that focus on ventral vagal response, how you are online in your connection with a client, and how you can help them also to move into that. We've mentioned a number of ways throughout the series. Let's name a few of them. Peter, what are some of the ones that you talked about?

Peter: I'm sorry. Name what?

Maggie: Ways of helping the pain patient come into the ventral vagal system and to contact.

Peter: Again, I was mentioning the analogy of the iron filings and the magnet. So when a person feels, even for a moment - for the first time, feels the homeostatic state. Instead of just leaving them in that - it would be meditation, some meditation - you have the person then make as much eye contact as they're comfortable with. With the idea - often, this is in a group. With the idea that instead of the people looking at you, you are not only looking at them, but you are drawing them in, the way a magnet draws them to the filings. You're drawing them into you, into that now, more open, visceral state. And then, that in itself opens the visceral state even more, which allows the social engagement. So when you get this thing going in a good way, the positive feelings tend to add and add to themselves. And it contextualized it in terms of the governor, which is - as Steve described - the ventral vagal state.

One of the things that I've noticed is sometimes - Steve, you're talking about the movement. One of the exercises I do in my training is that I I demonstrate it by just putting my hand on the person, with their permission, of course, on their upper arm on both sides. And then, just waiting there. Then what will happen is the body will tend to just almost imperceptibly move in one direction or the other, and then I just support that and maybe accent it a little bit. I think again, what's happening is - Steve, I don't know if it's baroreceptors, but it's certainly the vestibular system. And this gentle movement tends very often into helping the person move into this state of balance.

One other thing I wanted to add was sometimes the mistake the therapists make. They try to get the client to engage socially. Maybe they've heard some seminar or just Steve speaking, and they have the idea, "So we want to get the person into the social engaging, into the ventral vagal system." So what do you do? You want to engage them.

But a person who's in shutdown hasn't spent the mechanism, especially if they are unable to make contact. And if you force that in any way, they go deeper into the shutdown. I think Lewis has demonstrated this very same thing with the very high, high, high power brain scan. So even though this is, in a sense, the ideal state, if you try

to make it happen, rather than creating this possibility for it to happen, then you may get exactly the opposite result.

Maggie: That's right--

Stephen: Let me add a little more to that. That is eye contact and facial expression to a stranger is viewed as a threat. And depending on the physiological state that the individual is in, your facial expression, your engagement, will be viewed as either a threat or something that is positively engaging. The portal that is the most flexible is the use of prosody, the intonation of voice.

So even if people aren't looking at you, you can, in a sense, cue them. This goes back to what mothers do with tantruming babies, singing lullabies or talking to them. Fathers, historically, have not been as good because their voices are lower. And of course, reprimanding someone in a tantrum is certainly not going to take them out of it. So the issue is, how can you trigger the physiological state by your behavior as a therapist? And socially engaging, making eye contact, facial gesture, and hand gesture, might literally, frighten the person out and, in a sense, force a disassociation.

The other part that you can work on is, you want to give instruction set. This is what the client can do, that you could teach the client certain breathing methods in which they would extend the duration of exhalations, based on what they could tolerate and report their feelings as they change those breathing patterns. You could have them, in a sense, extend the duration of their vocalization.

Peter does work with that, with the voo sound. Not only does he do duration of exhalations with the sounds, he also modulates the frequencies. This is very, very profound because it's stimulating many of the neural features of the social engagement system. The laryngeal-pharyngeal nerves, also the oral cavity, and the facial muscles are being stimulated. The other one is, basically, posture. And posture is simple. People can, in a sense, as an exercise, have people lean forward, or sit up straight and lean backwards, and do some self-report of their perception of you as a therapist.

Maggie: Also, I would add to that, you can experiment with leaning forward. You have to be careful about this, but watching, of course, for their responses. Because sometimes that will make a huge difference. Not even, really, saying anything about it. Just moving forward with your interests. The other thing I wanted to say is that I think what is helpful to me is to have in my mind and my intentions, the metaphor of engaging a baby. When you're engaging a baby, the last thing you want to do is to make any sudden movements. You don't place any demands on them, "Look at me." Some of those things that we're talking about would be obvious in that context. If that's helpful to you, I would just offer that as well.

Maggie: We have one question that I'd like to finish with. I think it's a good question. This is from Sarah. “I wasn't clear on the issue, actually, from the second webinar. So that would be the sympathetic adrenal. I'd like to hear more about the vagal brake. How does it work, and what does it mean as a caregiver to get the timing right?”

Stephen: It's my construct. I'll talk first.

Maggie: Go for it.

Stephen: The vagal brake is really the effective component of that myelinated ventral vagus on the sinoatrial node. Basically, it's an inhibitor on your pacemaker. And it's chronically there because our heart rates are much slower than our intrinsic heart rate, meaning that if you took the nerves away from our heart, both sympathetic and vagal, the heart rate would be over 100 beats per minute, but most of us have slower heart rates than that. That's because we have a chronic inhibition of our pacemaker through the vagus, and that's the vagal brake. The vagal brake enables us to retract it - take it away - and raise our heart rate very, very rapidly without recruiting sympathetic activation. So we can, in a sense, get up, walk around, do things, raise our heart rate, sit back down, and the vagal brake will come back on board. It will calm us down immediately.

If we had to recruit the sympathetics, we would have more difficulties - a more generalized arousal type response, harder to control. But just by manipulating the vagal brake, we can increase the cardiac output necessary to move. So the vagal brake is really our personal governor to keep us from overheating, from overreacting. We can recruit it through simple things like extending the duration of exhalation. People used to say, "If you're really upset, take a deep breath," but they weren't phrasing it correctly. It was, "Take a breath, and exhale slowly." So if you want to calm down, don't take that deep breath. Take a breath and exhale slowly. What you're doing is, you're allowing the vagal brake to come back on board.

Maggie: Great. Peter, you want to add something?

Peter: Just one thing. Maybe we don't want to use the word "chronic" for the vagal brake, but maybe something like - what would be a good word? Because I confuse that with the chronic pain.

Stephen: It's a dynamic adjustment of our heart-rate output. We can see that on a breath-by-breath basis, and that gives us what's called Respiratory Sinus Arrhythmia. But then, you have to really expand or empower the brake more. You just exhale slower, because the vagal effect on the sinoatrial node is optimized and maximized during exhalation.

Peter: I think maybe the term I would use is the vagal brake is - oh, God [chuckles]. I had it a minute ago. It's a modulator of the sympathetic arousal state. If you think about it this way, you're sitting in a room and

somebody - they don't knock, but they just open the door and walk in. You're not really looking in their direction, so there's a shadow. You see that shadow, and then your heart rate goes up. Now, you look and you see, '"Oh, my goodness. This is Jeff somebody who's coming to clean the room," or something like that. So the great advantage of the vagal modulation is that you then say, "Okay, it was only this person coming in," and you don't go into full sympathetic arousal state.

But you do go into an arousal state, in case you would need to go into a sympathetic arousal state. But then, you're able to. That is because it's a myelinated system in part of the fact that it's a myelinated system, then allows you to say, "Okay, we don't need to have the heart rate up." So you say hello to the person, they say hello to you, and your heart rate goes back to baseline.

Stephen: I think the last part - being myelinated - is tied into our control. It's literally a cleaner signal, a more efficient signal, goes more rapidly, and that part is absolutely correct. The part of - in the sense - retracting that vagal brake and allowing heart rate to go up, I call that literally, an anticipatory precautionary state. Because now, without the inhibitory aspect of the vagus on the sinoatrial node, if you need to go into a fight-flight, there's no competition. The sympathetic will just take charge.

Maggie: Her last comment was, "How can the caregiver or the therapist get the timing right?" I'm not even sure I understand that part.

Peter: Well, I think this is very, very important because-- so the person has shut down, shut down, they come out just a little bit, and then you see a sympathetic state. That's when you know to intervene. As you feel that tingling or as you feel that rush of energy, what do you begin to notice next or what else do you begin to notice? So it's really important because as a therapist-- that you get that the client has just come out of the shutdown, or that they've just regulated the sympathetic arousal - down regulated the sympathetic arousal. Then the client doesn't get the input they need to know that they've switched states, and that this is a positive thing. So the ability to monitor where the person is in terms of the Polyvagal theory. To monitor where they're in, and then to be able to see that often, just with - Steve, the term you used - prosody.

Peter: As you notice that or as you start to feel your heartbeat going up, I just want to know, "Have you noticed if it continues to go up? If it goes down? If the sensation changes in any way?" so forth and so on. So really, the timing is absolutely critical. When the therapists say, "That's it," well, that's not it. You lose [chuckles] that ability and really, what allows for that resonance in interpersonal space to evolve, to both support the clients in-- both the therapist's and the client's internal state of balance.

Stephen: I'd like to add one point. Our nervous system detects the lack of reciprocity, the lack of the synchronous, smooth interaction of one to the other. It basically responds with a very defensive reaction, and I call this biological rudeness. Even when we're trying to encourage our children when they're young to behave appropriately, we give them two magic words, "Please" and "Thank you." And they are merely words that enable an engagement, and also the completion of a behavioral response. So enables a loop to be completed. Because if you ask for something, you get it, and walk away, it's a neural violation to the person who handed that to you.

And when you're talking about a mother or a therapist dealing with a client or a child, there is a timing component of where they have to engage or that client's body will think of it as being biologically rude. Because they have made themselves vulnerable for that moment they've engaged. And if you don't immediately or appropriately respond in the appropriate time window, which is merely, relatively - it's like within a second or so. You have to be present, and you can't just say, "A few moments ago, I think you were looking at me. You really rejected me," because they're now already gone.

Maggie: Well said. Well, thank you all. I wish we could go on, but we really do need to stop so that the recording will be complete for people who listen later. I would just say this. I really feel that this has been an excellent series. I hope those of you listening do. And certainly, it would help to send us feedback. We would really benefit from that. I, of course, will forward that to Peter and to Stephen. We thank you all for being with us. Stephen and Peter, the two of you are nothing short of amazing, and I'm so glad for the privilege to be working with you. Thank you so much.

Peter: Thank you, Maggie…

Stephen: Thank You Maggie, and thank you Peter.

Peter: Thanks, really--

Maggie: Take care. Goodbye.

Peter: …it's great to reconnect to all. Bye-bye.

Maggie: Yes, bye-bye. Take care.

Recommendations

We hope you have enjoyed this e-book. As further steps in learning, we recommend the following reading and online searches.

Peter Levine: To learn about Peter and view his books, articles, and videos, please visit http://traumahealing.org/peter-a-levine-phd.php. To learn about Peter's Somatic Experiencing training, visit http://traumahealing.org/se-professional-training.php

Stephen Porges: Stephen's website is a primary way to connect with Stephen's landmark book, articles, videos and podcasts, research studies, interviews and other news. Visit him at www.stephenporges.com.

Maggie Phillips: To learn about Maggie and view her books, audio and online programs, and other information, visit http://www.maggiephillipsphd.com/about.html, http://www.maggiephillipsphd.com/products.html, and http://www.maggiephillipsphd.com/interviews.html.

These three references will give you a good foundation in polyvagal theory and its somatic applications. Of course, there are many more helpful materials and we hope you will dig deeper. We wish you well on your journey!

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