Complex Trauma and Body Centered Healing, Part 2

Neuroplasticity, and trauma in the brain

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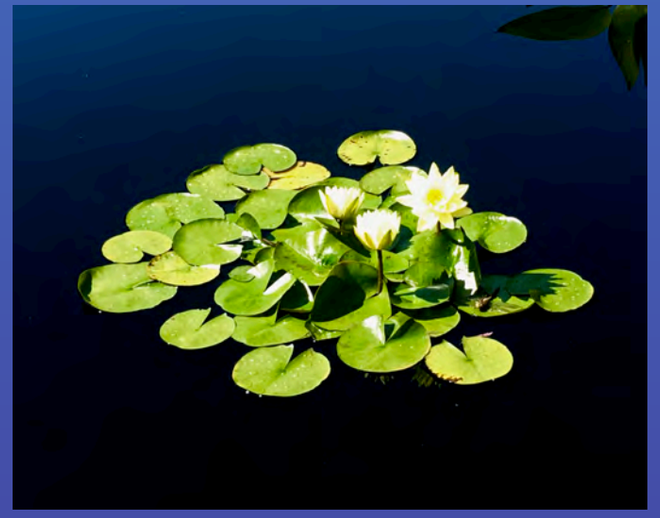
"After trauma the world is experienced with a different nervous system. the survivor's energy now becomes focused on suppressing inner chaos, at the expense of spontaneous involvement in their life.

These attempts to maintain control over unbearable physiological reactions can result in a whole range of physical symptoms, including fibromyalgia, chronic fatigue, and other autoimmune diseases."

—Bessel van der Kolk

Sometimes learning about trauma can feel overwhelming;
during this presentation please feel welcome to take care of yourself as needed.



If you like, you might take a moment or two here,
to breathe, stretch, and notice how you feel, before going on.

Neuroplasticity in trauma and healing

Neuroplasticity is the way that your nervous system changes in response to the experiences that you have: it is the way that your body and mind adapt and learn

"The neural pathways we use the most become our automatic defaults…

In electrical terms, they are literally the path of least resistance. Think of them as ruts carved into our brains by (what we do) over and over."

—Leora Weitzman, massage therapist, educator

Neuroplasticity:

- Thoughts and experiences create new neural pathways

- To help us survive,
  memories of harm and how to avoid it
  create the strongest neural pathways

- Repetition strengthens neural pathways
- Neural pathways used less, weaken
  "Neural pruning"

- Your nervous system registers the danger of traumatic experiences, and engraves sensations associated with them in implicit or procedural memory:

nonverbal thoughts, procedures, habits
stored in lower, unconscious parts of the brain

Sounds, tastes, smells, images, touch

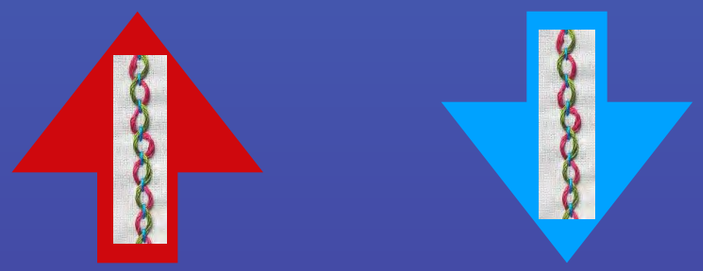
and internal sensations like:

hunger, tiredness, loneliness, arousal, anger, even gentleness…

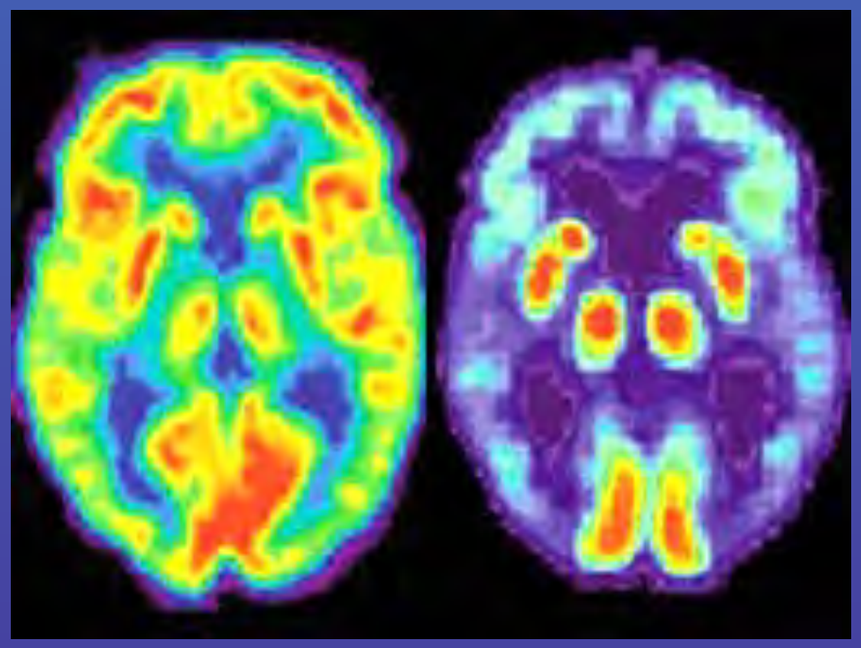
can become intertwined with
feelings of danger or harm.

Sometimes, trauma may intensify sensations associated with danger

Sometimes it may diminish them or shut them down



In trauma, to focus on immediate survival
many areas of the nervous system may shut down



Trauma can temporarily impair or shut down:

- Logic, sequencing, verbal expression *(left side of brain, Broca's Area)*

Trauma can temporarily impair or shut down:

- Executive reasoning, social connection *(medial prefrontal cortex)*

Trauma can temporarily impair or shut down:

- Sense of time
  (dorsolateral prefrontal cortex)

Trauma can temporarily impair or shut down:

- Filtering: ability to discern what's important and what isn't
- Focus: ability to learn new things *(thalamus)*

Trauma can temporarily impair or shut down:

- Ability to integrate information into longterm memory *(hippocampus)*

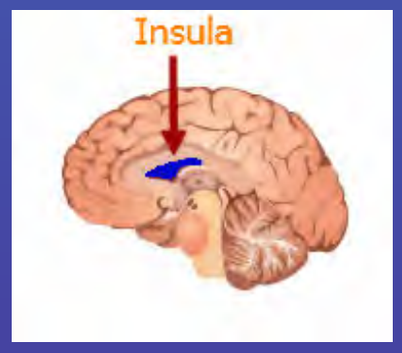
Trauma can temporarily impair or shut down:

- Ability to self-soothe and be calm
  (Upper Parasympathetic Nervous System)

Trauma can temporarily impair or shut down:

- Certain physical senses
  (Sometimes the ability to see, hear, smell, feel, or taste things in some way associated with the trauma)

Trauma can temporarily impair or shut down:



Interoceptive pathways which bring body sensations to your insula, where they are processed to create a sense of self:

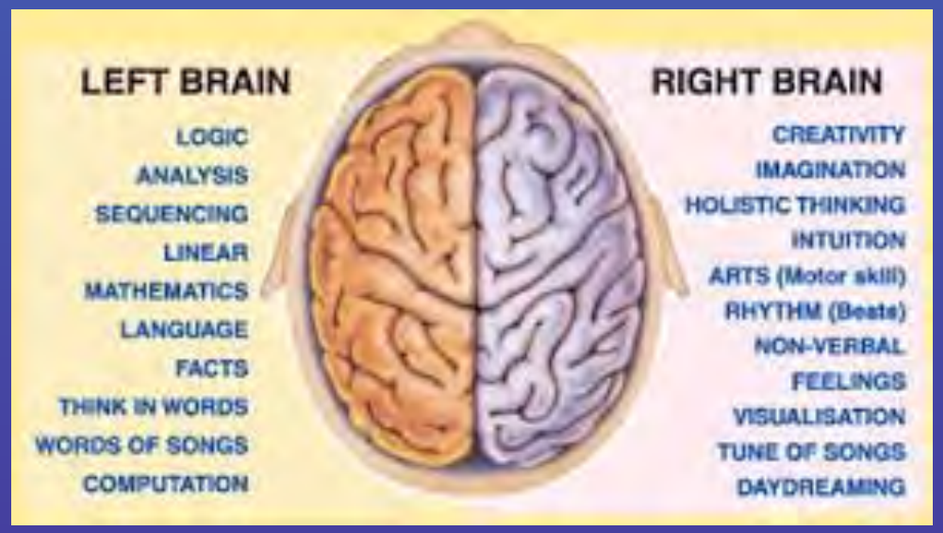
"Here I am, alive in the world"

When these areas are affected by trauma, it can diminish your sense of connection with your full physical and emotional self.

Meanwhile trauma makes other parts
of the nervous system more active, like:

The right side of the brain

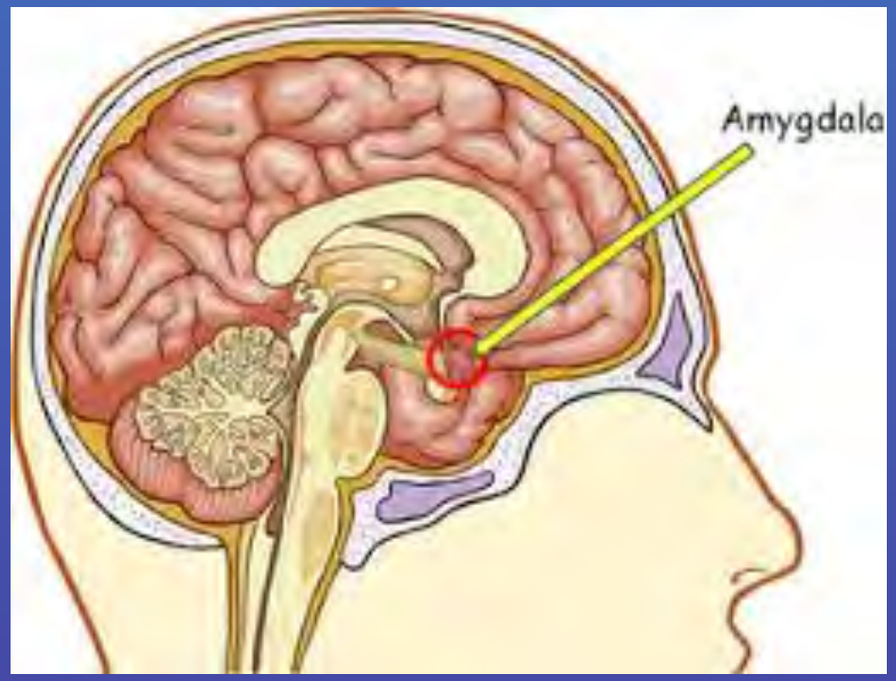
—which can make things feel as if trauma is happening in the present.



The threat perception system also becomes very active, especially the amygdala:

"…people (with trauma) see danger where other people see manageable stuff. And this is not in the cognitive part of the brain, it is in the core perceptual part of the brain, a very primitive part of the brain. This is the part of the brain that basically is in charge of making sure that your body is okay, and it becomes a fear-driven brain.

—Bessel van der Kolk



The Sympathetic Nervous System and HPA axis
can also become chronically activated,
with cortisol levels that go up quickly, then down slowly

Short term
Cortisol creates energy for fight or flight.

Long term
Cortisol harms focus, memory,
immune system, sleep.

With trauma, neuroplasticity makes your nervous system focus on detecting and avoiding the dangers of the past.

But often trauma reactions:

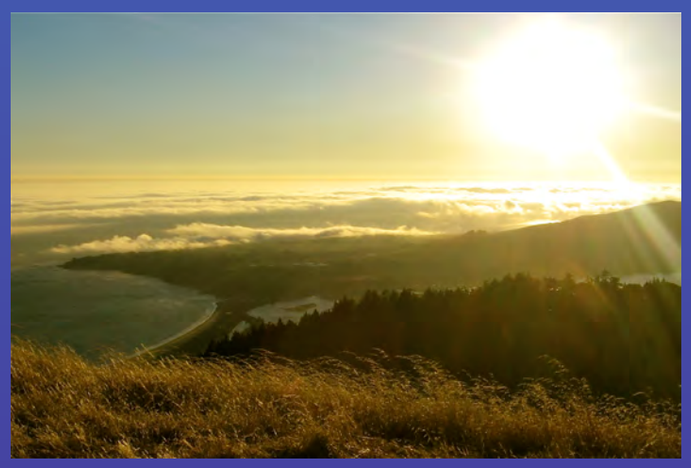
- don't protect you from harm
- do keep you from being fully present in life

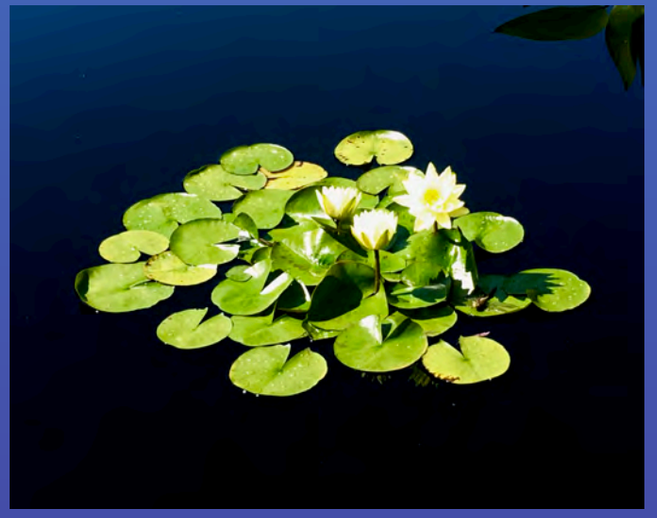
Fortunately neuroplasticity also means that at any age your nervous system can learn new habits of resilience and recovery.

Trauma is not about personal weakness,
lack of willpower, or having the wrong attitude.

It is about the ways that your nervous system develops deep unconscious habits meant to protect you, after overwhelmingly harmful experiences.

Yet over time, trauma itself harms physical and emotional health—which is why people study and develop ways to heal from it.





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Thank you for your interest in this presentation.

It was created out of a desire to make information about complex trauma and body-centered healing as accessible as possible. If you share that intention, then you're welcome to share material from the presentation with others—but please acknowledge the sources, out of respect for the work involved.

I am grateful to the trauma researchers listed at the end of this presentation for their research and insights into trauma and healing; and still more grateful to my clients, who teach me so much.

I offer various versions of this presentation in person (in English and in Spanish), and also facilitate TCTSY sessions for large groups, small groups, and individuals.

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This presentation is based on the work of:

David Emerson E-RYT, author of *Overcoming Trauma Through Yoga,* and *Trauma-Sensitive Yoga in Therapy*

Bud Craig PhD, author of *How Do You Feel? Interoception: the sense of the physiological condition of the body*

Stephen Porges PhD. Author of *Polyvagal Theory : Neurophysiological Foundations of Emotions, Attachment, Communication, and Self-Regulation*

Laura van Dernoot Lipsky, social justice activist and author of *Trauma Stewardship: An Everyday Guide to Caring for Self While Caring for Others*

Elaine Miller-Karas LCSW, author of *Building Resilience to Trauma: The Trauma and Community Resiliency Models*

And ***trauma researchers*** *with the NICABM Treating Trauma Master Series:* **Pat Ogden** PhD**., Dan Siegel,** MD. **Ruth Lanius**, MD, PhD, **Ron Siegel** PhD, **Ruth Buczynski** Phd. , **Peter Levine** PhD., and **Bessel van der Kolk** MD; also **Wendy D'Andrea** PhD**.**

And, yoga teacher-trainers **Hala Khouri** MA, E-RYT and **Marlysa Sullivan** MPT, C-IAYT E-RYT

Thank you to all of these people for their work supporting trauma prevention and healing.