



Healing Trauma & Chronic Pain through Autonomic Re-Regulation and Somatic Awareness

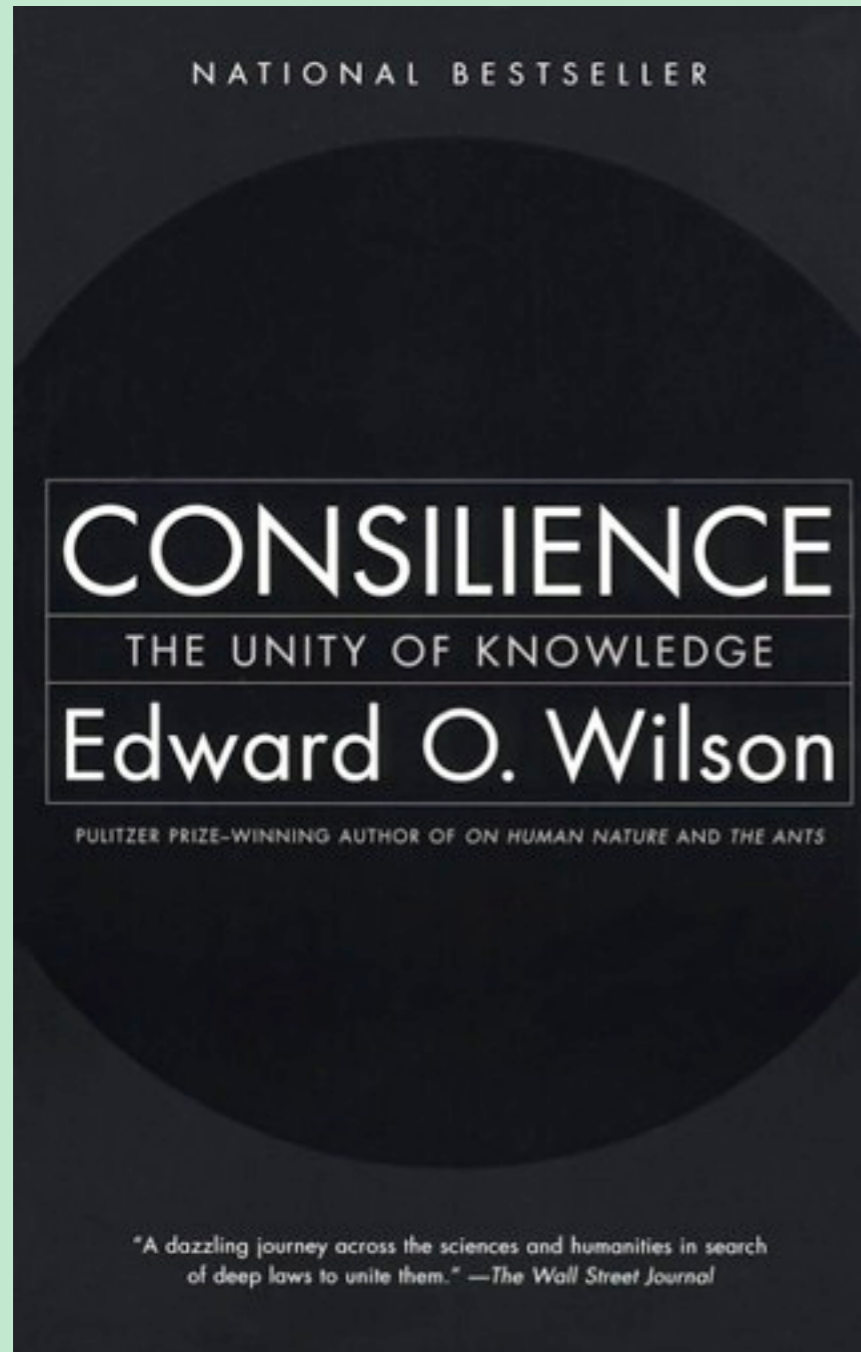
presented by Dr. Paul Canali, DC

UNIFIED THERAPY™

**Barry University School of Social Work Seventeenth Annual Professional Conference
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Interdisciplinary View

E.O.Wilson, Evolutionary Biologist, author of Consilience



“An interdisciplinary view is aimed at finding the **convergence (consilience)** among independent fields...to enable a unity of knowledge to emerge...[An] interdisciplinary approach bridges these separations and enables **science to progress.**”

Traditional Psychotherapy: A Top-Down Technique

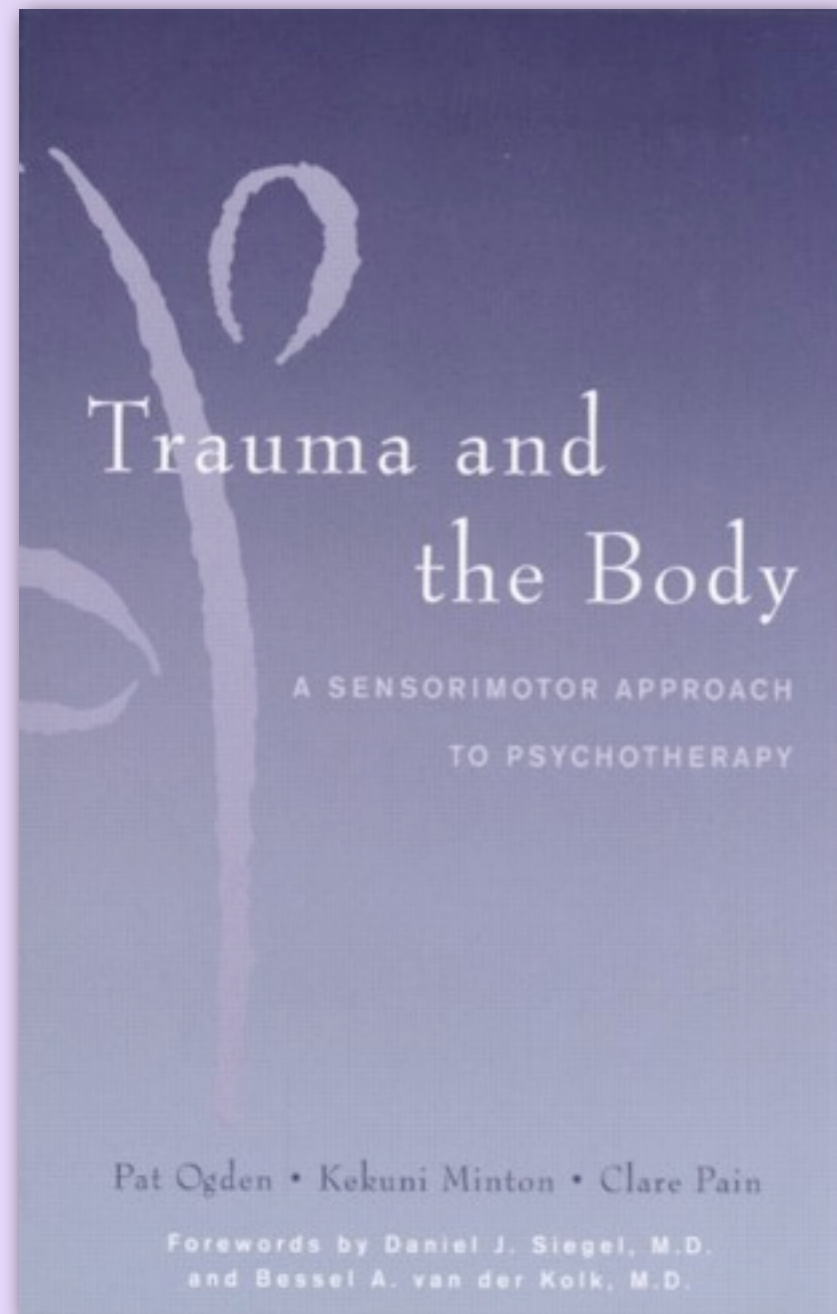
-**Bessel A. van der Kolk, MD**, Beyond the Talking Cure: Somatic Experience, Subcortical Imprints, and the Treatment of Trauma (2002)



- **Traditional psychotherapy** relies on top-down techniques to manage disruptive emotions and sensations. These are approached as unwanted disruptions of “normal” functioning that need to be **harnessed by reason**, rather than as reactivated or unintegrated fragments of traumatic states.
- Top-down processing is **focused on inhibiting** rather than “**processing**” and **integrating** unpleasant sensations and emotions.

Bottom-Up Technique

-Pat Ogden, PhD, 2002; Kurtz 1990.



***Awareness is toward internal organization** of experience, the procedural tendencies, rather than the story or insight.*

***Awareness is focused on present experience** rather than on past or future.*

***Awareness is curious and interested,** rather than interpretive or intent on change.*

Awareness & Adaptation

-**Bessel van der Kolk, MD**, Founder and Medical Director of the Trauma Center. Dr. van der Kolk is an internationally recognized leader in the field of psychological trauma. Quote from: Beyond that Talking Cure: Somatic Experience, Subcortical Imprints , and the Treatment of Trauma, 2002



Bessel van der Kolk, MD

“Awareness, as opposed to avoidance, of one’s internal states allows feeling to be known, and to be used as a guide for action. Such mindfulness is necessary if one is to respond adaptively according to the current requirements for managing one’s life. By being aware of one’s sensation , one introduces new options to solve problems. This allows people to not react reflexively, but to find better ways to adapt.”

The *Felt Sense*

-Eugene T. Gendlin, PhD, Focusing (Bantam New Age Books, 1978)



“What is split off, not felt, remains the same. When it is felt, it changes. Most people don’t know this. They think that by not permitting the feeling of their negative ways they make themselves good. On the contrary, that keeps these negatives static, the same from year to year. A few moments of feeling it in your body allows it to change...”

Where we put our Attention Transforms the Brain

-Daniel J. Siegel, MD, *Mindsight* (NY,NY: Bantam Books. Inc., 2010) p. xii

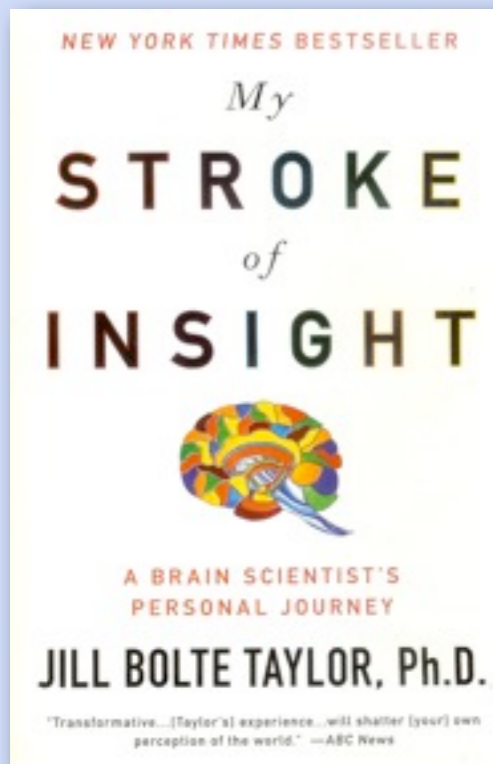


“...we now know from the findings of neuroscience that the mental and emotional changes we can create through cultivation of the skill of mindsight [mindful attention] are transformational at the very physical level of the brain.

By developing the ability to focus our attention on our internal world, we are picking up a “scalpel” we can use to re-sculpt our neural pathways, stimulating the growth of areas of the brain that are crucial to mental health. “

Physical Component of Emotion

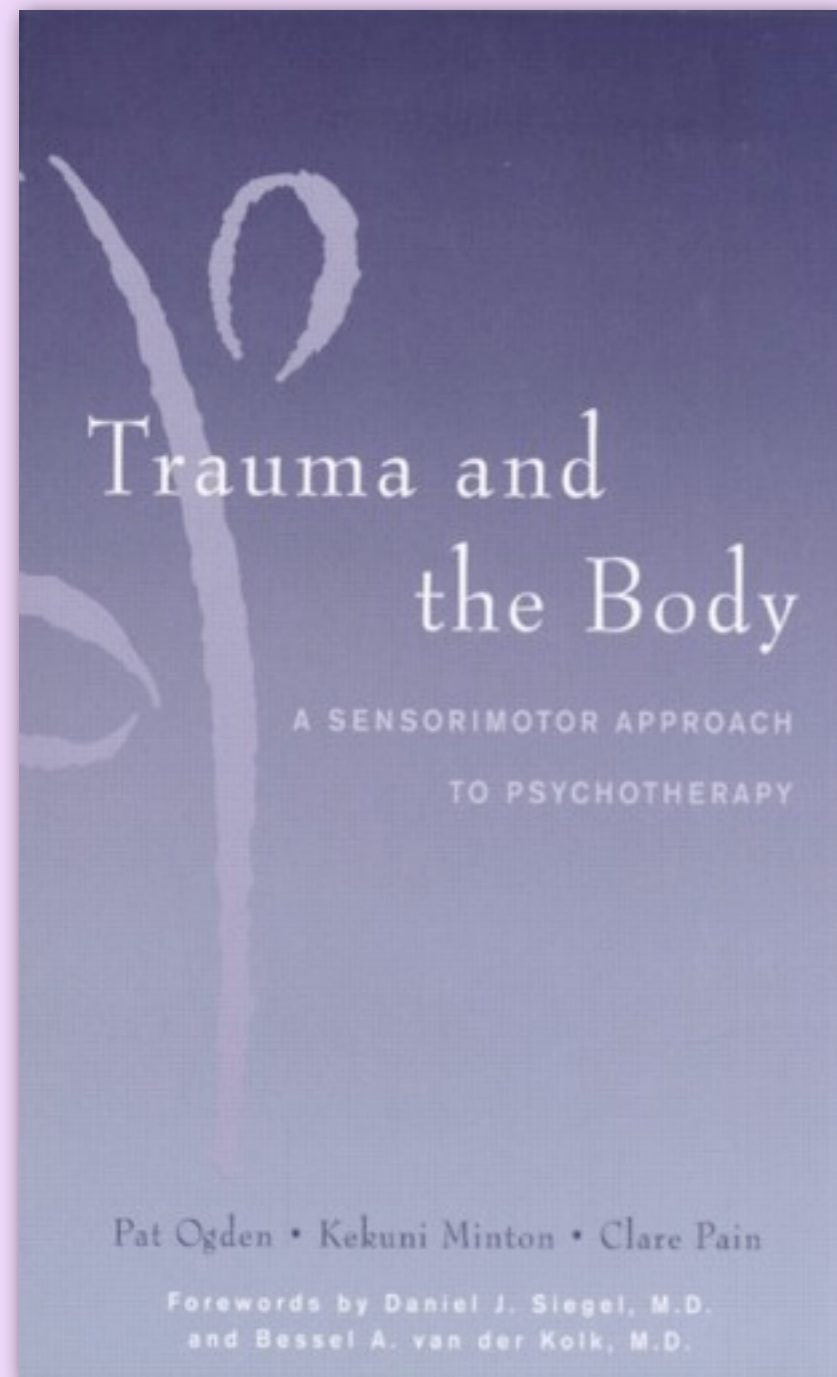
-**Jill Bolte Taylor, PhD**, My Stroke of Insight, A Brain Scientist's Personal Journey (London, England: Penguin Books Limited, 2006) p. 126



“One of the greatest lesson I learned was how to feel the physical component of emotion. Joy was a feeling in my body. Peace was a feeling in my body. I thought it was interesting that I could feel when a new emotion was triggered. I could feel new emotions flood through me and then release me. I had to learn new words to label these “feeling“ experiences, and most remarkably I learned that I had the power to choose whether to hook into a feeling and prolong its presence in my body, or just let it quickly flow right out of me.”

Changing Procedural Tendencies & Rewiring the Brain

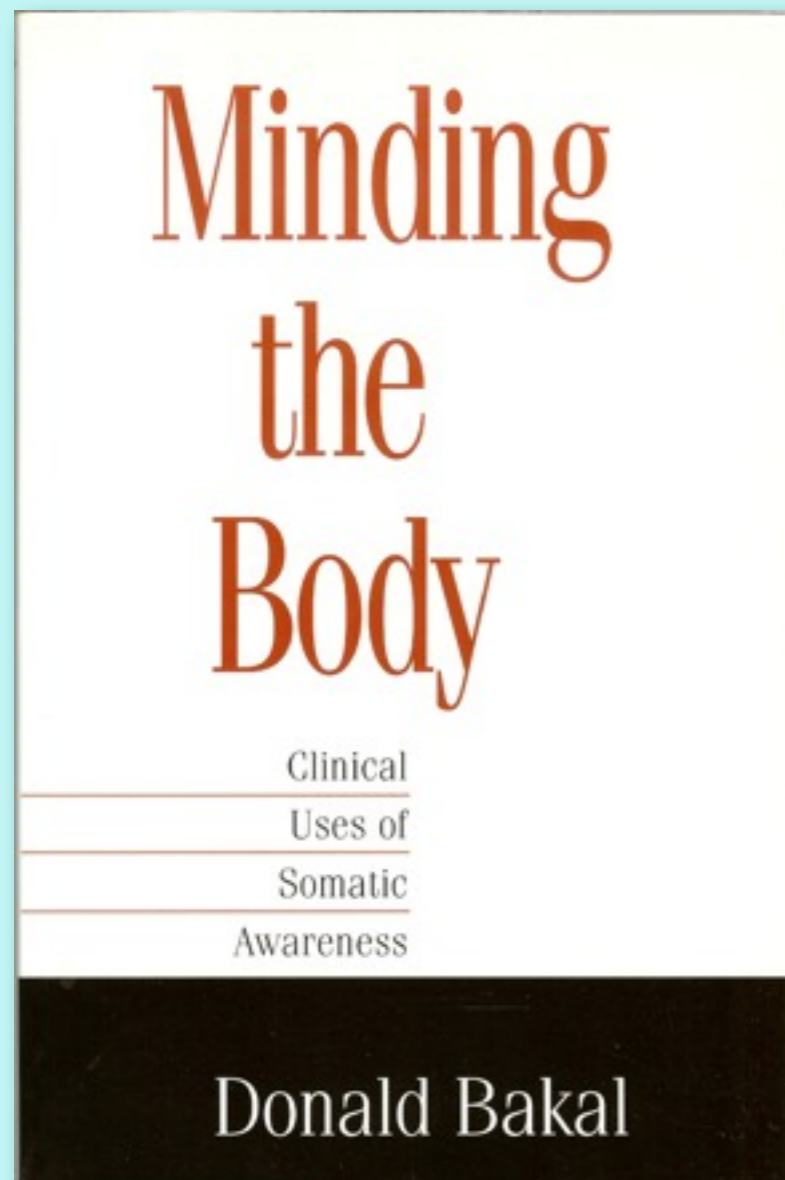
-Pat Ogden, PhD, 2008; Fisher 2004.



- *Repetition of habitual thoughts, feelings, body sensations, and movements connected to patterns of symptoms and memory will not change the brain.*
- *Repetition only reinforces established neural networks, and habitual procedural actions.*
- *To change the brain, we must interrupt and inhibit procedural patterns, and experiment with new amounts and kinds of sensory stimulation.*

Somatic Awareness

-Donald Bakal, PhD, Minding the Body (The Guilford Press, 1999)



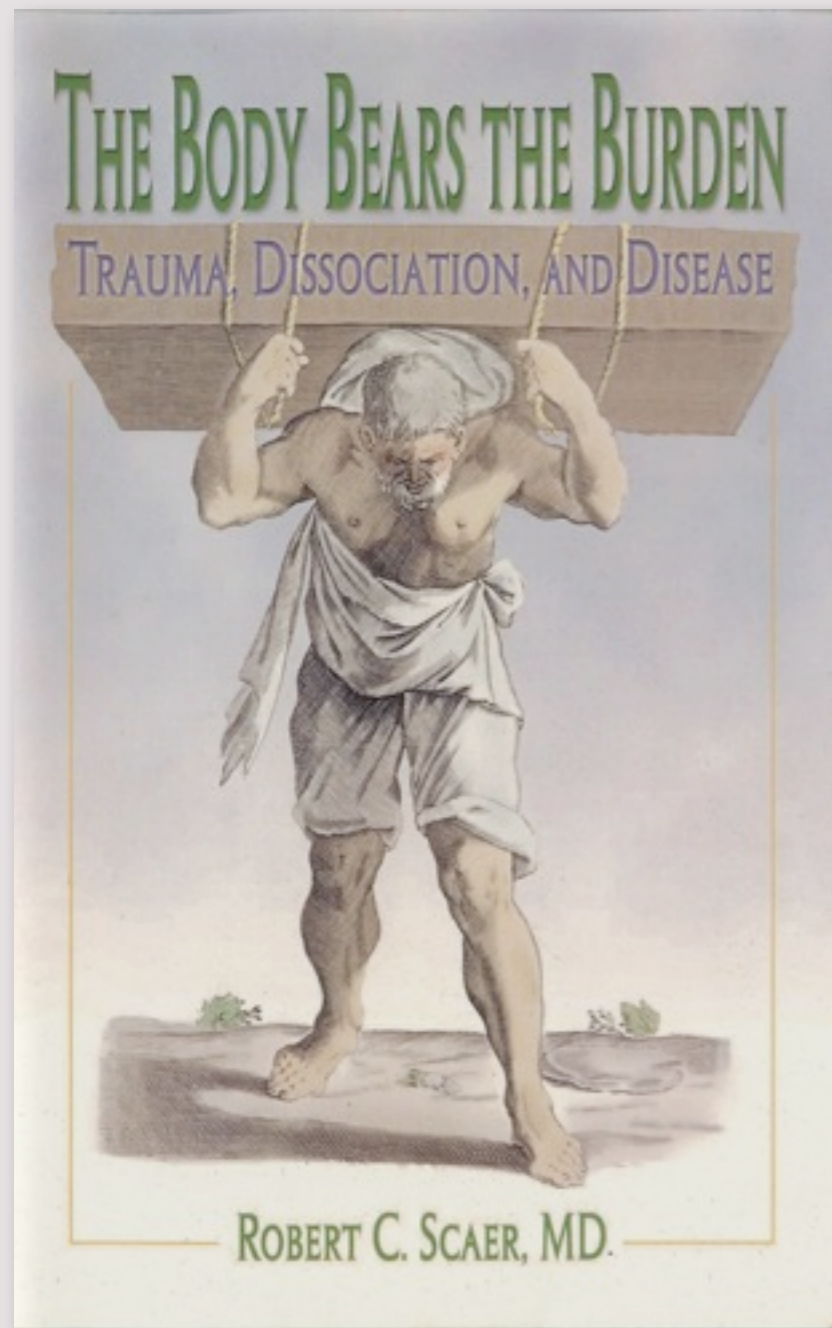
“Somatic awareness is at the cutting edge of the mind-body interface and represents a way to truly empower individuals in their efforts to maintain and restore good health.

Somatic awareness constitutes an innate wisdom that people have about their own psychobiological health. It involves utilizing sensory information that is readily available, and that when utilized can contribute to all aspects of health, from preventing migraine, hypertension, and heart disease to regulating autoimmune diseases, and possibly to altering the course of cancer.

For virtually all symptoms, diseases, and illness conditions, the mind’s awareness of the body’s sensations has a very significant role to play.”

Suppression of Discharge Phenomenon in Humans

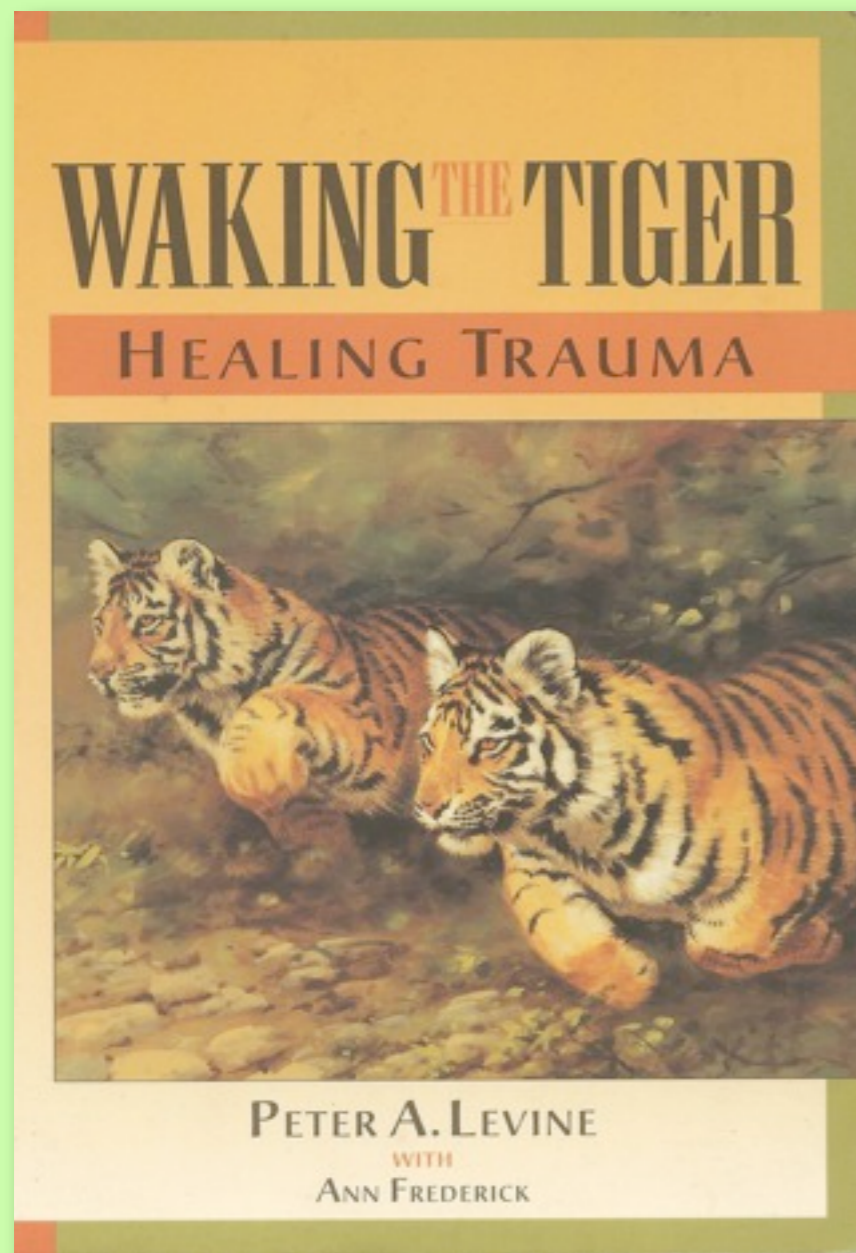
-**Robert Scaer, MD.** “Observations on Traumatic Stress Utilizing the Model of the “Whiplash Syndrome””[Online] Available: <http://www.traumasoma.com/excerpt2.html> 1997 p.1



“Presumably due to acculturation or neocortical inhibition, **the human species frequently will not discharge this high state of autonomic arousal after a freeze response in the face of perceived trauma, but will suppress the discharge phenomenon, resulting in storage of a high state of autonomic arousal, probably in limbic and procedural memory systems of the brain.**”

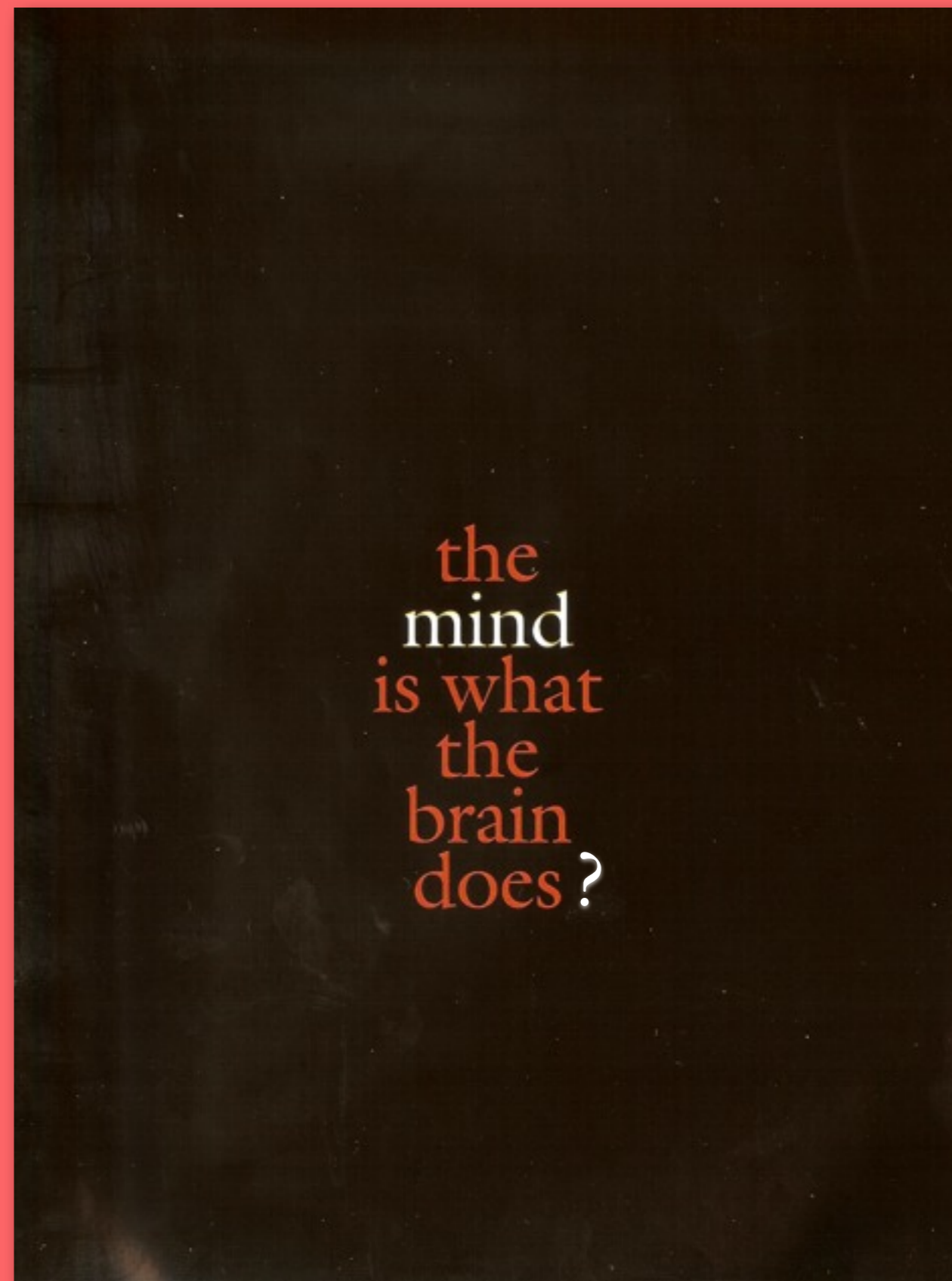
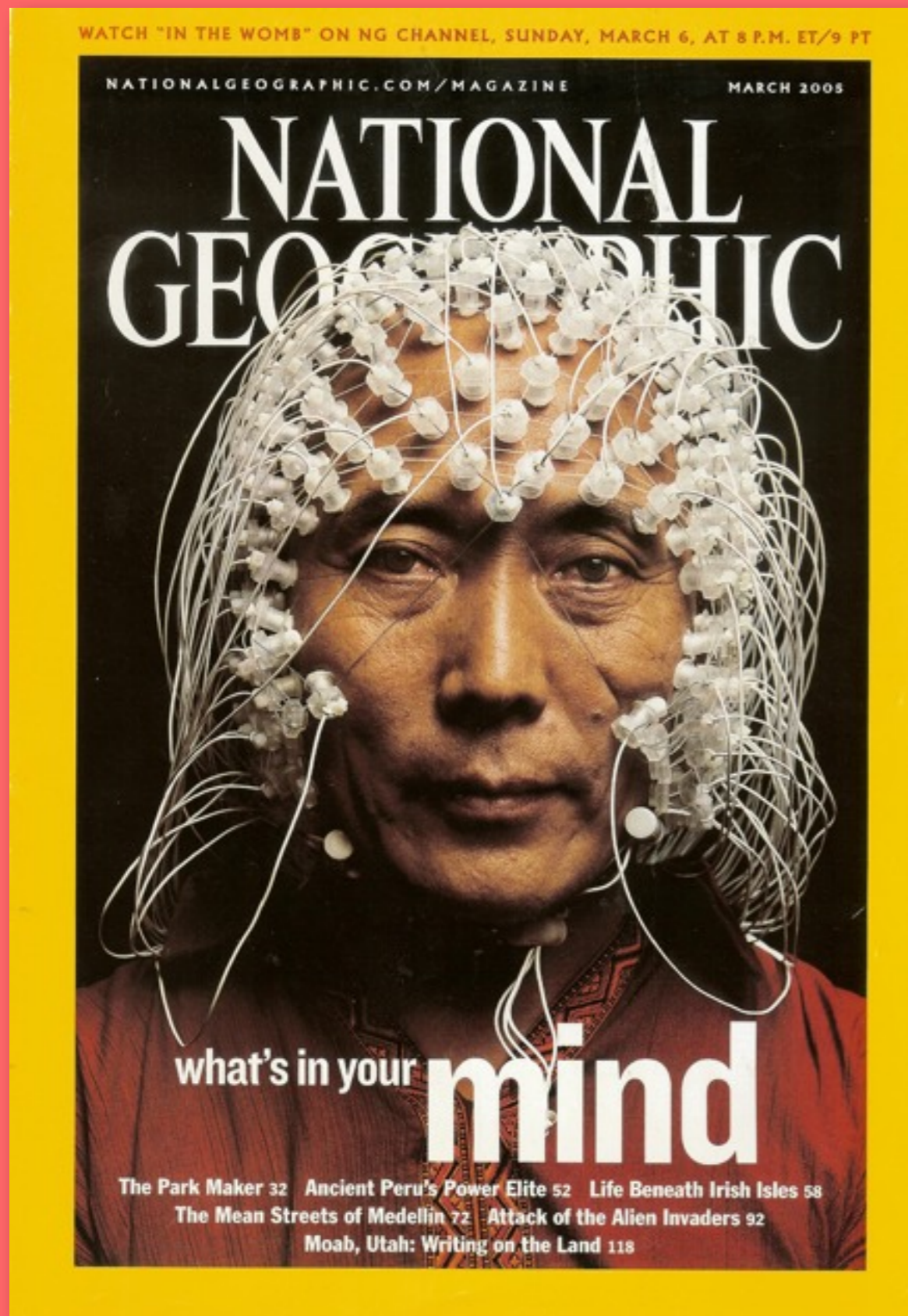
Healing Trauma

-Peter Levine, PhD. *Waking the Tiger* North Atlantic Books 1997



“My observations of scores of traumatized people has led me to conclude that post-traumatic symptoms are, fundamentally, incomplete physiological responses suspended in fear... These symptoms will not go away until the responses are discharged and completed... Energy held in immobility can be transformed...”

Neuroplasticity/Neurogenesis



Anti-Depressants vs. Placebo

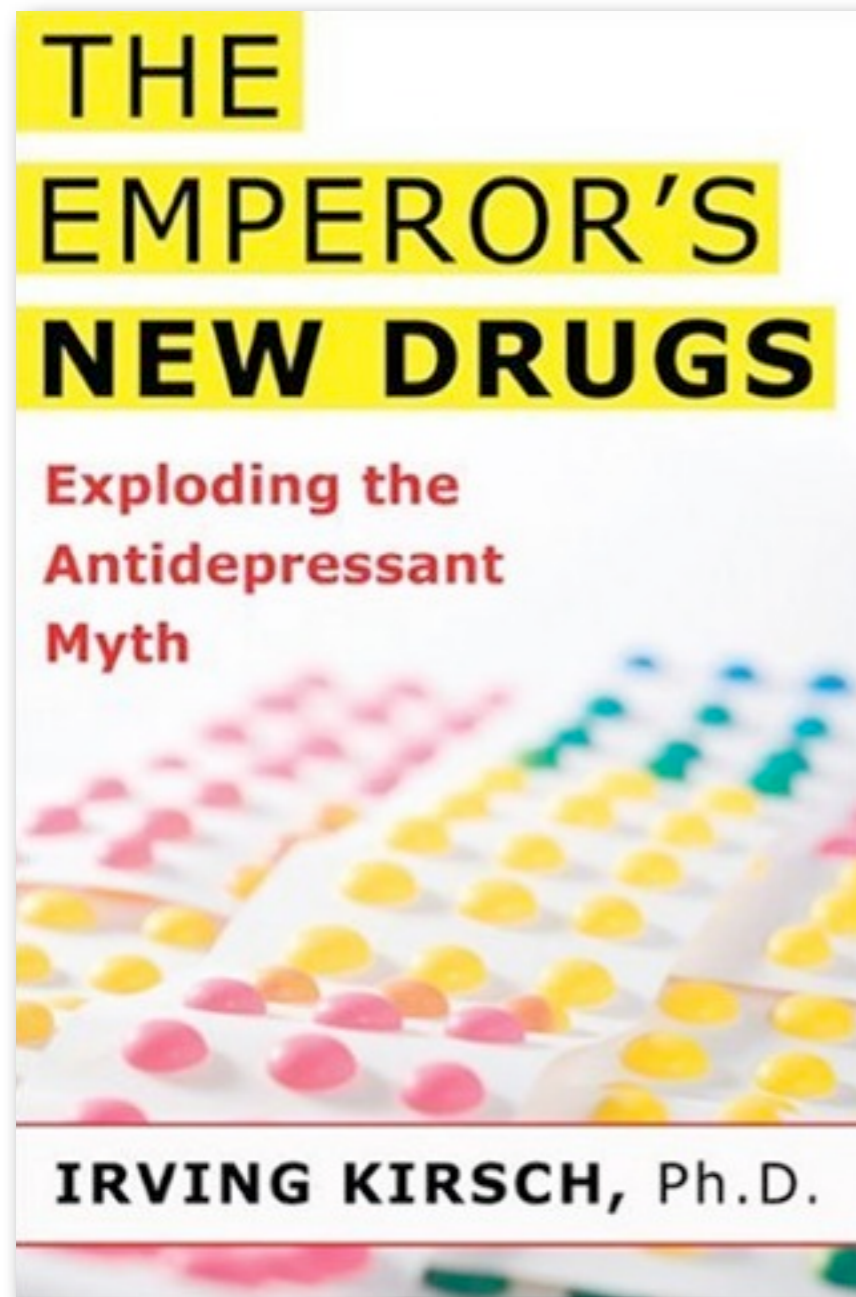
source: JAMA: Journal of American Medical Association [<http://jama.ama-assn.org>] Vol. 303 No. 1, January 6, 2010



“The magnitude of benefit of antidepressant medication compared with placebo increases with severity of depression symptoms and may be minimal or nonexistent, on average, in patients with mild or moderate symptoms...”

Placebo Response

source: **Irving Kirsch, Phd**, FDA trials PLoS Medicine. medicine.plosjournals.org



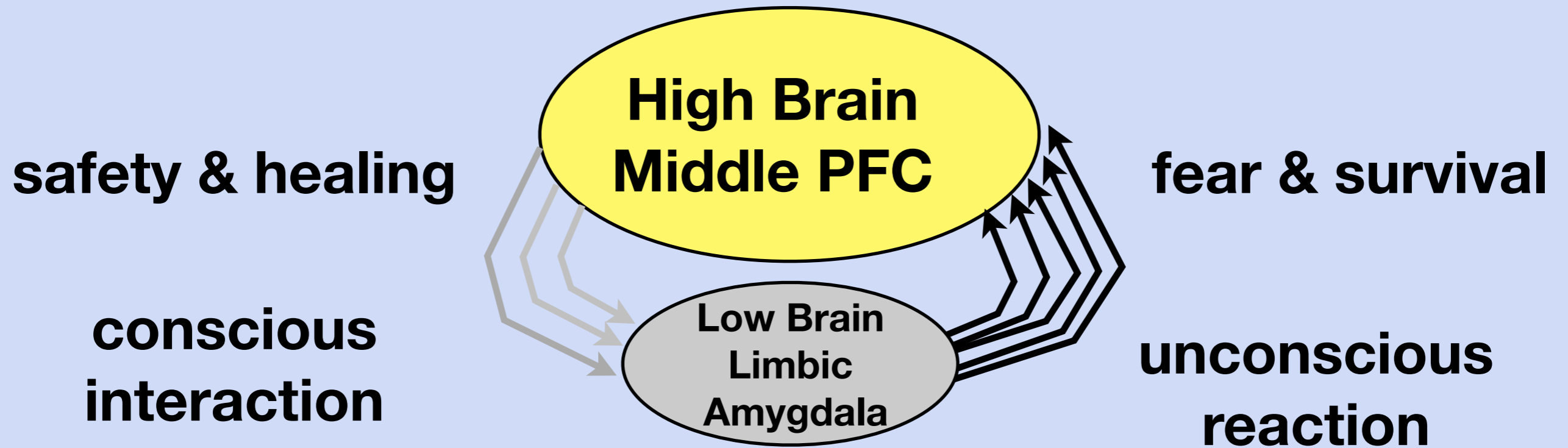
“...There is little evidence to support the prescription of antidepressant medication to any but the most severely depressed patients, unless alternative treatments with fewer side effects have failed.”

Chronic Pain

Frank Porreca and Theodore Price, *When Pain Lingers*. In *Scientific American MIND*. Sept/Oct 2009. p. 34

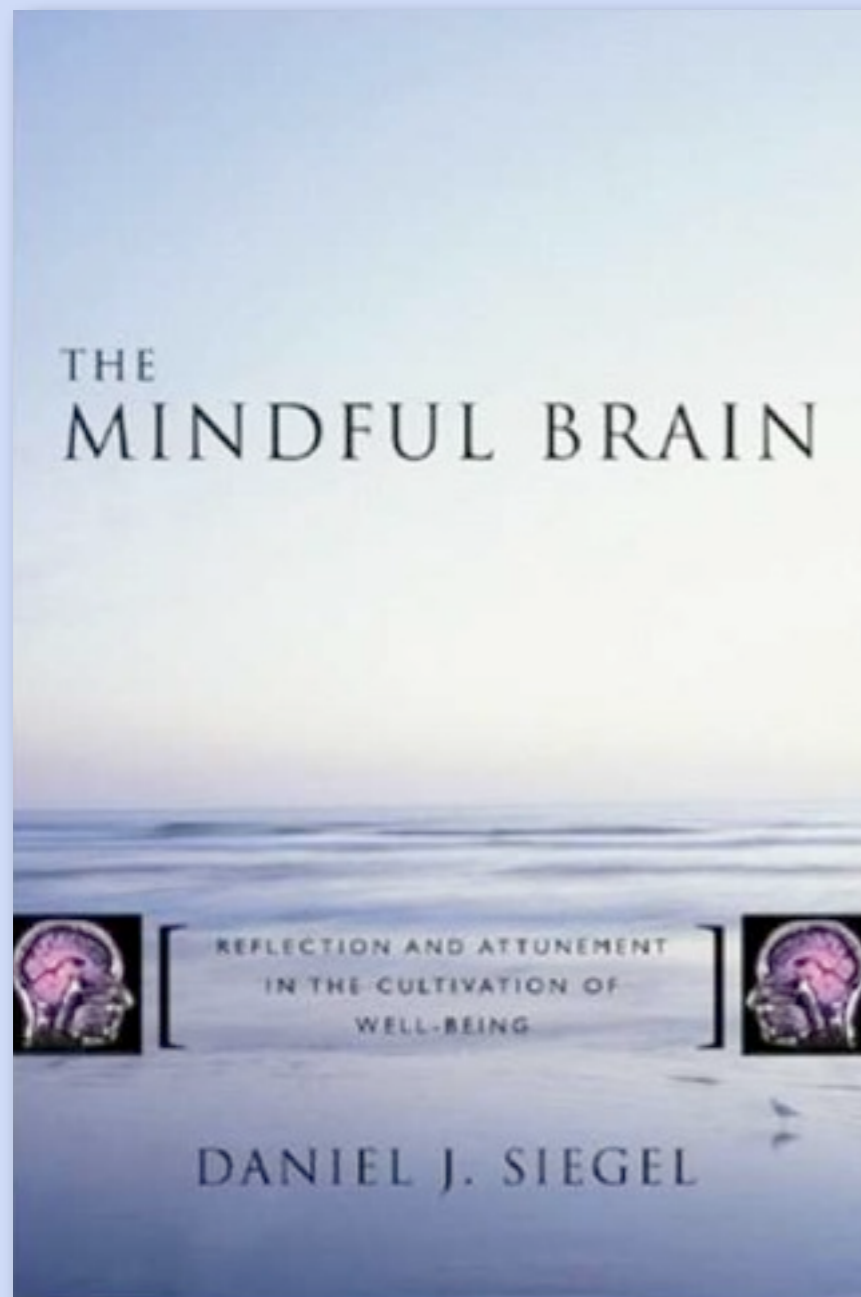
“...15-20% of adults worldwide suffer from persistent, or chronic, pain. Half the primary care patients who develop a chronic pain condition fail to recover within a year according to surveys conducted by the World Health Organization.”

High Brain/Low Brain Communication

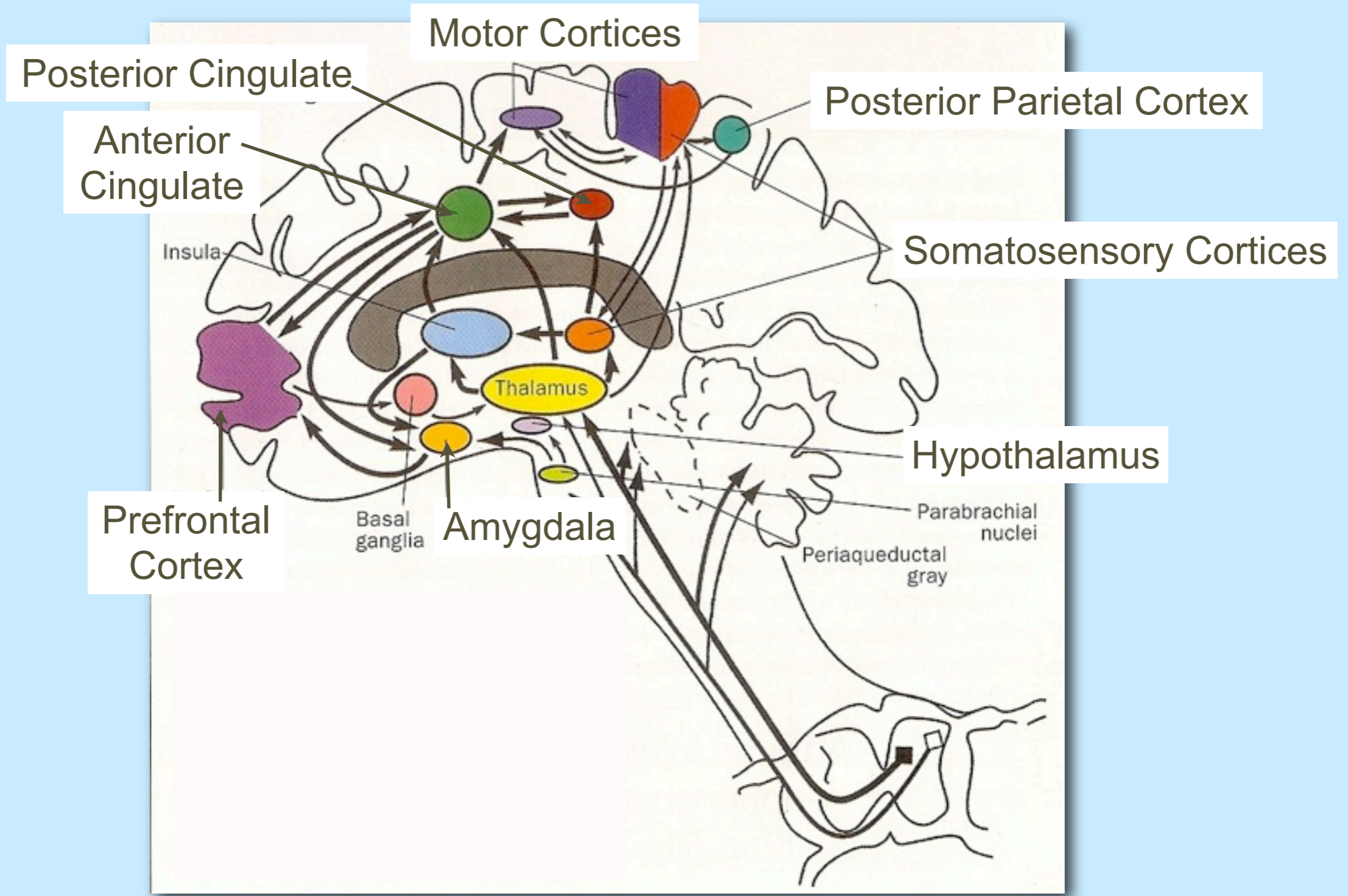


The Pre-Frontal Cortex Nine Functions

Dr. Daniel J. Siegel. “Toward an Interpersonal Neurobiology of Psychotherapy.” 2005. Evolution of Psychotherapy Slide Presentation. <<http://www.drdansiegel.com/>>

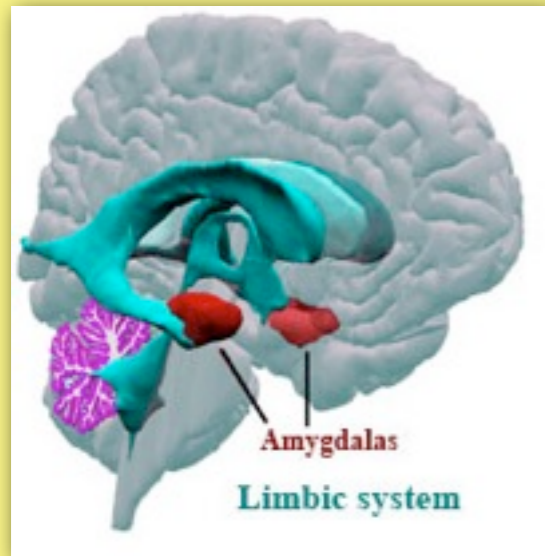


“...the nine functions of the PFC [are]: body regulation, attunement, emotional balance, response flexibility, empathy, self-knowing awareness, fear extinction, intuition, and morality.”



Amygdala

Susan Gaidos, “Cerebral Delights”, Science News, Feb 26, 2011, p.22.



“The Amygdala, a part of the brain known for its role in fear, also helps people spot rewards-and go after them.”

- *In humans and other primates, the amygdala is linked through a complex network of cells to brain regions involved in all 5 senses.*
- **Signals about everything you encounter are passed from the brain’s sensory processing areas directly to the amygdala.**
- *The amygdala shares elaborate communications channels with the prefrontal cortex.*
- *These connections also help you acquire the good things in life, by identifying and assessing rewards such as food, sex, and other delights.*

Dysregulation from Mother to Baby

-Allen N. Schore, PhD. *Affect Dysregulation and Disorders of the Self* W.W. Norton & Co., Inc. NY, NY 2003



“... the caregiver’s dysregulation effect on the infant’s internal state and her poor capacity to psychobiologically regulate excessive levels of high and/or low arousal negative affect, defines a pathomorphogenetic influence.”

*Structural limitations in the mother’s emotion processing right brain are reflected in a poor ability to comfort and regulate her child’s affective states, and these experiences, central to **the intergenerational transmission of psychopathology**, are stamped into the insecurely attached infant’s right orbitofrontal system and its cortical and subcortical connections.*

*...in this manner, severe early adverse developmental experiences may imprint “Neurological scars” that leave behind a permanent physiological reactivity in limbic areas of the brain thereby **inhibiting its capacity to cope with future stressors.**”*

Right Hemisphere and Processing

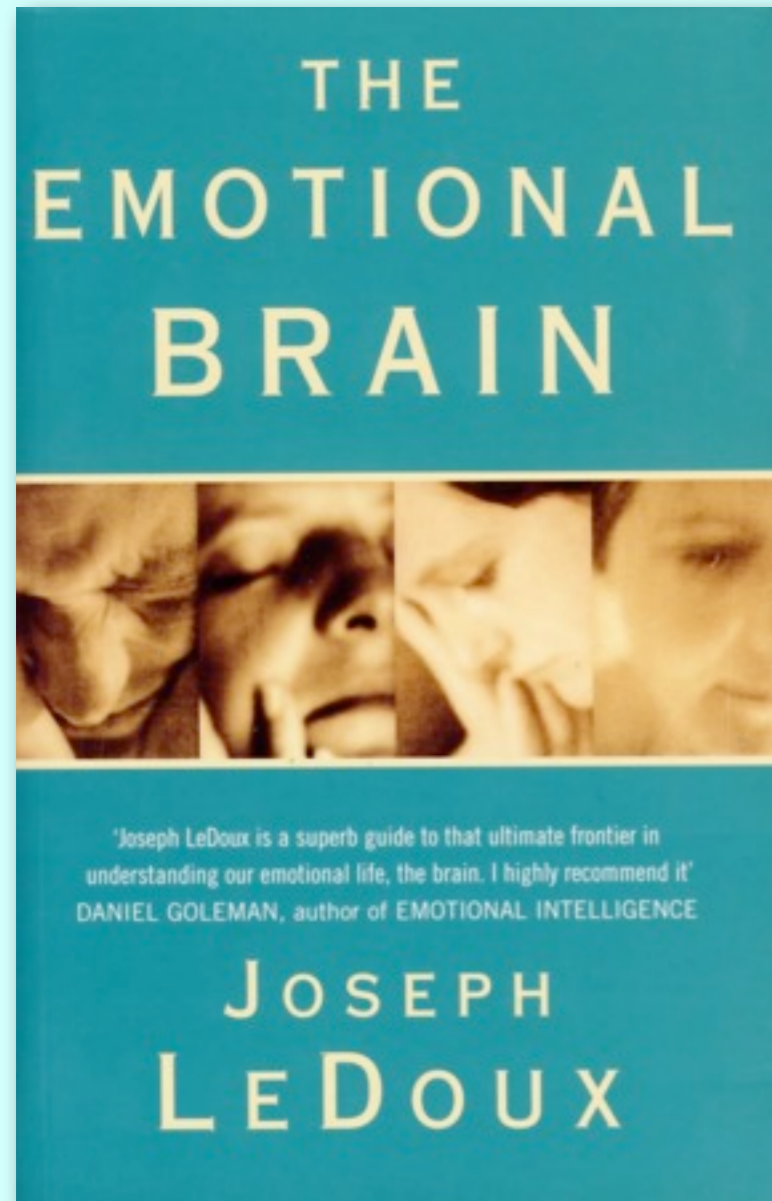
-Allen N. Schore, PhD. *Affect Dysregulation and Disorders of the Self* W.W. Norton & Co., Inc. NY, NY 2003, p. 238.

Because the early developing right hemisphere is, more so than the later maturing left, deeply interconnected into the autonomic, limbic, and arousal systems, it is dominant for the processing of social emotional and bodily information.



Fear & Anxiety

-**Joseph E. LeDoux, PhD**, Center for Neural Science, NYU, author of: The Emotional Brain, 1998; and Synaptic Self, 2002.



Fear:

An emotion caused by the **presence** of real or imagined danger, trouble or misfortune.

Anxiety:

An emotion caused by the **anticipation** of real, remembered, or imagined danger, trouble or misfortune.

Fear

-**Joseph E. LeDoux, PhD**, Center for Neural Science, NYU, author of: The Emotional Brain, 1998; and Synaptic Self, 2002.

Why is fear stored indelibly?

- If you forget what harmed you in the past your ability to survive is compromised.
- Evolution places a high value on not having to re-learn about danger

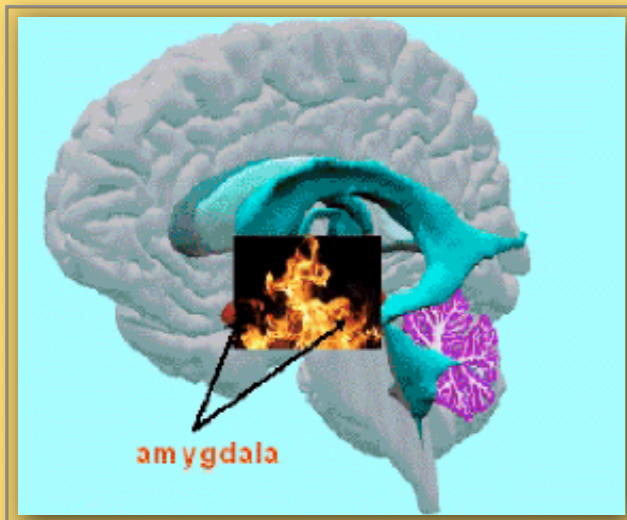
Fear

-**Joseph E. LeDoux, PhD**, Center for Neural Science, NYU, author of: The Emotional Brain, 1998; and Synaptic Self, 2002.

Two Problems With Memory

- Sometimes we can't remember
- Sometimes we can't forget
**fear, stress, and trauma form indelible memories*

Amygdala: Fear Center



*“As we merge deeper into self, the very door of fear, buried in the region of the subcortical or limbic brain called the Amygdala begins to part. **Amygdala fear is old, irrational and unconscious, it holds onto the past, keeping us frozen and ever vigilant.**”*

*The amygdala forms emotional memories in response to certain sensations, sounds, smells, images etc. that have become connected with prior painful, threatening or traumatic experience. **The Amygdala will never yield to the cognitive mind. Only the middle prefrontal cortex has the power to rewire the brain (neurogenesis) and slay this dragon.**”*

-Dr. Paul Canali

How Stress takes its Toll

HOW STRESS TAKES ITS TOLL

Like its more severe cousin depression, ordinary stress is harmful to the body as well as the mind. Stress comes in two forms, each with its own biochemistry

ACUTE
A response to imminent danger, it turbocharges the system with powerful hormones that can damage the cardiovascular system

CHRONIC
Caused by constant emotional pressure the victim can't control, it produces hormones that can weaken the immune system and damage bones

1 A stress response starts in the brain ...

When the brain detects a threat, a number of structures, including the hypothalamus, amygdala and pituitary gland, go on alert: they exchange information with each other and then send signaling hormones and nerve impulses to the rest of the body to prepare for fight or flight

2 ... and the body unleashes a flood of hormones ...

Adrenal glands react to the alert by releasing epinephrine (adrenaline), which makes the heart pump faster and the lungs work harder to flood the body with oxygen

The adrenal glands also release extra cortisol and other glucocorticoids, which help the body convert sugars into energy

Nerve cells release norepinephrine, which tenses the muscles and sharpens the senses to prepare for action. Digestion shuts down

3 ... that can cause significant damage

When the threat passes, epinephrine and norepinephrine levels drop, but if danger comes too often they can damage the arteries. Chronic low-level stress keeps the glucocorticoids in circulation, leading to a weakened immune system, loss of bone mass, suppression of the reproductive system and memory problems

Arteries widen
Heart beats faster
Lungs ventilate faster
Muscles tense
Adrenal glands release hormones
Stomach, digestion shuts down

Graphic by Lon Tweeten and Joe Lertola
Text by Michael Lemonick

Chronic Stress



“You can give a guy a drug-coated stent, but if you don’t fix the stress problem, it won’t really matter. Stress is the long term risk factor, everything else is a short term fix.”

-Robert Sapolsky, PhD

Chronic Stress/Trauma = Survival Mode



Living in Survival Mode is not living. There are varying degrees of severity. It is unconscious to us, and we accept that this is the way life is.

Survival Mode shuts down self-awareness (somatic dissociation); it causes loss of body communication and feedback. This loss opens the door for all kinds of disease and suffering to creep up on us while we are numb and unaware of what is going on...

*This condition creates a loss of joy, increased anxiety, and a fear-based physiology—a defensive self. **We become unable to receive deep pleasure and love.** This state is responsible for an incredible amount of suffering which negatively impacts humanity as a whole as our minds can find no peace, and we become lost in an endless stream of thought fears and worries...*

However, our bodies have the capability to turn off this condition. The system for rebalancing is already built in (**Homeostatic Reflex**) and waiting to be activated. It simply needs help from a skilled therapist who knows the language.

Survival Mode

Anxiety and panic attacks are prime examples of this phenomenon. Survival Mode is when our nervous systems are essentially **arrested in a physiological state of fear.**

This frozen state of trapped energy in the body can wreak havoc on our bodies and minds, without us being aware of what is happening to us. **It can be exactly like having your foot on the car's accelerator and brake at the same time.**

Working against ourselves without knowing it, we can burn out the balancing mechanisms of our Autonomic Nervous System, and develop numerous and varied emotional and physical symptoms.

Anxiety Disorders

source: **National Institute of Mental Health:** <http://www.nimh.nih.gov> 1. Kessler RC, Chiu WT, Demler O, Walters EE. **Prevalence, severity, and comorbidity of twelve-month DSM-IV disorders in the National Comorbidity Survey Replication (NCS-R).** *Archives of General Psychiatry*, 2005 Jun;62(6):617-27.

Anxiety Disorders affect about 40 million American adults age 18 years and older (about 18%) in a given year,¹ causing them to be filled with fearfulness and uncertainty. Unlike the relatively mild, brief anxiety caused by a stressful event (such as speaking in public or a first date), anxiety disorders last at least 6 months and can get worse if they are not treated. Anxiety disorders commonly occur along with other mental or physical illnesses, including alcohol or substance abuse, which may mask anxiety symptoms or make them worse.

Anxiety Disorders

source: National Institute of Mental Health: <http://www.nimh.nih.gov>

- **Generalized Anxiety Disorder:**
6.8 million, 3.1%, Adult Americans
- **Obsessive-Compulsive Disorder (OCD)**
2.2 million, 1.0%, Adult Americans
- **Panic Disorder**
6 million, 2.7%, Adult Americans
- **Post-Traumatic Stress Disorder (PTSD)**
7.7 million, 3.5%, Adult Americans
- **Social Phobia (or Social Anxiety Disorder)**
15 million, 6.8%, Adult Americans

Homeostasis: Unifying Principle of Biology

- Homeostasis is the ability to maintain a constant internal environment in response to environmental changes. It is a unifying principle of biology.
Source: <http://biology.about.com/od/biologydictionary/g/homeostasis.htm>
- A relative constancy in the internal environment of the body, naturally maintained by adaptive responses that promote healthy survival.
Source: Mosby's Medical, Nursing, and Allied Health Dictionary
- The tendency of an organism or a cell to regulate its internal conditions, usually by a system of feedback controls, so as to stabilize health and functioning, regardless of the outside changing conditions. The ability of the body or a cell to seek and maintain a condition of equilibrium or stability within its internal environment when dealing with external changes
Source: www.biology-online.org/dictionary/Homeostasis

Allostasis Definition

Source: **Allostasis is essential in order to maintain internal viability amid changing conditions** (Sterling and Eyer, 1988; McEwen, 1998a, 1998b; Schulkin, 2003).

Adaptation in the face of stressful situations and stimuli involves activation of neural, neuroendocrine and neuroendocrine-immune mechanisms. This adaptation has been called "[allostasis](#)" or "maintaining stability through change", which is an essential component of maintaining [homeostasis](#).

Allostatic Load

The main hormonal mediators of the stress response, cortisol and epinephrine (adrenaline), have both protective and damaging effects on the body. In the short run, they are essential for adaptation, maintenance of homeostasis, and survival “allostasis”.

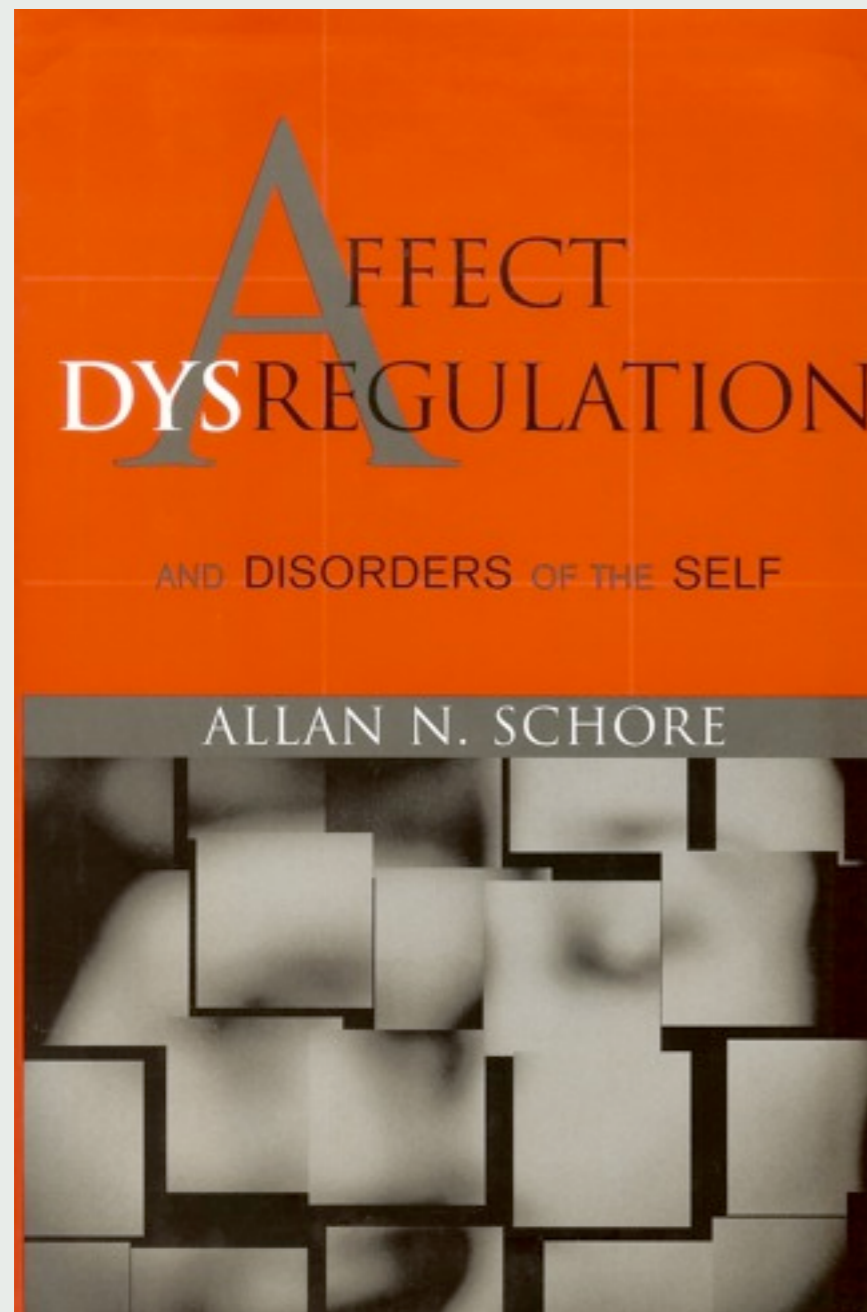
Yet, over longer time intervals, when called upon frequently, they exact a cost “allostatic load” that can accelerate disease processes. Allostatic load can be measured in physiological systems as chemical imbalances in autonomic nervous system, central nervous system, neuroendocrine, and immune system activity as well as perturbations in the diurnal rhythms, and, in some cases, plasticity changes to brain structures.

4 Conditions that lead to **Allostatic Load**:

- Repeated frequency of stress responses to multiple novel stressors;
- Failure to habituate to repeated stressors of the same kind;
- Failure to turn off each stress response in a timely manner due to delayed shut down; and
- Inadequate response that leads to compensatory hyperactivity of other mediators.

Disorders of Affect Regulation

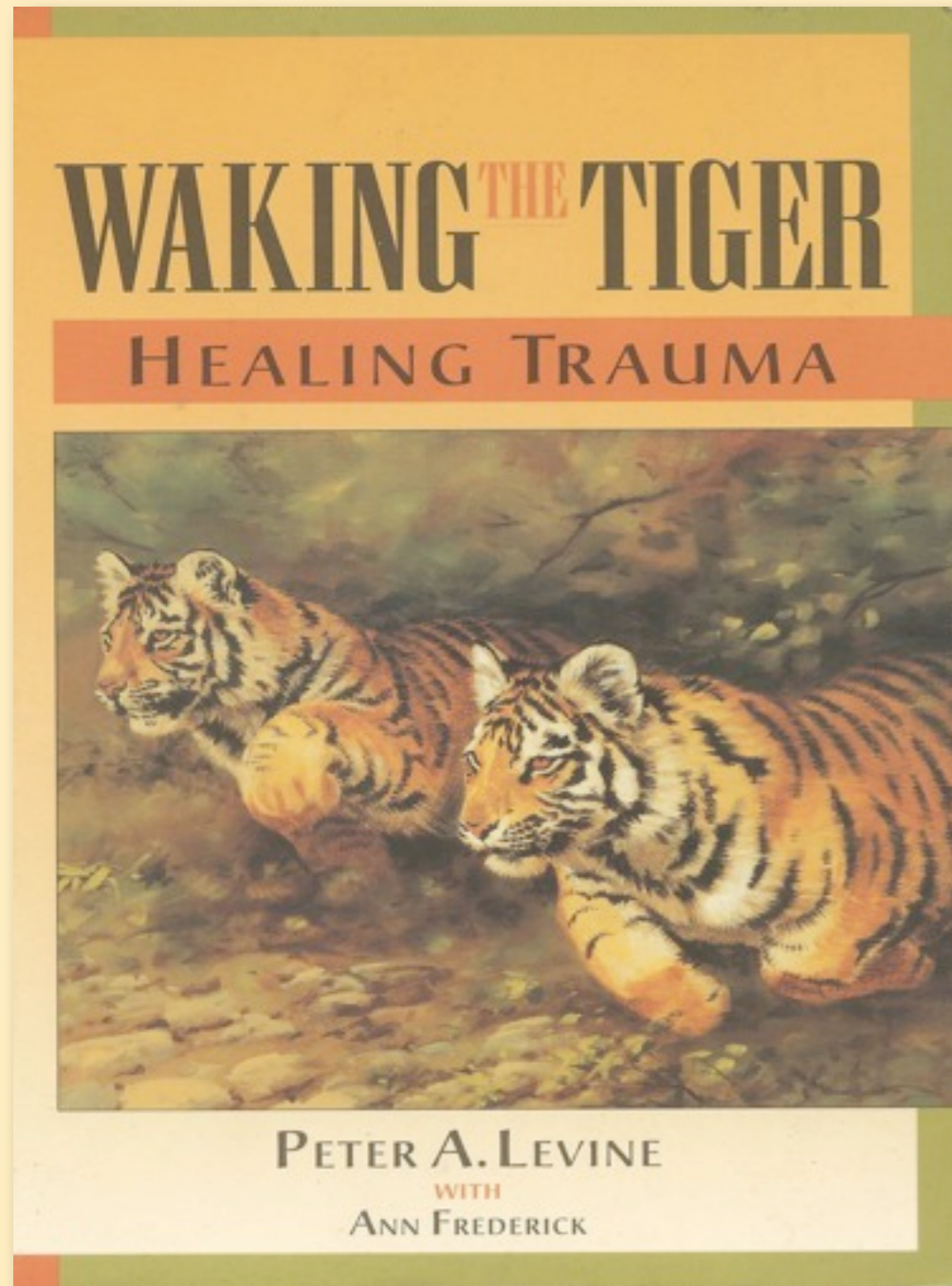
-Allen N. Schore, PhD. *Affect Dysregulation and Disorders of the Self* W.W. Norton & Co., Inc.
NY, NY 2003



*“The concept of disorders of affect regulation is consistent with a growing realization in medicine and psychiatry that **most illnesses and diseases are the result of dysregulations within the vast network of communicating systems that comprise the human organism.**”*

Traumatic Effects

--Peter Levine, PhD. *Waking the Tiger* North Atlantic Books 1997

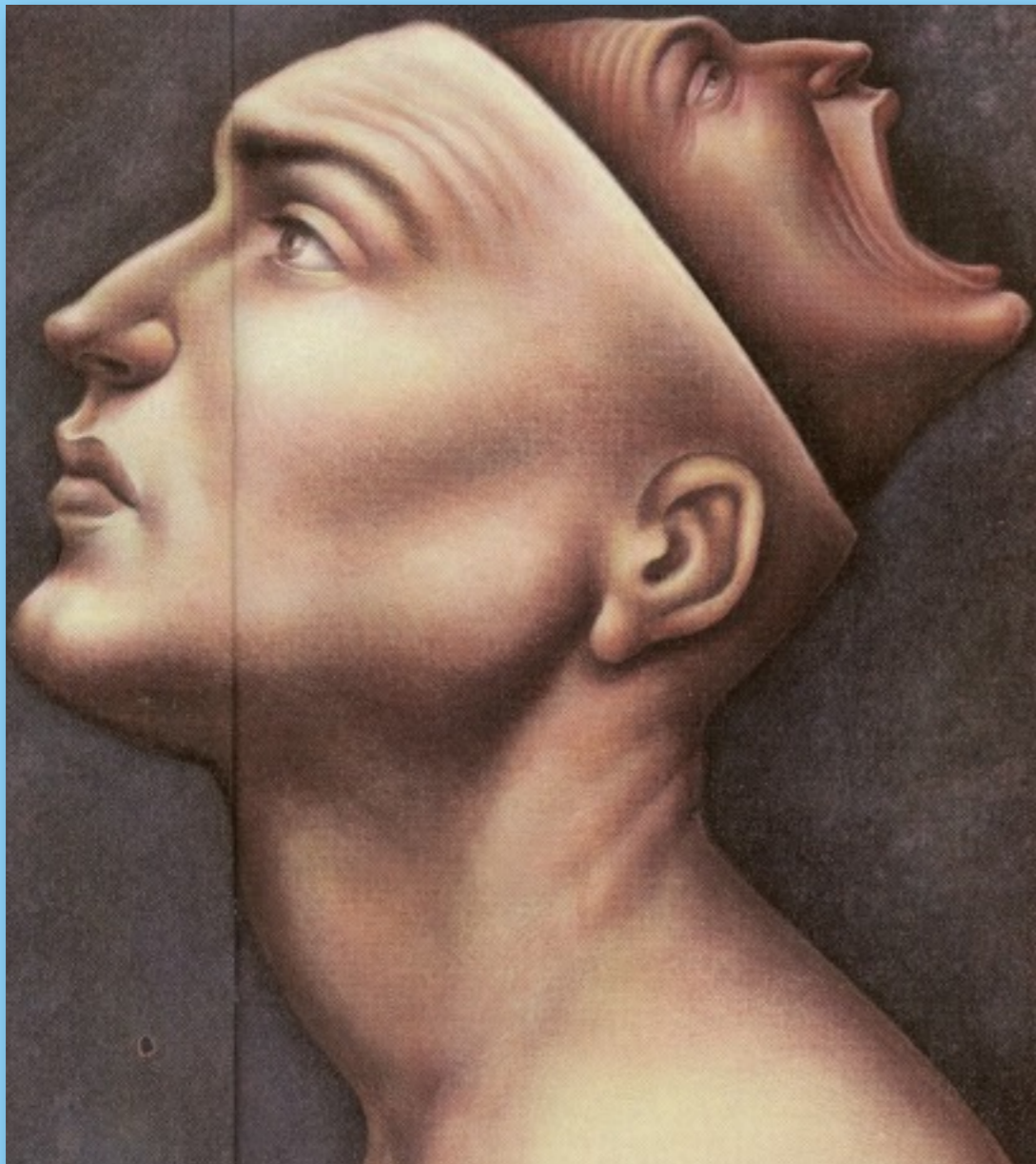


“Common occurrences can produce traumatic after-effects that are just as debilitating as those experienced by veterans of combat or survivors of childhood abuse.

Traumatic effects are not always apparent immediately following the incidents that caused them. Symptoms remain dormant, accumulating over years or even decades.

Then, during a stressful period, or as the result of another incident, they can show up without warning. There may also be no indication of the original cause. Thus, a seemingly minor event can give rise to a sudden breakdown, similar to one that might be caused by a single catastrophic event.”

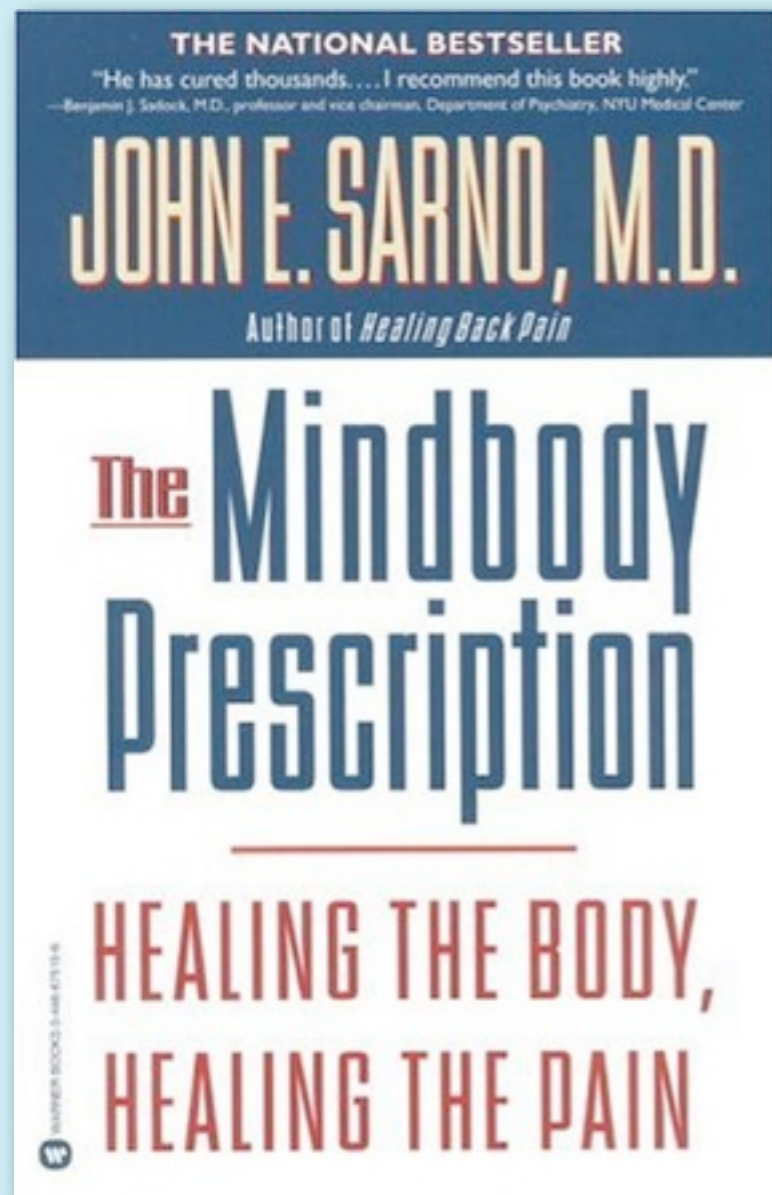
The Most Common Misdiagnosis in Medicine



Somatization and conversion of emotional and repressed feelings, personality disturbances and unconscious psychobiological states are responsible for an incredible amount of misdiagnosis and human suffering.

Mindbody Prescription

-John E. Sarno, MD, *The Mindbody Prescription: Healing the Body, Healing the Pain*

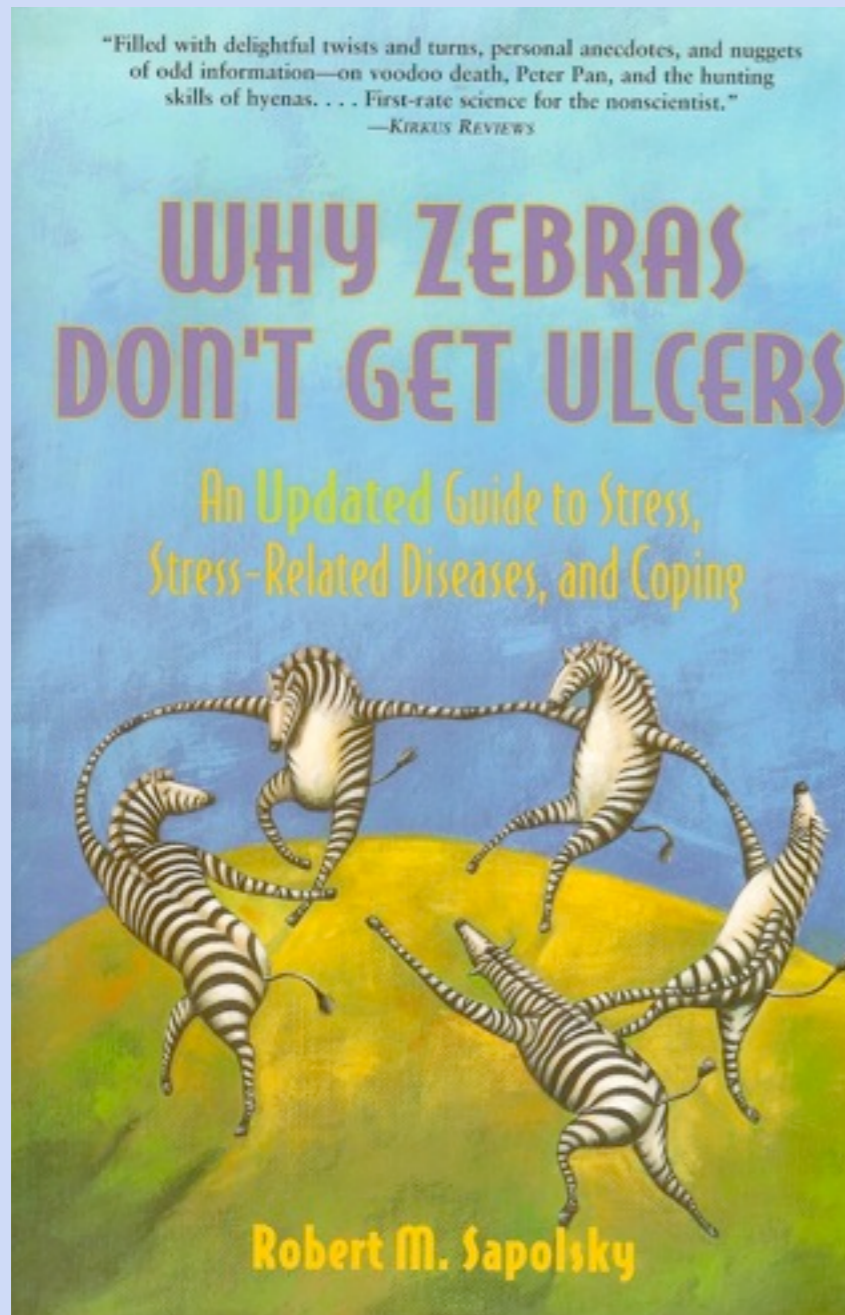


“Once the patients...become aware of the brain strategy to divert attention away from emotions and onto the body, their physical symptoms usually disappear.”

Sarno and others have repeatedly demonstrated that a shift in consciousness of the somatization process alone can often have profound effects on our physical health.

Stress and Our Biology

-Robert M. Sapolsky, Neuroscientist At Stanford University, Why Zebras Don't Get Ulcers (NY,NY: W.H.Freeman & Co., 1998) p. 2-3

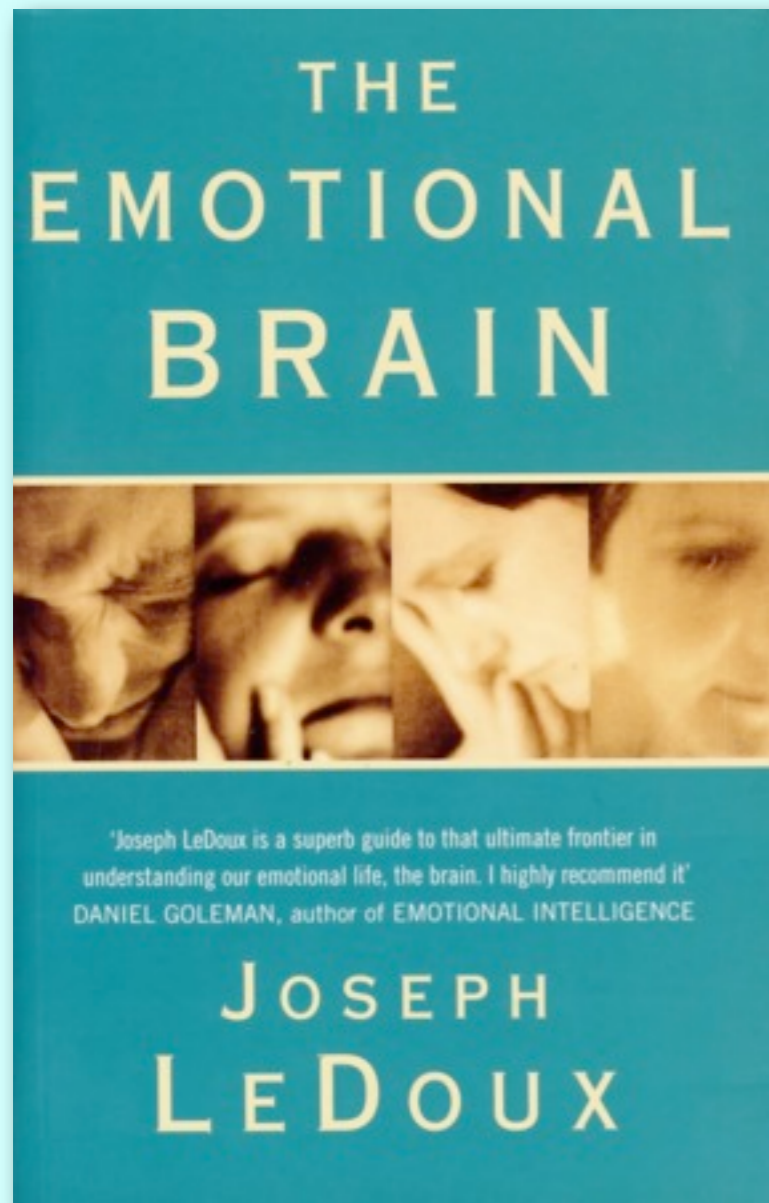


“...we have come to recognize the vastly complex intertwining of our biology and our emotions, the endless ways in which our personalities, feelings, and thoughts both reflect and influence the events in our bodies...”

*...extreme emotional disturbances can adversely affect us...**stress can make us sick, and a critical shift in medicine had been the recognition that many of the damaging diseases of slow accumulation can either be caused or made far worse by stress.**“*

Fear & Anxiety

-**Joseph E. LeDoux, PhD**, Center for Neural Science, NYU, author of: The Emotional Brain, 1998; and Synaptic Self, 2002.



“Fear and its more persistent cousin, anxiety, is at the roots of almost all emotional disorders.”

Assessing PTSD

source: **United States Department of Veterans Affairs:** www.ptsd.va.gov

- Neurobiological research indicates that PTSD may be associated with stable **neurobiological alterations** in both the **central and autonomic nervous systems**. Psychophysiological alterations associated with PTSD include **hyper-arousal of the sympathetic nervous system**, increased sensitivity and augmentation of the acoustic-**startle** eye blink reflex, and sleep abnormalities.
- Neuropharmacologic and neuroendocrine abnormalities have been detected in most brain mechanisms that have evolved for coping, adaptation, and preservation of the species. These include the noradrenergic, hypothalamic-pituitary-adrenocortical, serotonergic, glutamatergic, thyroid, endogenous opioid, and other systems.
- Structural brain imaging suggests **reduced volume of the hippocampus** and anterior cingulate.
- Functional brain imaging suggests **excessive amygdala activity and reduced activation of the prefrontal cortex**.

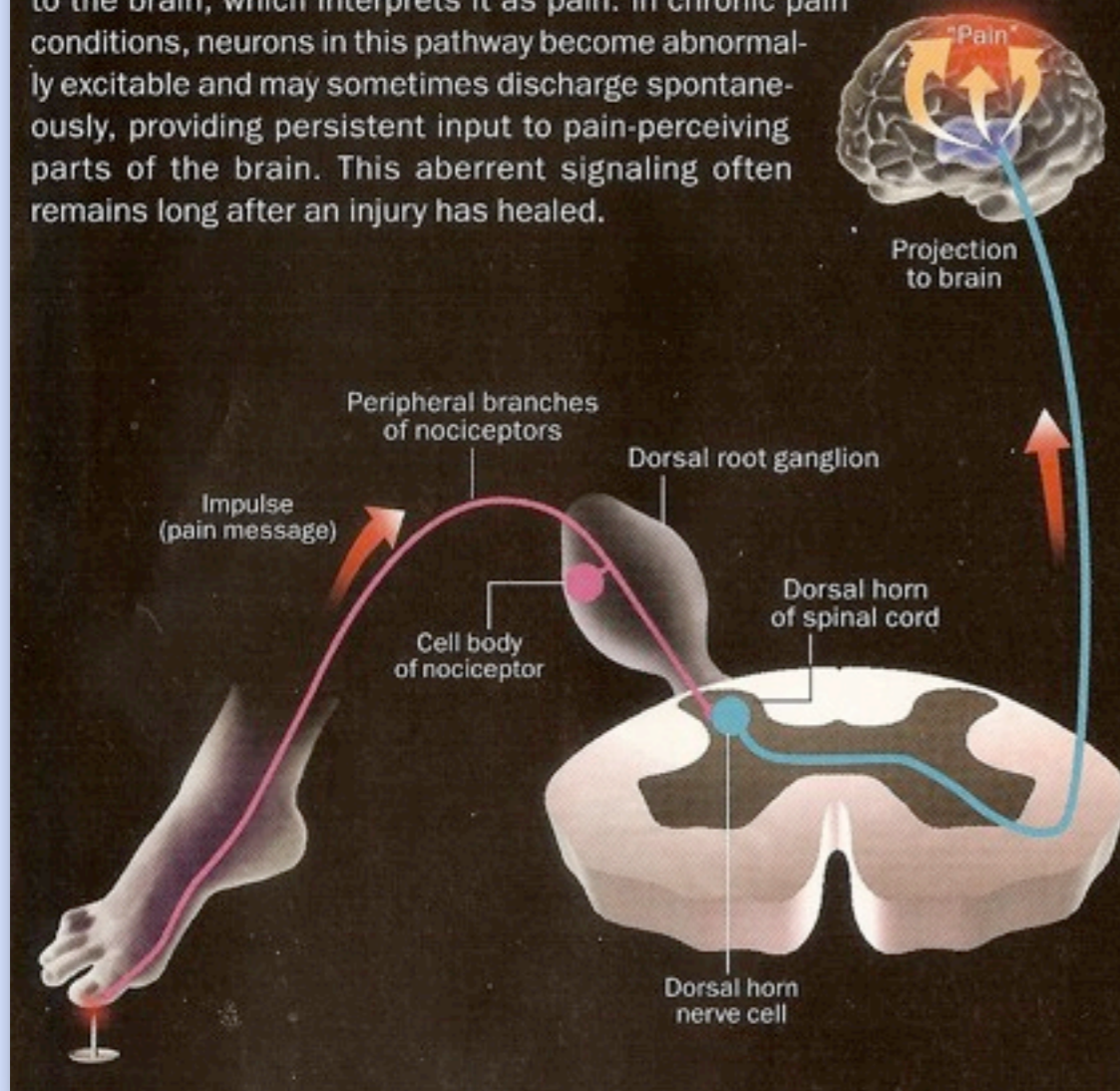
Pain Perception

Chronic Pain

-Frank Porreca and Theodore Price, *When Pain Lingers*. In *Scientific American MIND*. Sept/Oct 2009. p. 37

Perceiving Pain

In a healthy system for perceiving pain, a tissue injury causes pain-sensing nerve cells, or nociceptors (*pink*), to send a message to nerve cells in the dorsal horn of the spinal cord. These spinal cord cells pass the message to the brain, which interprets it as pain. In chronic pain conditions, neurons in this pathway become abnormally excitable and may sometimes discharge spontaneously, providing persistent input to pain-perceiving parts of the brain. This aberrant signaling often remains long after an injury has healed.



“In a healthy system for perceiving pain, a tissue injury causes pain-sensing nerve cells, or nociceptors (*pink*), to send a message to nerve cells in the dorsal horn of the spinal cord. These spinal cord cells pass the message to the brain, which interprets it as pain.

In chronic pain conditions, neurons in this pathway become abnormally excitable and may sometimes discharge spontaneously, providing persistent input to pain-perceiving parts of the brain. This aberrant signaling often remains long after an injury has healed.”

Loss rips us apart

-Daniel J. Siegel, MD, Mindsight (NY,NY: Bantam Books. Inc., 2010) p. 6



“Indeed, the parts of our brain that process physical pain overlap with the neural centers that record social ruptures and rejection. Loss rips us apart.”

Subjective Health Complaints, Sensitization & Sustained Cognitive Activation (Stress)

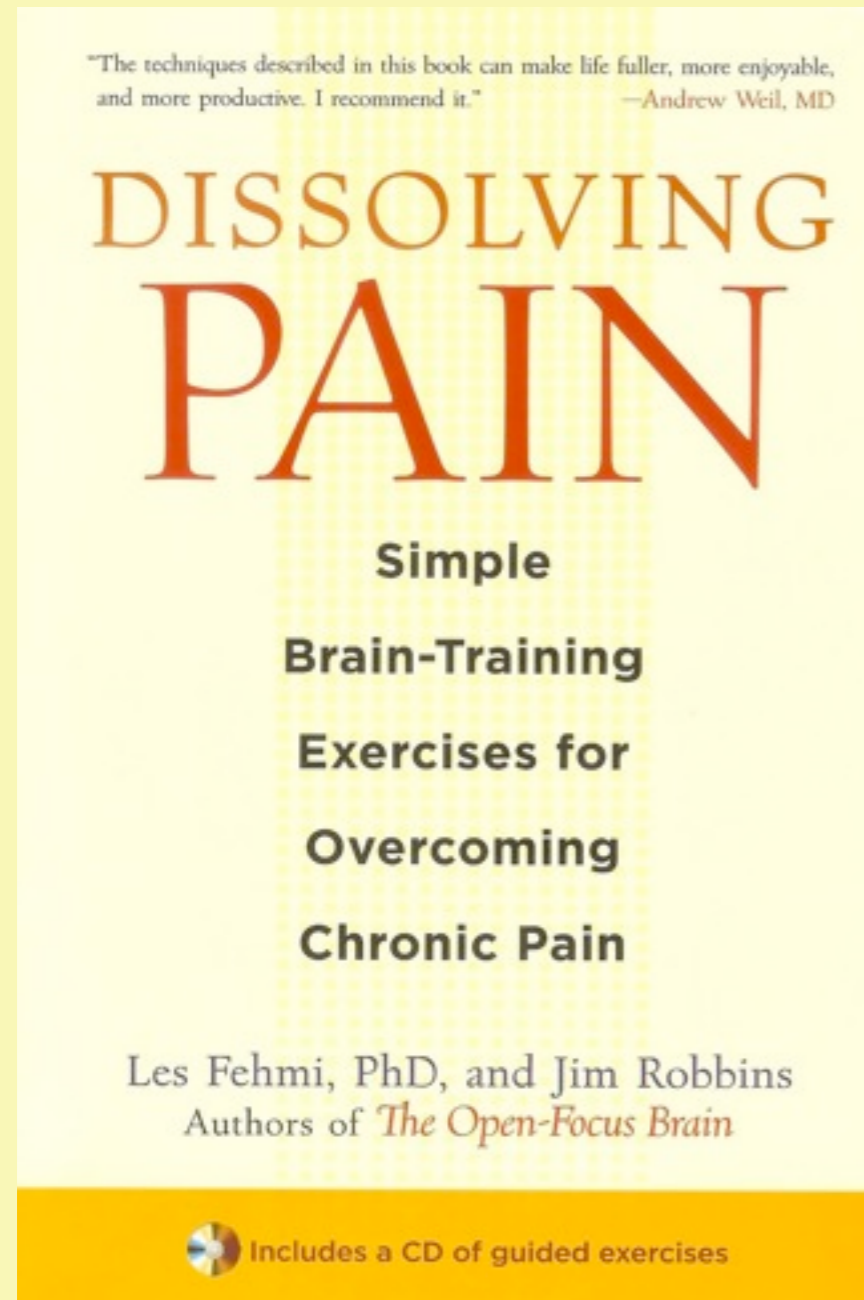
H.R. Eriksen, H. Ursin, Dept. of Biological and Medical Psychology, University of Bergen.
Subjective Health Complaints, Sensitization, and Sustained Cognitive Activation (Stress), Journal of Psychosomatic Research, v.56, Issue 4, April 2004, pp.445-448.

Recent survey of 1240 individuals: 96% reported they had experienced at least one type of complaint during the preceding 30 days:

- muscular skeletal: 80%
 - pseudoneurological: 65%
 - gastrointestinal: 60%
- Subjective health complaints are common-last month most of us have had one or more complaints. The severity and interference with our daily quality of life varies. [People who are sensitized] have frequent visits to general practitioners and represent a major source of sickness, compensation, and permanent disabilities in industrialized countries. Their main concern is a sensitization and increased attention to sensations from what basically may be normal physiological processes. Therapy should be directed to improve understanding of these processes in the patient and in the therapeutic community.

Directing Attention/Open Focus

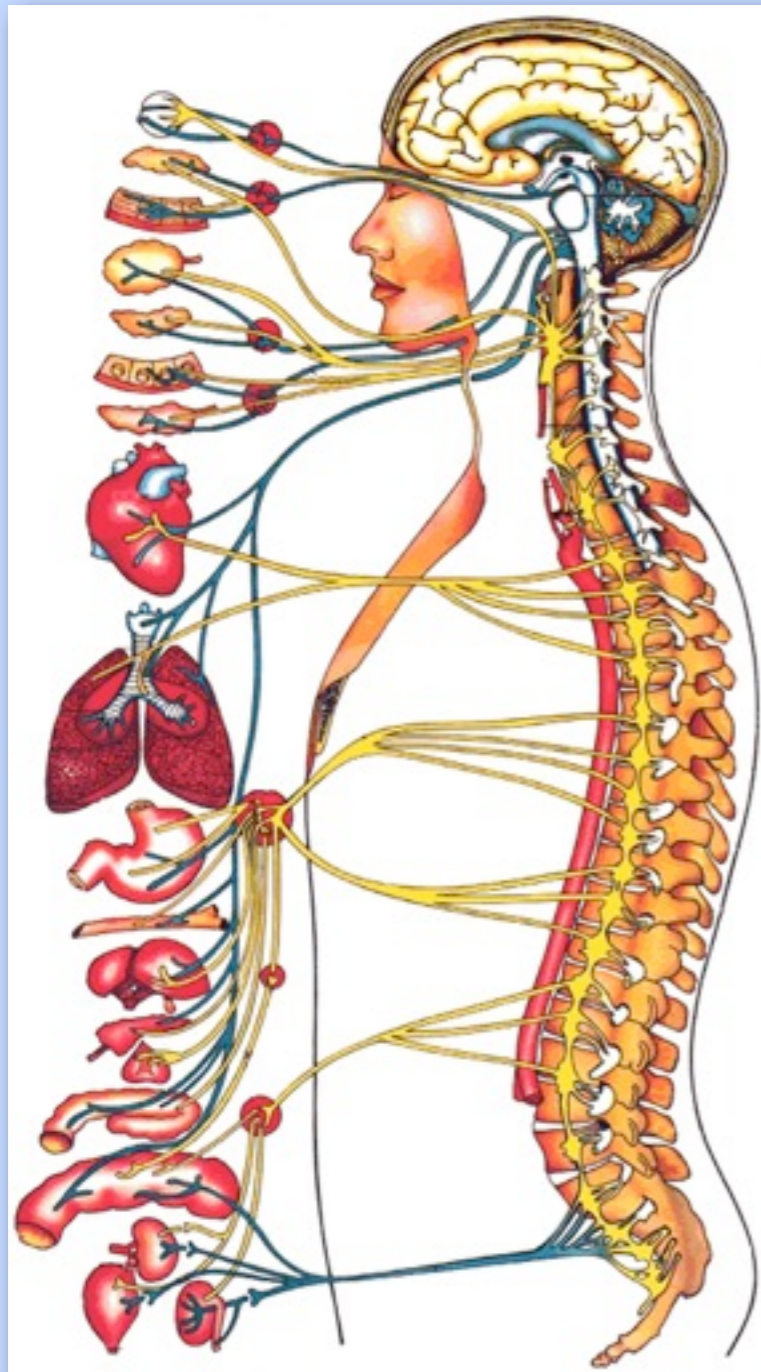
-**Les Fehmi, PhD**, Director of the Princeton Biofeedback Center, & **Jim Robbins**, [Dissolving Pain](#) (Trumpeter Books, 2010) p.71



“Evolution, however, did not give us pain without giving us anti-pain: we are equipped with an innate and robust normalizing mechanism in the human body, accessed and operated not by diverting our attention but by broadening our scope of awareness and becoming more subtle and sensitive in how we pay attention.”

The Autonomic Nervous System

source: **The Ansar Group** [Online] Available: <http://www.ans-hrv.com> 2005.



“ The Autonomic Nervous System influences every cell in the body.”

“...most illness and injuries cause or result from an imbalance between the branches of the Autonomic Nervous System.”

Sympathetic & Parasympathetic

source: The Ansar Group [Online] Available: <http://www.ans-hrv.com> 2005.

The ANS influences every cell in the body through its two branches :

In general, the sympathetic is responsible for mediating energy expenditure, while the parasympathetic is responsible for energy conservation and restoration.

For example, the **sympathetic** mediates the "**fight or flight**" response and the **body's response to stress**, pain, and cold. Thus, the sympathetic causes higher heart rates and respiratory rates, shunting blood from the extremities to core organs and muscles (e.g., running or shivering), etc.

The parasympathetic mediates **resting states** after meals and at night, digestion and nutrient storage, and recovery states by helping to coordinate **immune responses and healing**. Thus, the parasympathetic causes slower heart rates and respiratory rates, sleep, increased gastrointestinal track motility, increased peripheral vascular flow, blood flow to all cells, liver and kidneys, and venous return to the heart.

Autonomic Nervous System Balance

source: The Ansar Group [Online] Available: <http://www.ans-hrv.com> 2005.

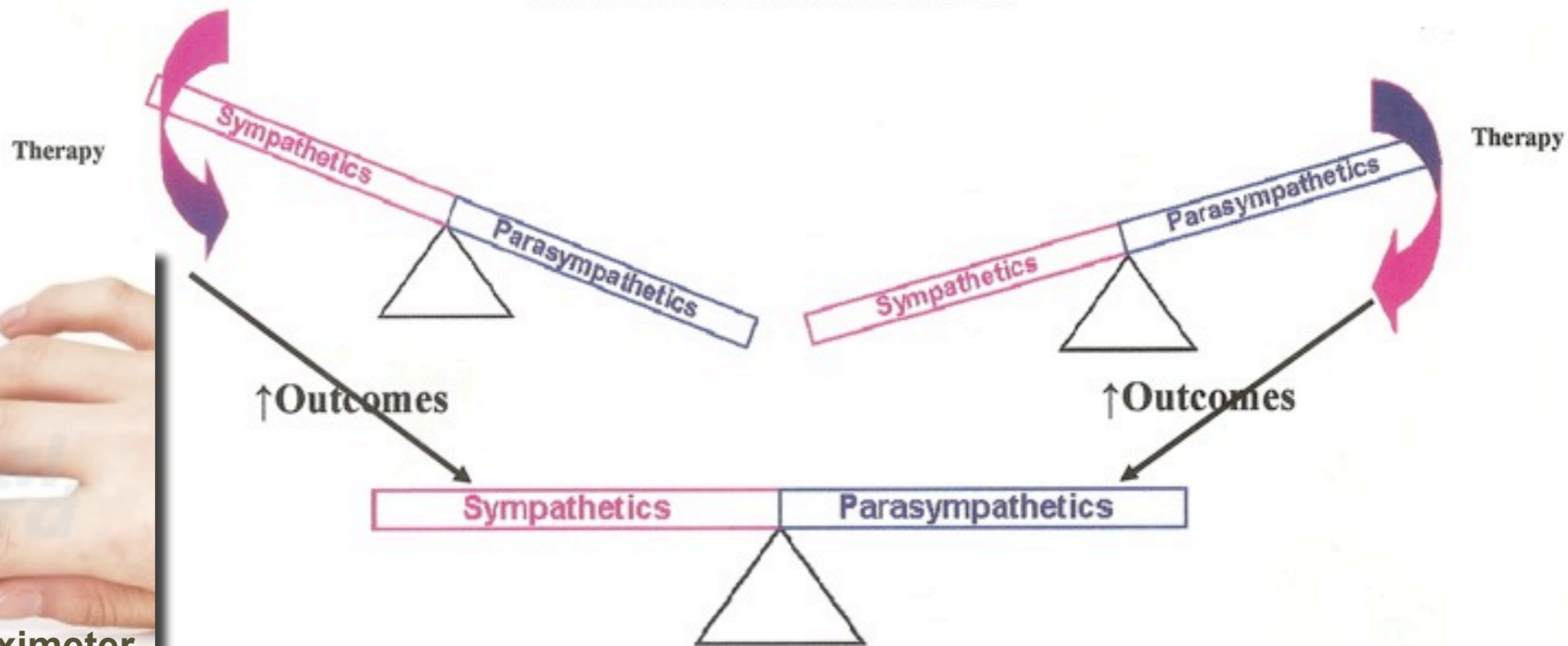
When the ANS affects a change in the body (e.g., heart rate or respiratory rate), it works only to cause the change. The ANS then returns to its baseline state. So, periodic excursions in one or the other branch from baseline are normal and expected as long as the ANS returns to baseline in a timely manner.

Persistently elevated levels of tone in one or the other branch are not healthy. The general action of each of the branches of the ANS is to oppose the other. As one branch begins to work the other branch begins to return it to baseline.

Consequently, persistently elevated tone in one branch can result in a persistently depressed tone in the other. This only serves to compound an unhealthy situation. So, balance between the branches is as important as overall tone in each of the branches.



Serial Autonomic Function Assessment



Finger Pulse Oximeter

Restoring autonomic balance improves outcomes, preserves quality of life*, and promotes longevity.

*(eating, sleeping, going to the bathroom, having sex)

-The Ansar Group [Online] Available: <http://www.ans-hrv.com> 2005.

Autonomic Nervous System

source: National Dysautonomia Research Foundation, NDRF, 1999. <<http://www.ndrf.org>>

The normal functioning of the autonomic nervous system day and night, from heartbeat to heartbeat, plays a largely unconscious but vital role in our livelihood.

It is not surprising, therefore, that autonomic abnormalities, though they are usually more difficult to recognize than a severe pain, or sensory loss or paralysis of a limb, may be even more important in impairing equality, and even *jeopardizing the continuum of life*.

The Enteric Brain

-Dr. Michael Gershon, MD. founder of the field of Neurogastroenterology



- Concentrated with same receptors, peptides, as brain.
- 95% of the Serotonin found in this area- makes Dopamine, Xanax®, Valium® and dozens of other chemicals.
- Vagus nerve is the key connection between Cranial Brain and Enteric Brain.
- Forging the ability to get info from this part of the body is key to physical, mental, and spiritual health.
- Enteric brain remembers old fears and traumas.
- When “stuck” in survival mode it can affect High Brain (Pre-Frontal Cortex)

Trauma-Related Dysregulation

-Pat Ogden, PhD, 2000; Minton 2000. Sensorimotor Psychotherapy Institute

Freeze: “The deer in the headlights”

Mute, Paralyzed

Frozen defensive responses: “I couldn’t move”

Sympathetic Arousal ↑

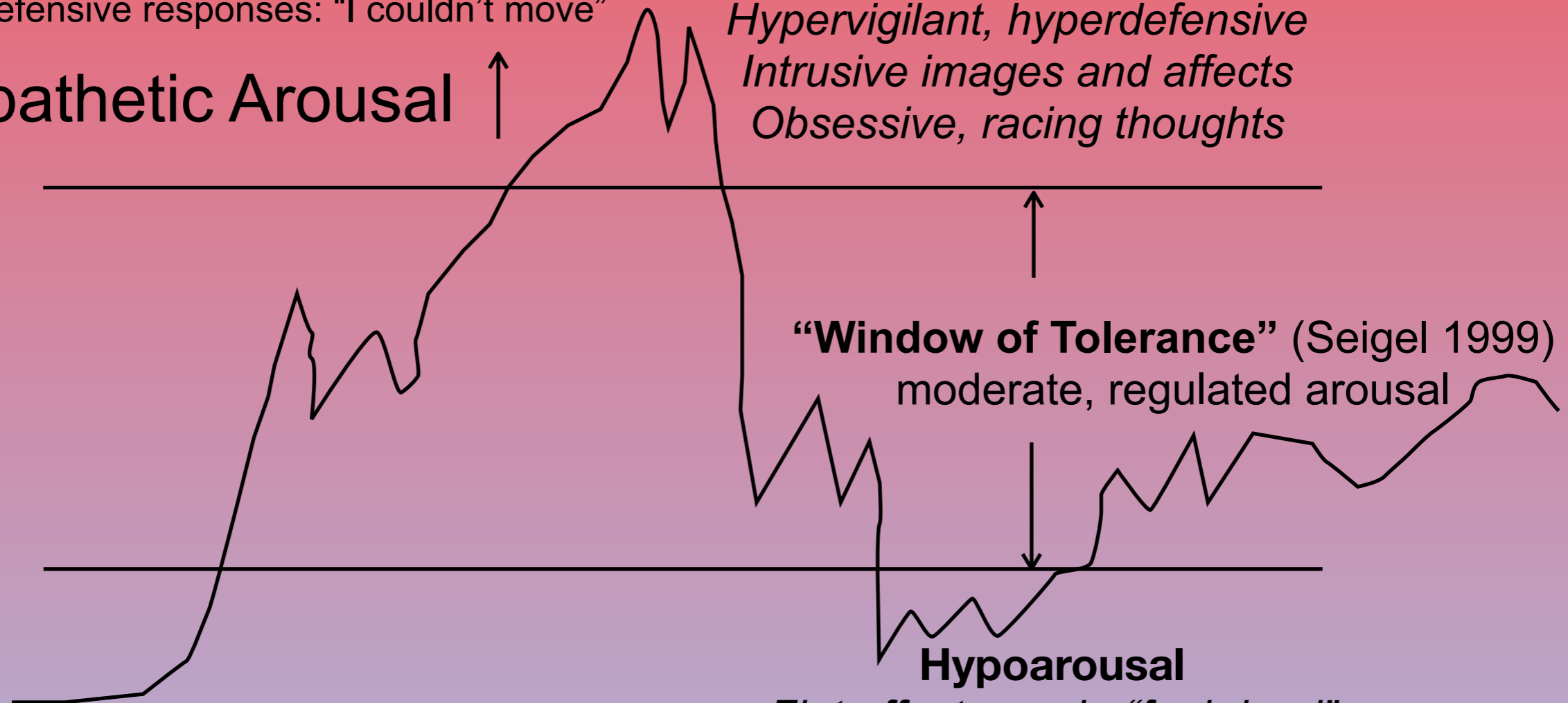
Hyperarousal

Emotionally reactive, impulsive

Hypervigilant, hyperdefensive

Intrusive images and affects

Obsessive, racing thoughts



“Window of Tolerance” (Seigel 1999)

moderate, regulated arousal

Parasympathetic Arousal ↓

Hypoarousal

Flat affect, numb, “feel dead”

Cognitively dissociated or slowed

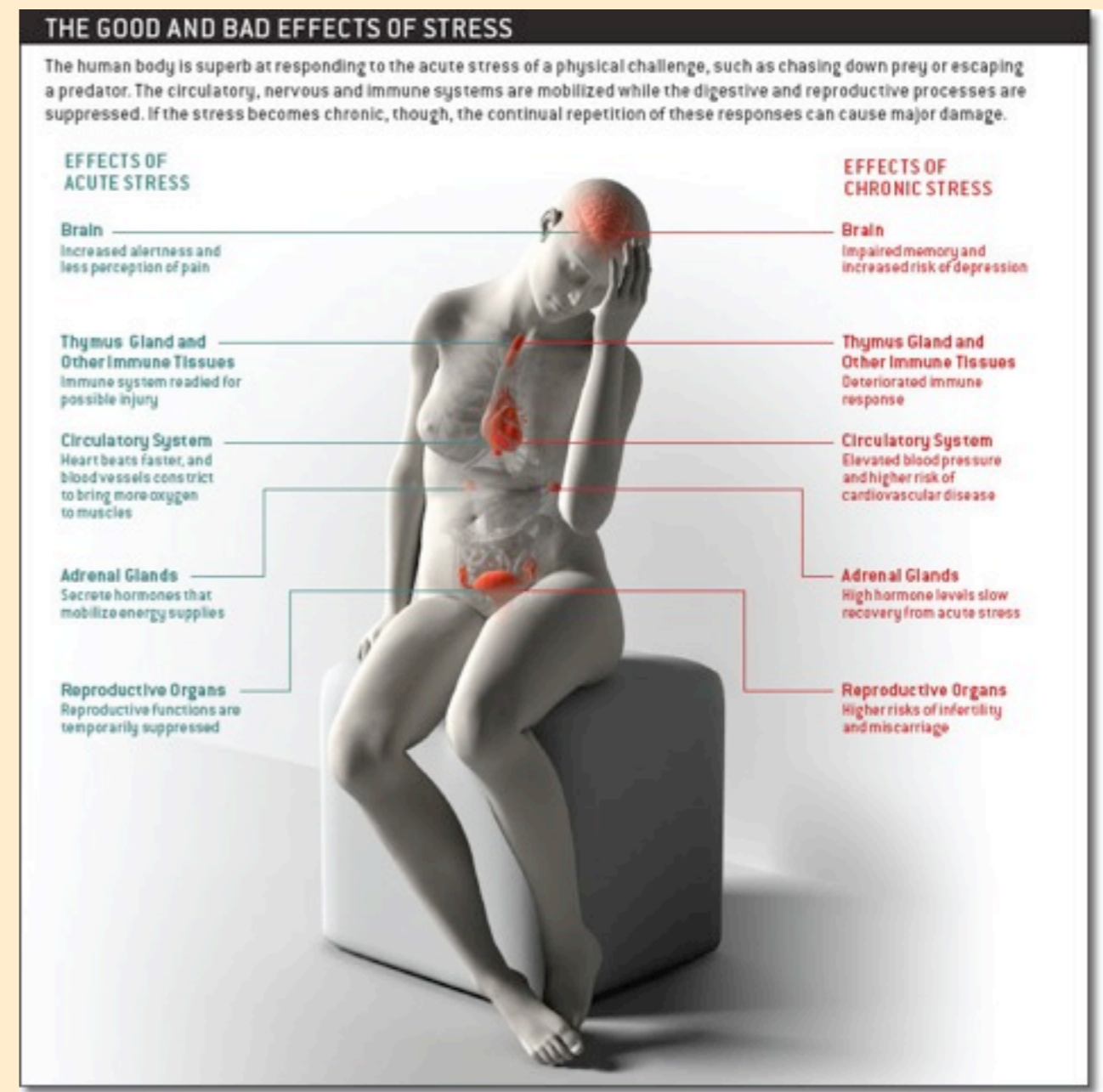
Collapsed, psychomotor retardation

Disabled defensive responses

Discharge of Stress & Trauma

Homeostatic Reflex, emptying Allostatic Load

The Autonomic Nervous System, or ANS, will automatically try to discharge this frozen energy by trembling, shaking, emotional expression, and temperature changes. This release in turn will be followed by rest and deep states of peace and healing.



Causes of Trauma

-Peter Levine, PhD. *Healing Trauma* Sounds True, Inc, 2005, pp.14-15

Obvious Causes of Trauma

- War
- Severe childhood emotional, physical, or sexual abuse
- Neglect, betrayal, or abandonment during childhood
- Experiencing or witnessing violence
- Rape
- Catastrophic Injuries and illnesses

Less Obvious Causes of Trauma

- Minor automobile accidents (even fender benders), especially those that result in whiplash
- Invasive Medical and Dental procedures...when restrained or anesthetized
- Falls and other so-called minor injuries, especially with children or elderly people.
- Natural disasters including hurricanes, tornadoes, fires, and floods
- Illness, esp. with higher fever or accidental poisoning
- Being left alone, esp. in young children and babies
- Prolonged immobilization, esp. in children (casting, splinting, for long periods)
- Exposure to extreme heat or cold, esp. children or babies
- Sudden loud noises, esp. children or babies.
- Birth stress, for both mother and infant

Post Traumatic Stress Disorder

source: United States Department of Veterans Affairs: www.ptsd.va.gov

- **PTSD is unique among psychiatric diagnoses because of the great importance placed upon the etiological agent, the traumatic stressor.**
- In fact, one cannot make a PTSD diagnosis unless the patient has actually met the "stressor criterion," which means that he or she has been exposed to an historical event that is considered traumatic. Clinical experience with the PTSD diagnosis has shown, however, that **there are individual differences regarding the capacity to cope with catastrophic stress. Therefore, while some people exposed to traumatic events do not develop PTSD, others go on to develop the full-blown syndrome.**



PTSD

Trauma and Recovery: The Aftermath of Violence--from Domestic Abuse to Political Terror by J.L. Herman, PhD.



J. L. Herman, Psychologist, has argued that the current PTSD formulation fails to characterize the major symptoms of PTSD commonly seen in victims of prolonged, repeated interpersonal violence such as domestic or sexual abuse and political torture.

She has proposed an alternative diagnostic formulation that emphasizes multiple symptoms, excessive somatization, dissociation, changes in affect, pathological changes in relationships, and pathological changes in identity.

Memory



Memory

Short Term
Memory

Working
Memory

Long Term
Memory

Implicit
(Procedural)

memories since
birth

unconscious
memories

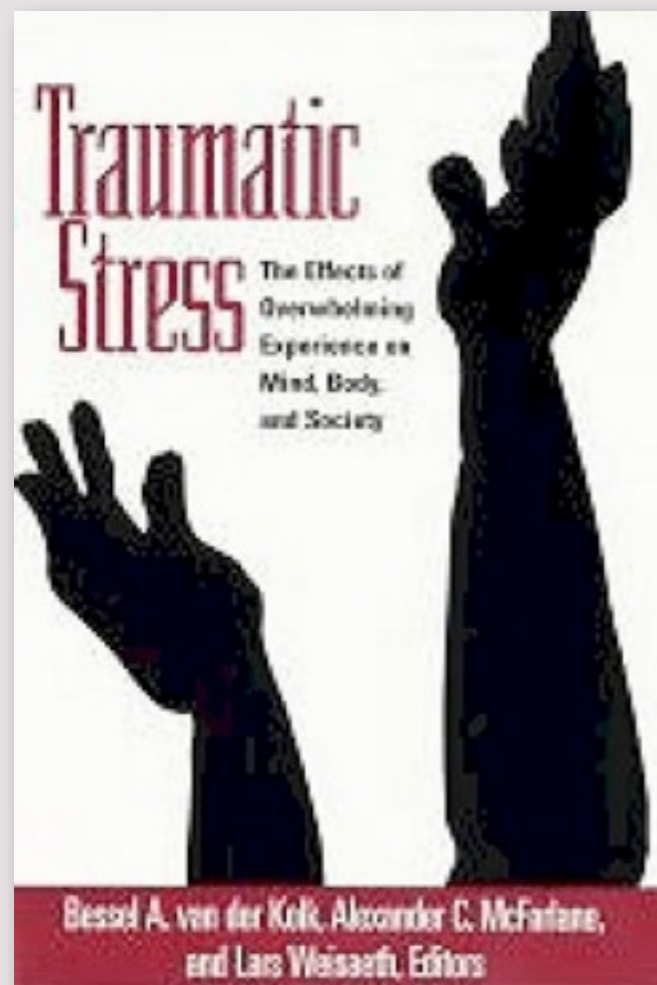
Explicit

memories after 1-2
years old

conscious
memories

Effects of Overwhelming Experiences

-**Bessel van der Kolk, MD**, Alexander C. Macfarlane, Lars Weisaeth, Traumatic Stress: The Effects of Overwhelming Experience on Mind, Body, and Society (The Guilford Press, 2006)



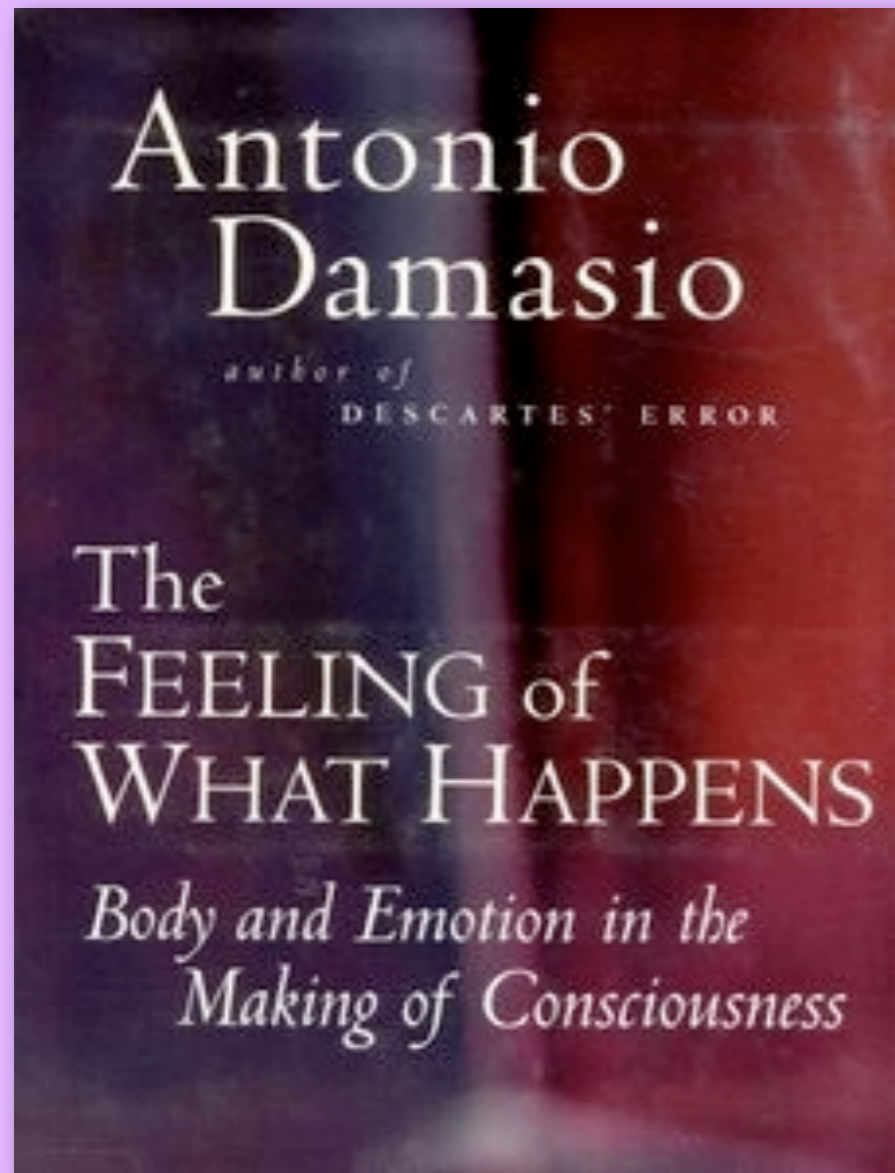
“The issue of memory has always been central to the study of trauma. Ever since Psychologists and Psychiatrists have devoted themselves to the study of trauma’s impact on consciousness, they have noted that traumatic memories are stored in a **state-dependent** fashion, which may render them inaccessible to verbal recall for prolonged periods of time.

When traumatic memories dissociated from other life experiences and stored outside of ordinary awareness, they may be expressed in such seemingly incomprehensible **symptoms** such as **physical ailments, behavioral reenactments, and vivid sensory re-living of experiences...**“

Somatic Markers

Somatic Markers Hypothesis

Source: **Antonio Damasio, PhD**, Dept. of Neurology, University of Iowa College of Medicine, Iowa City



The key idea in the hypothesis is that “marker” signals influence the processes of response to stimuli, at multiple levels of operation, some of which occur overtly (consciously, “in mind”), and some of which occur covertly (non-consciously, in a non-minded manner).

The markers are termed somatic because they relate to body-state structure and regulation even when they do not arise in the body proper but rather in the brain’s representation of the body.

Unified Therapy™:

- **Accesses regulatory processes** that promote safe, fast and efficient ANS & Limbic re-regulation.
- **Teaches interaction** through direct experience with Sensory Processing & Mindfulness (Middle Prefrontal Cortex)
- **Promotes development of Prefrontal Cortex** to gain conscious control over affect of Limbic Structures by directly interacting with fears that arise during the process.
- **Accesses, and teaches how to interact with, Implicit & Explicit memory** in a safe environment.

- **Treats Comorbid Conditions Concurrently**
- **Re-Creates Conditions** (memories, emotions, traumatic experiences) moment-to-moment and returns from this challenging stimulus to a safe baseline (homeostasis).
- **Decreases acquired Allostatic Load.**
- **Supports shift from Dysregulation to Re-Regulation to Self-Regulation.**
- **Highly reproducible and evidence-based.**

Benefits to Mental Health Practitioners:

- **Understand how to *recognize* and *trust* the regulatory processes** that promote safe, fast and efficient ANS & Limbic re-regulation.

- **Learn how to *effectively interact with* Sensory Processing & Mindfulness** in shifting states of anxiety, depression and more.

- **Learn *how to use props* that can help your clients to sense and feel in their bodies** in order to enhance their ability to access deep emotions and states.

- **Acquire *new tools* to work with Implicit Memory** when it arises.

- **Learn how to use sensory processing** to returns from challenging stimulus (memories, emotions, traumatic experiences) to a safe baseline (homeostasis).

- **Learn to recognize signs of changes in levels of Allostatic Load.**

- **Recognize the signs of shifting from Dysregulation to Re-Regulation to Self-Regulation.**

- **Know the how collaboration with a therapeutic bodyworker can help your patients progress and why.**



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