INTRODUCTION

Since nothing written on the subject of trauma would be complete without a mention of Abram Kardiner, here it is: After the Second World War, American psychiatrist, Kardiner re-introduced the concept of traumatic neurosis to psychoanalytic theory. Unlike his contemporaries, he recognized traumatic neurosis not as a conflictual illness, but as the result of a psychological defensive maneuver used in warding off trauma. He warned that the cost of such a maneuver might well be the destruction of the victim's adaptive capacity in the future.

Traumatic neurosis; a new name for an old condition. You may recognize it by its prior aliases. When it was a result of war, it was dubbed Shell Shock, Battle Fatigue and Operational Exhaustion. As a result of sexual assault or domestic violence, it was identified as Rape Trauma Syndrome and Battered Women Syndrome, respectively. As a result of childhood sexual abuse, it was labeled Hysteria. Describing the condition, trauma expert Peter Levine writes, ". . . it is the most avoided, ignored, belittled, denied, misunderstood, and untreated cause of human suffering." The DSM-IV-TR's most recent designation for this long-standing cause of human suffering is Post Traumatic Stress Disorder (PTSD). My colleagues and I call it, psychiatry's redheaded stepchild-the troubled one, who won't leave home.

Regarding psychiatry's erratic interest in trauma, Kardiner lamented, "these conditions [traumatic neurosis] are not subject to continuous study . . . but only to periodic efforts which cannot be categorized as very diligent." Since it is the collective that determines where its resources are directed, might it be that it is not only psychiatry — but society in general — that refuses to study trauma and its sequelae? In *Trauma and Recovery,* Herman writes, ". . . When the traumatic events are of human design, those who bear witness are caught in the conflict between victim and perpetrator. It is morally impossible to remain neutral in this conflict. The bystander is forced to take sides. It is very tempting to take the side of the perpetrator. All the perpetrator asks is that the bystander do *nothing* . . . the victim, on the contrary, asks the bystander to share the burden of pain. The victim demands action, engagement and remembering."

Quick recap of those options: 1) Deliberate, intentional sharing of another's pain, along with involuntary conscription into action, engagement, and remembering or 2) *nothing* at all.

Tough Call.

CLINICIAN'S CORNER: ESSENTIAL BRAIN STUFF

A REFRESHER: THE ANATOMY AND FUNCTION OF THE TRIUNE BRAIN

The term "triune brain," coined by neuroscientist Paul MacLean describes in evolutionary terms what he viewed as the three distinct but interconnected levels of the human brain: 1. The brainstem and cerebellum, (Reptilian Brain) 2. The limbic system (Mammalian Brain), and 3. The cerebral cortex (Neocortex).

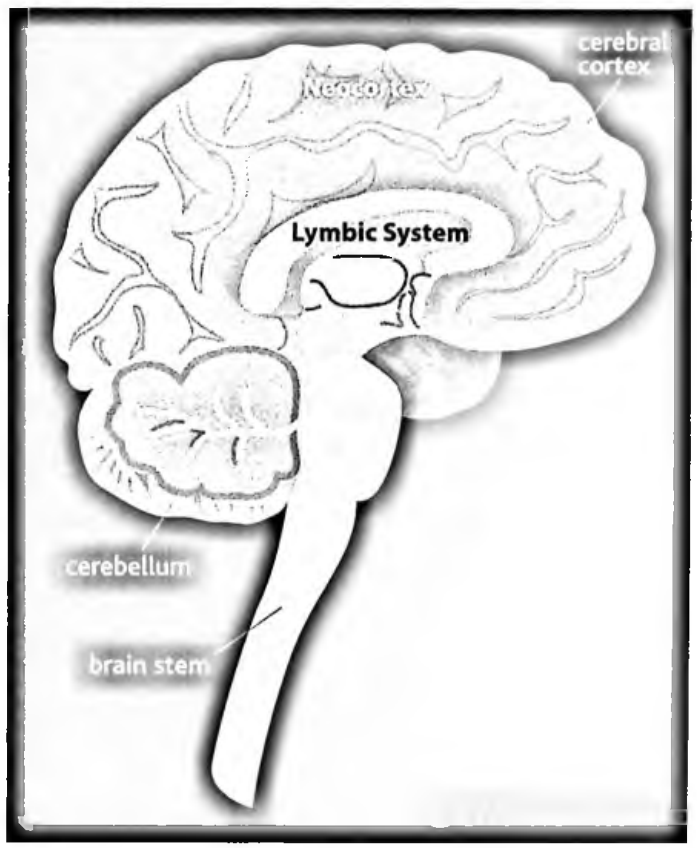


Figure 1 — Triune Brain

1. **Brainstem and Cerebellum (Reptilian Brain):** The cerebellum orchestrates movement. The brainstem connects the spinal cord and the forebrain. It functions as an important relay station; every nerve impulse that passes between the brain and the spinal cord must pass through the brainstem to allow the body to function normally, i.e. it controls vital functions such as heartbeat, body temperature, and breathing.

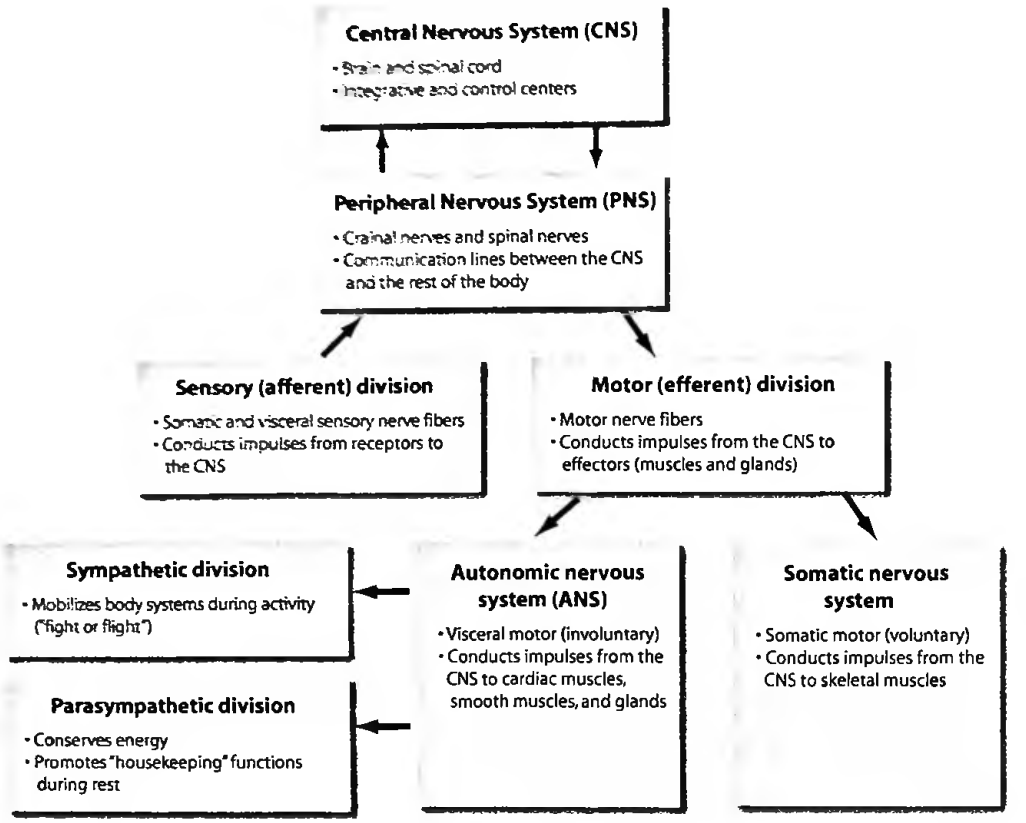


Figure 2 — The Nervous System

2. **The Limbic System ("The Old Mammalian Brain"):** A collective term referring to several brain parts, including the hippocampus and the amydala. The limbic system is tightly connected to the prefrontal cortex; and highly interconnected with the nucleus accumbens, the brain's pleasure center. It operates by influencing the endocrine system and the autonomic nervous system. It is the source of emotions and instincts (e.g. feeding, fighting, fleeing, and sexual behavior). The limbic structures are important in the regulation of visceral motor activity and emotional expression. Basically, the limbic system is the interface between animal drives and the constraints of society; between impulses and rational, practical decisions; and between crude emotions and "reasonable" behavior. The limbic system includes many structures in the cerebral cortex and sub-cortex of the brain. The following structures may be considered part of the limbic system:

   a. **Amygdala:** an almond-shaped component of the ancient basal ganglia that is involved with aspects of emotion and memory formation — allowing for instantaneous, unthinking reaction in the face of a threat. As Joseph LeDoux says, "When it comes to detecting and responding to danger, the brain just hasn't changed much. In some ways we are emotional lizards." It is also involved in signaling the cortex of motivationally significant stimuli related, to reward including social functions including sex.

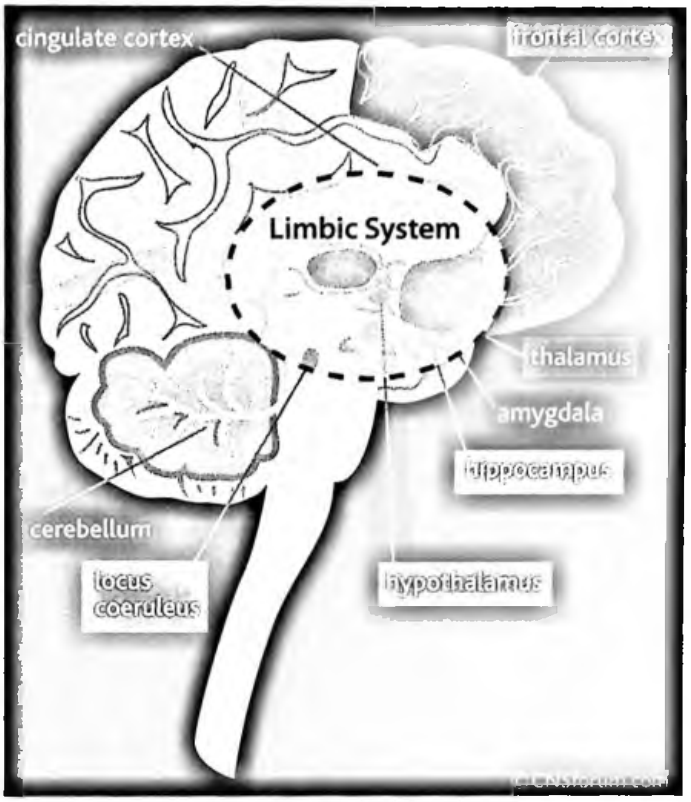


Figure 3 — Limbic Structures

b. **Hippocampus:** Required for the formation of long-term memories and implicated in maintenance of cognitive maps for navigation

c. **Parahippocampal Gyrus:** Plays a role in the formation of spatial memory

d. **Cingulate Gyrus:** Autonomic functions regulating heart rate, blood pressure, and cognitive and attentional processing

e. **Fornix:** carries signals from the hippocampus to the mammiliary bodies and septal nuclei

f. **Hypothalamus:** Regulates the autonomic nervous system via hormone production and release; affects and regulates blood pressure, heart rate, hunger, thirst, sexual arousal, and the sleep/wake cycle

g. **Thalamus:** The "relay station" to the cerebral cortex

3. **The Cerebral Cortex (Neocortex or "gray matter")** is found only in the brain of higher mammals. It is divided into sensory, motor and association areas. Sensory areas receive sensory input; motor areas control movement of muscles; and association areas are involved with more complex functions such as learning, decision-making, and complex movements such as writing.

   a. The central sulcus divides the primary sensory and motor areas. Both the sensory cortex and the motor cortex have been mapped out according to what part of the

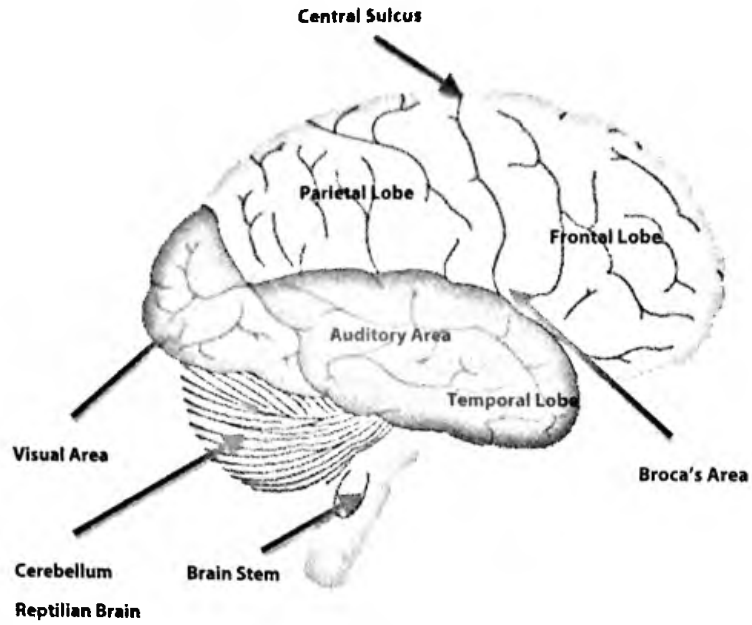


Figure 4 — Cerebral Cortex

body it controls. A larger portion of the cortex is involved with the lips, face, and fingers, which contain a greater number of sensory receptors.

b. Broca's area, the motor speech area, is involved in translating thoughts into speech. Impulses from this area control the muscles of the larynx, pharynx, and mouth that enable us to speak.

c. The visual area receives visual stimuli and the visual association area helps to interpret those stimuli. It is also involved with memory and recognition.

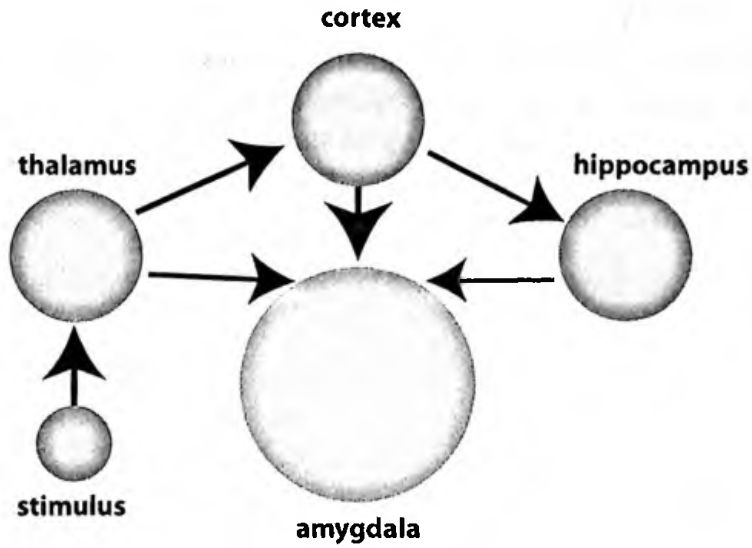
d. The auditory area receives auditory information. The auditory association area is where sound is interpreted as noise, music or speech.

Look familiar? Good.

Now a bit about fear and stress . . .

According to LeDoux (1994), the central nucleus of the amygdala is likely the control center for fear, receiving fear-related sensory information and transmitting fear-related motor instructions. He suggests that the amygdala receives input from three areas: the thalamus, cortex and the hippocampus.

- The thalamus and cortex convey information from the environment.
- The thalamus to amygdala pathway carries information rapidly to the amygdala. System One (Quick and Dirty)
- The thalamus to cortex to amygdala (Slow and Deliberate) pathway is more protracted-allowing time for the external stimuli to be *cognitively* appraised. System Two (Slow and Deliberate)



(From: LeDoux 1994)

Figure 5 — Amygdala Connections

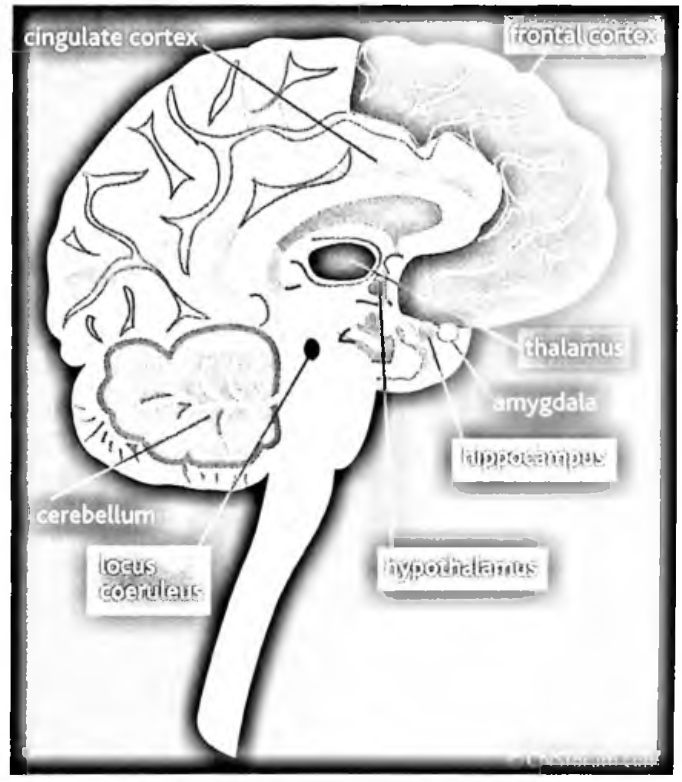


Figure 6 — Areas affected in PTSD

Remember the HPA Axis?

Here's the gist of it: it's a complex set of direct influences and feedback interactions among the hypothalamus, the pituitary gland, and the adrenal glands.

Here's the specifics: The release of CRH from the hypothalamus is influenced by stress and blood levels of Cortisol. The anatomical connections between the amygdala, hippocampus and hypothalamus facilitate activation of the HPA axis.

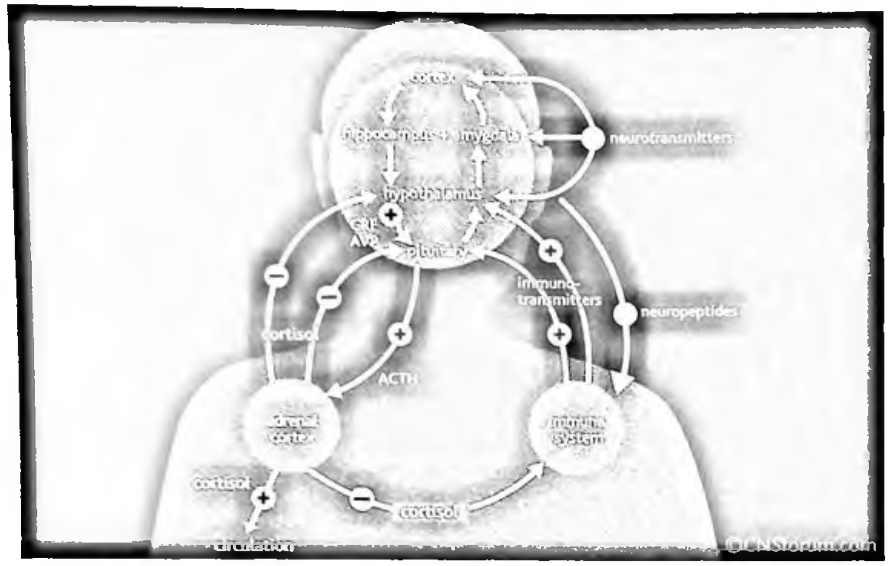


Figure 7 — The HPA Axis

1. Sensory information arriving at the lateral aspect of the amygdala is processed and conveyed to the central nucleus, which projects to several parts of the brain involved in responses to fear.
2. At the hypothalamus, fear-signaling impulses activate both the sympathetic nervous system (Figure 2) and the modulating systems of the HPA axis. (Figure 7)
3. Increased production of Cortisol* mediates alarm reactions to stress, facilitating an adaptive phase of a general adaptation syndrome in which alarm reactions, including the immune response are suppressed, allowing the body to attempt defensive reactions.

* Although Cortisol has the important function of modulating stress reactions, in excess it's quite damaging. Atrophy (and the subsequent shrinkage of) the hippocampus in humans and animals exposed to severe stress is believed to be caused by prolonged exposure to high concentrations of Cortisol and other glucocorticoids. The resultant reduction in hippocampal volume further reduces memory resources available to help a body formulate appropriate reactions to stress.

2. The second pathway takes the sensory input (in this case from the visual cortex) at a relatively leisurely pace over the evolutionarily newer, more precise, but considerably slower pathways to the cortex. This information is much more well-defined: "Big man, angry face, is that blood on his shirt?! That looks like a gun! And he's walking toward me. Get the hell outa here!" This message is far too time consuming to send, receive, and interpret. If you depended solely on your cortex to save you, you would have a very short life. When time is of the essence, this system fails, because it is just too deliberate and well, *too thoughtful.*

FYI: Formation of Semantic Memories

In the neocortex, memories are stored in dense highly overlapping neural networks. By a process called "interleaved replay", hippocampal memories are slowly and repetitively replayed from the hippocampal complex to the cortex where the memories are strengthened and eventually integrated and consolidated into the individual's general semantic knowledge (McClelland et al., 995; Stickgold, 1998b). Thus, cal memories, in contrast to campal memories, which rse and quickly formed, wly formed and densely nted. Semantic memories e extraction, abstraction storage of critically useful nformation from the sum total of our experiences (Schacter & Tulving, 1994; Squire, 1992).

Once this information reaches your cortex, you can start to formulate your get-away plan. Via the thalamic pathways, the body and brain become primed for action. Now, what's needed is some cognitive input — a little thought, to refine your escape. The second pathway, after a short stopover at the cortex, continues back to the amygdala, where it meets up with the original thalamic pathway.

Once out of harm's way (i.e., the man is no longer in your vicinity), the emotional memory of fear and the cognitive memory of the would-be attacker become a learned emotional response that allows — and hopefully motivates — you to plan a little bit better for the next time. (Perhaps you decide to walk a different route, arm yourself, walk with a partner, or buy a treadmill.)

Because we have two systems — the quick and dirty one that keeps us alive and the slower, more deliberate one that allows us to plan a rational escape plan, we're able to effectively react to the danger (assuring our immediate survival of the encounter).

Once *the threat is perceived to be gone*, the hippocampus reengages, and begins the much slower process of transferring this stressful episodic memory to the store of general semantic knowledge. (Very little of what we have experienced is remembered as episodic memory. Instead, the brain extracts, abstracts and stores critically useful information from the sum total of our experiences (Schacter & Tulving, 1994; Squire, 1992; Stickgold, 1998b)) i.e. we take what's useful in this emotional memory (information to plot future courses of action) and leave behind the details, including the intense affect and somatic and visceral responses. This is what memory is for — to plan for the future; this is the normal learning process.

Welcome to "Trauma Land: Home of Scared Bodies and Lost Minds"

What happens when the threat is gone, but the person still perceives it to be present?

In PTSD the whole system (described above) breaks down (Ball et al., 1994; Lavie et al. 1979; Hefez, Metz, & Lavie, 1987; Claubman, Mikulincer, Porat, Wasserman, & Birger, 1990; Mellman et al., 1995), due to noradronergic and serotonergic surges. The information from the episodic memory does not get extracted, transferred or integrated into the cortex, so there is no weakening or elimination of the episodic memory. If the episode was a traumatic one, PTSD results. We see evidence of this in the constant, intrusive replay of hippocampal, episodic memories of the event(s), combined with the associated intense affect, but lacking the necessary neocortical input as to the semantic meanings of the traumatic event (Stickgold, R., 2002 *EMDR: A Putative Neurobiological Mechanism of Action*).

Diagnosis: PTSD

"What's wrong with me?"

"Well, given your symptoms, I think you have PTSD; Post Traumatic Stress Disorder."

"Post Traumatic Stress Disorder? What are you talking about? Trauma? It doesn't make sense. What trauma did I have? I wasn't in a war, or survive a holocaust, or anything. I didn't even really get hurt."

This is a fairly typical client response to the diagnosis of this poorly understood disorder. It seems appropriate that this diagnosis — like any other serious medical diagnoses — would be initially met with denial (to temporarily protect the person from the reality of his/her own vulnerability). However, in order to effectively treat the condition, the diagnosis eventually needs to be accepted, and in order to accept the diagnosis, one needs to understand it.

To this end, I offer the following answers to the two most frequently asked questions: What is trauma? And, how bad does an event need to be to be considered traumatic?

According to, Dr. Peter Levine, "Trauma is a basic rupture — loss of connection to ourselves, our families, and the world. The loss, although enormous, is difficult to appreciate because it happens gradually. We adjust to these slight changes, sometimes without taking notice of them at all . . . although the source of tremendous distress and dysfunction, it (trauma)

is not an ailment or a disease, but the by-product of an instinctively instigated, altered state of consciousness. We enter this altered state, let us call it "survival mode" when we perceive that our lives are being threatened. If we are overwhelmed by the threat and are unable to successfully defend ourselves, we can become stuck in survival mode. This highly aroused state is designed solely to enable short-term defensive actions; but left untreated over time, it begins to form the symptoms of trauma. These symptoms can invade every aspect of our lives." (Levine, 2006)

The most effective way I've found to have a client evaluate whether (s)he has been traumatized is to ask a simple question: when you remember the incident, is the memory exactly the same every time? With the same bodily sensations and emotions? If the answer is yes, then the memory is a traumatic one. By no means does one traumatic memory constitute a diagnosis of PTSD; it does, however, indicate that the traumatic event has been dysfunctionally stored; remains inadequately processed; and continues to cause distress.

A diagnosis of PTSD is different from most mental-health diagnoses in that its four major types of symptoms — re-experiencing, avoidance, numbing, and arousal — are all tied to an overwhelming experience. Which brings us to the answer to the second question: It's not what happened; it's how the event was experienced. What makes an event traumatic is the powerlessness and sense of overwhelm that accompanies it, i.e., an event is traumatic if the physical and psychological resources available at the time were insufficient for effective coping.

The symptoms that result from an overwhelming life experience may be stable and pervasive, or appear intermittently — sometimes surfacing years after the event. Usually, symptoms occur in clusters — growing increasingly complex over time (making it harder to trace back to the original incident and easier to deny trauma's impact). Although there are pervasive misconceptions about trauma, PTSD is neither rare nor unusual. But unlike seeking treatment for symptoms related to diabetes or glaucoma, seeking treatment for the symptoms of PTSD is somehow interpreted as a psychological weakness. Clients often tell me, "It wasn't really that bad; I should just get over it." To which I reply, "Then why haven't you?" Followed up with, "Don't you think that if you could get over it, you would do just that?" At that point, we begin the psychoeducation process.

DSM-IV-TR Criteria for Simple PTSD

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A. The person has been exposed to a traumatic event in which both of the following were present:

- The person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others.
- The person's response involved intense fear, helplessness, or horror.

B. The traumatic event is persistently re-experienced in one (or more) of the following ways:

- Recurrent and intrusive, distressing recollections of the event, including images, thoughts, or perceptions
- Recurrent distressing dreams of the event
- Acting or feeling as if the traumatic event were recurring (includes a sense of reliving the experience, illusions, hallucinations, and dissociative flashback episodes, including those that occur on awakening or when intoxicated)
- Intense psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event
- Physiological reactivity on exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event

C. Persistent avoidance of stimuli associated with the trauma and numbing of general responsiveness (not present before the trauma), as indicated by three (or more) of the following:

- Efforts to avoid thoughts, feelings, or conversations associated with the trauma
- Efforts to avoid activities, places, or people that arouse recollections of the trauma
- Inability to recall an important aspect of the trauma
- Markedly diminished interest or participation in significant activities
- Feeling of detachment or estrangement from others
- Restricted range of affect (e.g., unable to have loving feelings)
- Sense of a foreshortened future (e.g., does not expect to have a career, marriage, children, or a normal life span)

DSM-IV-TR Criteria for Simple PTSD

D. Persistent symptoms of increased arousal (not present before the trauma), as indicated by two (or more) of the following:

- Difficulty falling or staying asleep
- Irritability or outbursts of anger
- Difficulty concentrating
- Hypervigilance
- Exaggerated startle response

E. Duration of the disturbance (symptoms in Criteria B, C, and D) is more than 1 month.

F. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning

Associated Features and Disorders

- Painful guilt feelings about surviving when others did not survive or about the things they had to do to survive.
- Phobic avoidance of situations or activities that resemble or symbolize the original trauma may interfere with interpersonal relationships and lead to marital conflict, divorce, or loss of job.

The following associated constellation of symptoms may occur and are more commonly seen in association with an interpersonal stressor (e.g., childhood sexual or physical abuse, domestic battering, being taken hostage, incarceration as a prisoner of war or in a concentration camp, torture):

- Impaired complaints
- Feelings of ineffectiveness
- Shame
- Despair or hopelessness
- Feeling permanently damaged
- A loss of previously sustained beliefs
- Hostility
- Social withdrawal
- Feeling constantly threatened
- Impaired relationships with others
- A change from the individual's previous personality characteristics

DSM-IV-TR Criteria for Complex PTSD

A New Concept

Even the diagnosis of "Post-Traumatic Stress Disorder," as it is presently defined, does not fit accurately enough. The existing diagnostic criteria for this disorder are derived mainly from survivors of circumscribed traumatic events. They are based on the prototypes of combat, disaster, and rape. In survivors of prolonged, repeated trauma, the symptom picture is often far more complex. Survivors of prolonged abuse develop characteristic personality changes, including deformations of relatedness and identity. Survivors of abuse in childhood develop similar problems with relationships and identity; in addition, they are particularly vulnerable to repeated harm, both self-inflicted and at the hands of others. The current formulation of post-traumatic stress disorder fails to capture either the protean symptomatic manifestations of prolonged, repeated trauma or the profound deformations of personality that occur in captivity. The syndrome that follows upon prolonged repeated trauma needs its own name. I propose to call it "complex post-traumatic stress disorder." The responses to trauma are best understood as a spectrum of conditions rather than as a single disorder. They range from a brief stress reaction that gets better by itself and never qualifies for a diagnosis, to classic or simple post-traumatic stress disorder, to the complex syndrome of prolonged, repeated trauma. As the concept of a complex traumatic syndrome has gained wider recognition, it has been given several additional names. The working group for the diagnostic manual of the American Psychiatric Association has chosen the designation "disorder of extreme stress not otherwise specified". . . Naming the syndrome of complex post-traumatic stress disorder represents an essential step toward granting those who have endured prolonged exploitation a measure of the recognition they deserve. It is an attempt to find a language that is at once faithful to the traditions of accurate psychological observation and to the moral demands of traumatized people. It is an attempt to learn from survivors, who understand, more profoundly than any investigator, the effects of captivity (1992, 1997).

Excerpted from the seminal work of Judith Herman, *Trauma and Recovery*

About her participation in the PTSD Working Group for DSM-IV, Herman writes,

The data seemed promising: my co-investigators and I found that somatization, dissociation, and affect dysregulation — three cardinal symptoms of complex PTSD — were found particularly in survivors of childhood abuse, less commonly in those abused in adolescence or adulthood, and rarely in people who had endured a single acute trauma that was not of human design. Moreover, these three groups of symptoms were highly intercorrelated (van der Kolk et al., 1996).

Herman, J.L. 2009 in *Treating Complex Traumatic Stress Disorders An Evidence-Based Guide*, Edited by Christine A. Courtois and Julian D. Ford (pp. xiii-xvii). NY, NY:Guilford