

Trauma Treatment from a Global Perspective

A conversation

with



Bessel van der Kolk, PhD



Stephen Porges, PhD



Joseph LeDoux, PhD



Ian Macnaughton, PhD

“To feel the presence of others, our brain has to feel our body.”

Stephen W. Porges, personal communication, August 5, 2015

By Nancy Eichhorn, PhD

We sluffed off our backpacks and pitched our tents in a grassy meadow along Bubbs River in Kings Canyon National Park. Several deer stopped to graze just beyond our campsite. A black bear and two cubs strolled by, unalarmed by our presence (though my



breath momentarily clutched even as our cameras flashed). Animals and humans together without fear. Later that day another deer skittered into our camp wearing a thick leather collar with an antenna projecting off the right side. It inadvertently found itself between myself and another hiker. The deer tried to dart one way then another, perhaps it felt cornered, trapped. It froze. I backed away, created an escape path. Seconds passed before it fled. I felt fear permeated this creature’s existence: it was palpable, undeniable, real.

What happens in a traumatizing instant that creates lasting change?

Was it a memory of restraint, of human beings that triggered immobilization? Do I need to know what, if any, thoughts crossed this animal’s mind during its restraint or is the reality that its brain and body registered a connection between humans and a behavioral response that in my mind indicated fear enough? (A note: Joseph LeDoux states that behavior is not a reliable indicator of such feelings in animals or human beings; yet, for me, the deer’s movements appeared to be fear-filled.)

Fear: A Biological Response to Trauma

The biological nature of trauma (defined as a life threat in the face of helplessness) is on the forefront of therapeutic conversations. Proponents of body-based approaches accept that trauma is stored in the body and in the limbic system. It is noted as the major center for emotion formation and processing and for learning. The amygdala, located within the temporal lobe of the brain, is said to be a limbic

system structure (though this is debated) that is involved in emotions related to survival—fear, anger, and pleasure. It is also responsible to determine which memories are stored and where they are stored in the brain. The amygdala shifts when we encounter a life-or-death threatening event (associated with fear conditioning).

Of all of the brain's parts, the amygdala has received most of the attention in regards to trauma. It is said to be directly related to the cascade of responses that activate the sympathetic nervous system (SNS) and the flight/fight response. Thus, the autonomic nervous system (ANS)—the vegetative unconscious system that runs our body—is critical to trauma. Our defense systems, located in the lower brain levels, determine whether we fight, take flight or disappear and shut down (immobilize).

According to a recent blog post written by Joseph LeDoux, PhD the amygdala's circuits are "directly responsible for detecting threats and the resultant behavioral/physiological responses elicited by threats that alter information processing in diverse regions of the brain." One important response that he noted was "the secretion of chemicals throughout the brain (norepinephrine, acetylcholine, dopamine, serotonin) and body (hormones such as adrenalin and cortisol). In situations of danger, these chemicals alert us that something important is happening. As a result, attention systems in the neocortex guide the perceptual search of the environment for an explanation of the aroused state." (Blog quotes retrieved August 17, 2015 from <https://www.Psychologicaltoday.com/blog/i-got-mind-tell-you>)

Stephen Porges, PhD coined the term 'neuroception' to describe the nervous system process to monitor the environment for safety, danger, and life threat. Neuroception evaluates risk to negotiate, navigate, or trigger neural components that regulate autonomic state to fit the environmental context or the particular risk factor in question. It also connects risk



evaluation with social behavior, specifically facial expression, and tone of voice (prosody), gestures and body posture that implicitly and explicitly communicate messages of safety or threat to others. These signals impact what Porges calls the "brain-heart-face circuit" that exists outside our conscious awareness. It functions to control our range of emotional expression, our quality of communication and accompanying bodily states, including stress related responses (expression of and recovery from). In potentially threatening situations, our social engagement system has the ability to trump the sympathetic nervous system's arousal and the fight or flight response. Similarly, under threatening situations, in which the social engagement system is already offline, the sympathetic nervous system's support for fight or flight responses trump immobilization.

LeDoux also wrote that the meaning of present environmental stimuli was augmented by the retrieval of memories. He asserts that "a key part" of his "argument" is that "the amygdala is not directly involved in making feelings of

fear" (personal communication, 09.04.2015). "If the stimuli are known sources of danger, 'fear' schema are retrieved from memory. The feeling of fear then, results when the outcome of these various processes (attention, perception, memory, arousal) coalesce in consciousness and compel one to feel fear." (Retrieved August 17, 2015 from <https://www.Psychologicaltoday.com/blog/i-got-mind-tell-you>)

He stated that the feeling of fear can only happen in brains equipped with the cognitive ability of auto-noetic consciousness—the ability to mentally place ourselves in past, present and future situations and analyze our own thoughts. As well, Porges added that while neuroception detects threats, transgenerational messages, genetics, culture, childhood experiences and society convey the notion of what is dangerous.

Looking at treatment approaches then, perhaps it's not the feeling of fear that needs to be addressed as much as what happens in the brain.

"Our survival brain is not created by culture; there probably are few cross cultural variations," Bessel van der Kolk, PhD said. "Brain development, and the core processes involved in threat detection and survival, evolved in humans, as it has in all mammals. Trauma changes the brain—and the rational mind, the frontal lobe loses control over the more primitive limbic brain. The brain circuits change, the fear system changes, and the self system is changed."

"While the capacity to manage our emotions resides in the cortex. The limbic system primarily processes intense emotional experiences," he continued. "Faced with trauma our brain automatically activates unconscious mechanisms to survive the experience. When these survival

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systems get stuck, as happens when people develop PTSD, the changes in our physiology and nervous system create profound changes in the ability to adapt to the world. When we cannot actively fight back or escape a traumatizing situation, or, alternatively, find outside protection, the overwhelming experience may result in a system wide shut down. The result is often distrust (constant vigilance) and difficulties creating supportive relationships, including tolerating people to get close, one of the principal components of healing."

If we look at trauma's impact on the human brain from a global perspective, then, as Ian Macnaughton said, "The old adage that 'it takes a village to raise a child' is apt in the sense that from the global perspective there needs to be community awareness through education as well as both individual and group processes that can bring more healing to the traumatic imprints in the nervous system."

As Porges pointed out, our brain is integrated within a nervous system that regulates our entire body. And while the brain is an important regulator of the body, the brain stem is actually the pivot point between the body and the upper brain structures.

"Within the brain stem there are major intersections of neural pathways sending signals downstream to the body and upstream to the cortex. Early



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experiences can actually turn on and off genes and disrupt or bias the neural pathways that travel through the brainstem and communicate between body and brain structures,” Porges said, then he added that our personality structure has the potential to take on the trauma of those who came before us.

“We are a flexible species, there is not one idealized way of being,” Porges explained. “If culture demands more warriors, we modify to become more vigilant and aggressive. In a sense cultural demands turn genes on and off in response to threats to society. How is the genotype of the wounded Self relevant to that current society? In terms of trauma and trauma response, we need to look both at the stimulus and the neural state and resilience of the individual. This enables us to understand the interaction between the cues that effectively trigger physiological responses, which are capable of incapacitating social connection in some individuals, while others seem buffered and resilient to the same challenges.”

“We are bombing countries and creating unsafe environments, we escalated terror to convince “victims” to be our friends, and we are changing their biology,” he continued. “Creating volatile trauma responses makes them physiologically unsafe and lowers their threshold for shut down. They have to mobilize; they have to be aggressive or face immobility and death.”

Macnaughton agreed, and extended Porges’ statement adding that, “In fact through war, malnutrition, violence etc. we are damaging the brains of the younger generation, which can only lead to a less evolved human being and one that has experienced trauma. The affluent and

wealthy individuals and nations try to maintain their steady-state, fending off depletion of any of their assets or their lifestyles to assist in the global suffering that is being created by trauma. That can only last so long.”

“In global situations,” he continued, “I think what we see is this vast systemic wave of past traumatic experiences being attempted to be worked out through wars, attempting to stabilize through different religions, different ethnicities, different languages, forgetting the effect of how all of these were generated from geographical contexts.”

“A friend of mine recently had an extensive genetic report on his history,” he added. “In that history he said that of course it all went back to Africa, as well that at one time in the world there were only 2000 human beings that we all came from. When we see the landslide destruction of our environment and the creatures within it, it’s only logical that there is a probability that we, as one of the creatures, will face at least the possible reduction in population if not destruction as a race in centuries to come, perhaps sooner if something is not done. I believe much of all of this is rooted in the lack of development of our brains and our capacity to be more human than animal, as well as the effect on our common sense, our executive functioning, of past and current, individual and collective, trauma.”

Trauma is pervasive. Trauma is embedded.

And, if we define trauma as the disruption of our ability to regulate our affective and physiological state, then is it safe to say that treatment must revolve around state regulation?

Self-Regulation

“A number of techniques are likely to be helpful in self-regulation,” Van der Kolk said. He shared examples from his book, *The Body Keeps the Score* (see review on page XX), such as practicing mindfulness to access the medial prefrontal cortex, using interoception to notice what is going on inside and re-interpret danger, moving together, synchronizing our voices and respiratory systems by singing and breathing together- that is, by activating the bi-directional communication system between the nervous systems of different people. Moving, sensing what’s happening in the body, allows the self to know what you know, he said. Sensing the inner experience is a gigantic part of healing.

“In South Africa,” Van der Kolk shared, “I noticed their approach was very different than in the US. Everywhere around the world people use singing, moving, synchronous activities to deal with traumatic stress. This is not common in formal therapeutic programs in the US, though these methods are continually re-discovered in school systems, prisons, and rehabilitation programs.”

Thinking versus Feeling

“What if we misinterpreted the statement, I think therefore I am? It should be, I feel therefore I am. I feel my body, myself, with “feel” as a reflexive verb,” Porges said. “French distinguishes between feeling an object and feeling into the body whereas English uses the same word for feeling a physical object and feeling our body or emotions. Yet the meaning of the words are not the same.”

“All therapies have a common theme,” he continued. “We have implicit memories and explicit experiences. Trauma experience is implicit, the body holds the story; we do not have the vocabulary to discuss it. We have to go in and move those memories to the explicit level so we can deal with them. You have to go back and re-experience it so it can be defined in the implicit, the unknown needs to be defined, contained,



and brought forward into explicit thoughts and words, so you can resolve it. The therapist’s job is to provide the tools to experience and contain, to describe and defuse.”

As therapists then, we can help our clients understand what happened to them from a neurophysiological and bio-behavioral view. For instance, a young woman comes in because she was raped. She has all these bodily feelings that she doesn’t understand as well as feelings such as embarrassment and shame because she didn’t fight back (immobilization). As therapists, Porges said we can give clients a vocabulary to deal with implicit memories. But, he stressed, it is not so much the event that matters.

For example, in the case of our rape survivor, Porges explained that it’s crucial to find out her initial response to the trauma, what happened in the moment-where did she go (pass out, dissociate, fantasize), what happened then, step-by-step. From this case history, we can then create a healing intervention that supports the nervous system, where we can navigate or negotiate with her sense of safety so she is not working within her defense system (either shutting down or pushing to mobilize).

“As long as features of the social engagement system are on board through the use of modulated prosodic voice or safe

environments, then you might be able to discuss or get the person out of that state," Porges said. "Our social engagement system enables us to change our physiological state. The most successful trauma therapists are those who enable their clients to negotiate and navigate in a state of safety."

"I agree with what Steve has said, of course," Macnaughton added. "However, I would say that people do not always need to actually recall, certainly not relive all of the traumatic incident details. The treatment should allow for the person to respond to what traumatic events have happened so that the persons system can restore to its innate optimal functioning. The trauma pattern rests within the blocked responses that the individual and the group were not able to manifest in order to take appropriate action so that they were not traumatized."

"Trauma certainly has the effect of destabilizing the optimal human and societal functioning," he continued. "And once destabilized the organization of consciousness is shifted so that it cannot, as effectively, be able to realistically ascertain what is truly dangerous on the outside and what thinking and personal experience is skewed on the inside in ways that result in reinforcing behavior that keeps the traumatic patterns inside oneself as well as societally to maintain a new so-called 'functional steady-state', usually a reactive and less considered state of consciousness."

Offering concrete steps to address trauma, Van der Kolk listed several critical components for any treatment approach. The first involves self-regulation. Effective treatment, Van der Kolk said, means learning ways to change one's arousal system. This needs to be front and center in any treatment.

"We have in-born self-regulatory systems that need to be activated. This involves moving, taking action, and being in sync with others. You can establish internal sensory integration with methods such as Qi gong, drumming, dancing. It's more than

tolerating feelings and sensations, it's about learning how you can change your own physiology," Van der Kolk said.

Another component involves, "Learning to tolerate knowing what you know, and feeling what you feel. Finding a language for internal self-experience," and, "Finally, taking action to re-engage frozen engagement systems and overcoming the legacy of inescapable shock," he said.

The importance of trauma interventions rests in body-based approaches—language alone has limitations including the lack of a clear vocabulary to capture a sensation as it is occurring—to describe the experience of the sensation takes you out of the moment (out of the midbrain) and places you back in the neocortex—you are responding from the thinking brain, not the feeling brain.

As Van der Kolk notes, you cannot treat a traumatic event but you can treat the imprints of trauma on the body, mind, and soul. The rational brain can't simply abolish our emotions, sensations or thoughts—



“understanding why you feel a certain way does not change how you feel,” Van der Kolk writes. Using the phrase, “Limbic System Therapy”, Van der Kolk explains that one goal of trauma interventions is to restore balance between the rational brain and the emotional brain—you have to repair faulty alarm systems dysregulated by traumatic events so that the brain is no longer automatically (and unconsciously) responding to triggers/cues as if the traumatic event (a past reality) is experienced as live and present in the here and now.

As LeDoux pointed out, we can only consciously access our emotional brain through self-awareness. So, interventions need to provide tools that support self-regulation techniques/emotional regulation techniques such as using the breath to calm the SNS and stave off the fight or flight response and mindfulness practices that teach clients how to notice the interplay between their thoughts and physical sensations. As Van der Kolk writes, trauma often results in the fear of being overwhelmed by uncomfortable sensations such that the body is frozen and the mind is shut. (See Join the Conversation in this issue for two easy self-regulation tools shared by Peter Levine, PhD).

There are many treatment approaches available to work with trauma including but not limited to: Somatic Experiencing, sensorimotor psychotherapy, Eye Movement Integration (EMI), Eye Movement Desensitization and Reprocessing (EMDR), Emotive Freedom Technique (EFT), Hakomi therapy, hypnotherapy and neurofeedback. Macnaughton also added group and subgroup work such as developed by Yvonne Agazarian's in her Systems-Centered Therapy for Groups. And Dr. Marvin Westwood's work with soldiers who experienced trauma. Westwood teaches veterans how to self-govern their own healing processes, which appear to parallel Van der Kolks' four precepts.

However, in the larger scheme of global awareness, Macnaughton said, “We need more than just trauma teams going in to different countries, notwithstanding the great benefit of them doing so and especially when they teach other people in the communities and countries how to assist individuals, families, communities to work with storytelling and connection. I'm not up to date on some of those global initiatives, more a sense of it has to go beyond just working with crash teams and just individual one-on-one work. I do believe that the power of stories, being listened to, attuned to, specially shared in groups that are well contained, is probably the way to go but really we need awareness and a larger global sense of what type of world we are creating for the future. I lose hope when I see that even in our individual countries and communities we don't know or are blind to how to work with the trauma of our children.”

Fortunately Van der Kolk dedicated a considerable amount of space in his recent book, *The Body Keeps the Score*, to discuss children and trauma from a variety of perspectives: attunement, attachment, brain development in relationship, and brain impacts in situations of abuse and trauma. He explored the overall question: Is it possible to help the minds and brains of brutalized children to redraw their inner maps and incorporate a sense of trust and confidence in the future? He noted that early attachment patterns create inner maps that chart our relationships throughout life, not only in terms of what we expect from others but also in terms of how much comfort and pleasure we can experience in their presence. The map is implicit, etched into the emotional brain. It is not reversible simply by understanding how it was created. Children who experience early abuse, neglect, violence, misattunement, abandonment, sexual assault, incest and other forms of trauma have no internal sense of security; it's difficult for them to distinguish between

safety and danger. The staff at Van der Kolk's Trauma Center (www.traumacenter.org located in Boston, Massachusetts)) have developed programs to help parents attune and connect with their children, to help heal damaged attunement systems through training in rhythmicity and reciprocity.

Coming to a Place of Closure

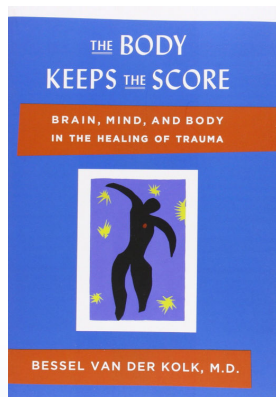
Looking at trauma treatment from a global perspective, the overall sense I gathered is that we have to step back and look at what is going on in social, political, and environmental systems. As Macnaughton said, "They are all in a way trying to self-organize within their domains yet not quite sufficiently interdisciplinary. I think part of that, as I mentioned, is the evolutionary state of us as human beings: where will we have evolved to so far? I think the other is that we have tended to think more linearly rather than systemically."

"I find trauma narrows down a person's

and society's scope of consciousness—their story of what is true, when actually there are multiple perspectives often polarized into two main ones. Yet, between the two exists a 'third story'. When working with families, couples, individuals, businesses, I am looking for the 'third story'," he continued.

"The most flexible element in any system is the one that will survive," Macnaughton said.

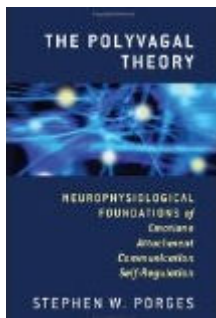
"If we look at the pattern of what happens worldwide we can see that nature itself has many traumatic patterns—fire, wind, water, for instance—and with huge changes many species have survived, including human beings who are the consensual highest level of functioning species," Macnaughton said. "So it seems to me that if the latter is true that we are actually the most evolved, then we need to really address how global traumatic patterns are not being studied systemically, and neither are the solutions."



Bessel A. van der Kolk M.D. is the Medical Director of the Trauma Center in Brookline, MA, and professor of psychiatry at Boston University School of Medicine who has taught in

hospitals and universities all over the world. His work integrates developmental, biological, psychodynamic and interpersonal aspects of the impact of trauma and its treatment. Funded by the National Institutes of Health, The National Center for Complementary and Alternative Medicine, the Centers for Disease Control and private foundations, he has extensively researched the impact of trauma on development, such as dissociative problems, borderline personality and self-mutilation, cognitive development in traumatized children and adults, and the psychobiology of trauma, as

well as a variety of treatments for PTSD, including medications, EMDR, yoga and neurofeedback. His recent 2014 New York Times bestseller, [The Body Keeps the Score: Brain, Mind, and Body in the Treatment of Trauma](#), (see [page 28 for review](#)) transformed the understanding of traumatic stress, spelling out how it literally rearranges the brain's wiring—specifically areas dedicated to pleasure, engagement, control, and trust. He shows how these areas can be reactivated through innovative treatments including neurofeedback, mindfulness techniques, play, yoga, and other therapies.

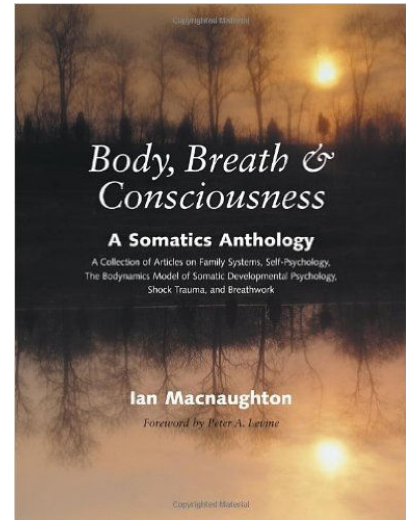


Stephen W. Porges PhD is Distinguished University Scientist at Indiana University Bloomington, where he is creating a trauma

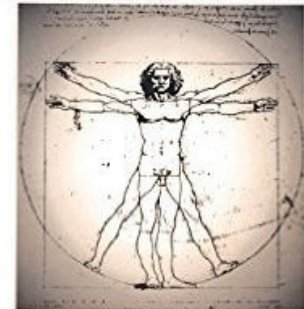
research center within the Kinsey Institute. His wife, C. Sue Carter is the Director of the Kinsey Institute. Dr. Carter is known for her discovery linking oxytocin to social behavior. Dr. Porges is also a Professor in the Department of Psychiatry at the University of North Carolina in Chapel Hill, North Carolina. He formerly directed the Brain-Body Center in the Department of Psychiatry at the University of Illinois at Chicago, where he also held appointments in the Departments of Psychology, BioEngineering, and the Program in Neuroscience. He is a neuroscientist with particular interests in understanding the [neurobiology](#) of social behavior. In 1994 he proposed the [Polyvagal Theory](#), a theory that links the [evolution](#) of the [autonomic nervous system](#) to the emergence of social behavior. The theory, summarized in his 2011 book, *The Polyvagal Theory: Neurophysiological Foundations of Emotions, Attachment,*

Communication, and Self-Regulation, provides insights into the mechanisms mediating symptoms observed in several behavioral, psychiatric, and physical disorders.

Ian Macnaughton, MBA, PhD, is a psychotherapist and trauma specialist as well as the principal of TransitionPoint Coaching, a consulting company that works with business owners and their families. Recognized as one of Canada's most qualified and trusted business family coaches, Ian has more than 35 years of experience as a family systems consultant and as a change management and organizational consultant. He advises a number of family businesses and maintains a practice as an executive coach for leadership development. Ian is also the former owner and CEO of a second-generation family enterprise. Ian has an MBA and a PhD in human sciences. In addition to being a certified Family Enterprise Advisor, he has multiple certifications in Family Firm Advising and is a Registered Clinical Counsellor. He is a long-time volunteer with PACE Children and Family Centre in Vancouver, an early intervention and education center for preschool-aged



Embodying the Mind



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A COLLECTION OF ARTICLES ON FAMILY SYSTEMS, BODYDYNAMICS SOMATIC DEVELOPMENTAL PSYCHOLOGY, SHOCK TRAUMA, AND SPIRITUALITY

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children and their families. He also edited two anthologies: *Embodying the Mind and Minding the Body*, and *Body, Breath, and Consciousness*.



Joseph LeDoux, PhD is the Henry and Lucy Moses Professor of Science at NYU in the Center for Neural Science. He directs the Emotional Brain Institute of NYU and the Nathan Kline Institute. His work is focused on the brain mechanisms of memory and emotion. He writes a blog for Psychology Today called, *I Got A Mind To Tell You*. He recently authored, *Anxious: Using the Brain to Understand and Treat Fear and Anxiety*. LeDoux is a Fellow of the American Academy of Arts and Sciences, the New York Academy of Sciences, and the American Association for the Advancement of Science, and a member of the National Academy of Sciences. He is also the lead singer and songwriter in the rock band, The Amygdaloids.

Joseph's blog material is derived from his new text: *Anxious: Using the Brain to Understand and Treat Fear and Anxiety*.