

MEMORY, TRAUMA & HEALING

By Peter Levine, Ph.D

The brain's function is to choose from the past, to diminish it, to simplify it, but not to preserve it.--Henri Bergson from The Creative Mind, 1911

For therapists, the current controversy surrounding so-called false "recovered" traumatic memories raises a number of compelling questions. Where do these 'false' memories come from and what is their function? More importantly, what role does memory play in the understanding and treatment of trauma?

Around 1900, the French philosopher Henri Bergson gleaned deep insights into the nature of memory that are just now being appreciated by contemporary researchers and clinicians. Bergson theorized that there are two fundamentally different forms of memory; one conscious, the other unconscious. Neuroscientist Daniel Schacter (1996), in a readable volume entitled *Searching for Memory*, describes his examination of a patient with a serious head injury. This man (called Mickey) had little memory of his recent experiences. Schacter asked Mickey a series of obscure questions such as "Who holds the worlds record for shaking hands" and "Where was the first baseball game played?" Not surprisingly, Mickey did not know the answers to these questions. Schacter then gave them to him. When asked the same questions twenty minutes later in another room, Mickey correctly answered Teddy Roosevelt and Hoboken, New Jersey, etc., to the trivia questions. However, he had no recollection of how he got this information and thought that perhaps it might have been from his sister. Although he had an *implicit* memory of his meeting with Schacter twenty minutes earlier, he had no *explicit* memory of it.

Similar observations and extensive experiments have been carried out by experimental psychologists, cognitive neuroscientists and clinicians, confirming that we humans have two distinctly different forms of memory; one explicit and conscious, the other implicit and unconscious. The description by Schacter of Mickey's strange behavior illustrates the curious "dissociation" between the conscious and unconscious aspects of memory.

Of particular significance in working with and understanding trauma, is a form of implicit memory that is profoundly unconscious, and forms the basis for the imprint trauma leaves on the body/mind. The relationship between implicit and explicit aspects of an experience is an important dynamic in the resolution of trauma and in the question of false memory.

Memory as Procedure

The type of memory utilized in learning most physical activities (walking, riding a bike, skiing, etc.) is a form of implicit memory called "procedural memory." Procedural or "body memories" are learned sequences of coordinated "motor acts" chained together into meaningful actions. You may not remember explicitly how and when you learned them, but, at the appropriate moment (like Mickey's trivia knowledge), they are (implicitly) "recalled" and mobilized (acted out) simultaneously. These "motoric memories" (action patterns) are formed and orchestrated largely by involuntary structures in the cerebellum and basal ganglia.

Procedures are primarily non-conscious, and attempts at conscious learning are generally counter-productive. Imagine trying to learn how to ride a bicycle, ski or have sex from written instructions. It cannot be done. A book may point you in the direction of where to begin, but the learning occurs through instinct, trial and error.

Trauma is about procedures the organism executes when exposed to overwhelming stress, threat and injury. The failure to neutralize these implicit procedures and restore homeostasis is at the basis for the maladaptive and debilitating symptoms of trauma.

Completion and Remembering

Acts must be carried out to their completion. Whatever their point of departure, the end will be beautiful. It is (only) because an action has not been completed that it is vile.

Jean Genet, from *Thief's Journal*

In response to threat and injury, animals, including humans, execute biologically based, non-conscious action patterns that prepare them to meet the threat and defend themselves. The very structure of trauma, including activation, dissociation, and freezing are based on the evolution of reptilian, mammalian and primate predator/prey survival behaviors. When threatened or injured, organisms draw from a "library" of possible motoric responses supported by adjustments in the autonomic and visceral nervous systems. In response to threat and injury we orient, dodge, duck, stiffen, brace, retract, fight, flee, freeze, collapse, etc. All of these coordinated responses are somatically based—they are things that the *body* does to protect and defend itself. It is when these orienting and defending responses are overwhelmed that we see trauma.

The bodies of traumatized people portray "snapshots" of their unsuccessful attempts to defend themselves in the face of threat and injury. It is because they have been overwhelmed that the execution of their normally continuous responses to threat have become truncated. *Trauma is fundamentally a highly activated incomplete biological response to threat, frozen in time.* For example, when our full neuromuscular and metabolic machinery prepares us to fight or to flee, muscles throughout the entire body are tensed in specific patterns of high energy readiness. When we are unable to complete the appropriate actions and discharge the tremendous energy generated by our survival preparations, this energy becomes fixated into specific patterns of neuromuscular readiness. Afferent feedback to the brain stem generated from these incomplete neuromuscular/autonomic responses maintains a state of acute and then chronic arousal and dysfunction in the central nervous system. Traumatized people are not suffering from a disease in the normal sense of the word. They have become fixated in an aroused state. It is difficult (if not impossible) to function normally under these circumstances.

Residual incomplete responses (the "snapshots" of unsuccessful attempts at defense) are the basis of (implicit) traumatic memory. Just as Mickey was unable to remember the source of his trivia information, trauma is not "remembered" in an explicit, conscious form. It is coded as implicit procedures based on biological survival reactions. These incomplete procedures seek completion and integration, not (explicit) remembering. The compulsion that so many trauma survivors have to "remember" is often a

misinterpretation of the profound urge to *complete* the highly charged survival responses that were aborted or truncated at the time they were overwhelmed. This is a significant factor in the genesis of spurious memory.

In an attempt to rationalize their highly activated (incomplete) survival responses, traumatized people will often create explicit stories that energetically match their internal experience. These "memories" may be accurate only in the sense that they are metaphors for what is stored implicitly. Many survivors of trauma need an "explanation" for their disturbing internal states. For example, I have worked with numerous people who came to me fairly certain that they had been molested or raped as children. In many cases the people were correct, but not in all of them. Several clients had created interpretations that seemed to explain their symptoms, but, in fact, they had been traumatized by early childhood surgical procedures. To a child, a frightening surgical procedure can be experienced very much like a rape.

Whether you can remember a traumatic event explicitly is not highly significant for healing to take place. Trauma is implicit. What is significant in the resolution of trauma is the completion of incomplete responses to threat and the ensuing discharge of the energy that was mobilized for survival.

When the implicit (procedural) memory is activated and completed somatically, an explicit narrative can be constructed; not the other way around. In this way, survivors can begin to *re-member*, i.e., to associate the dissociated aspects of their body experience and thaw the frozen energy that is at the core of their trauma. In doing this, they begin to integrate implicit experience into coherent conscious narratives. These stories are neither true nor false. They contain a balance of elements, some of which are historically accurate, some are symbolic of feeling states, while the primary function of others is to promote the healing process.

Jody

Twenty-five years ago Jody's life was shattered. While walking in the woods near her boy friend's house, a hunter came up to her and began a conversation. It was mid-September. There was a chill in the air--her boyfriend and others thought nothing when they saw someone apparently chopping wood. A madman, however, was smashing Jody's head again and

again with his rifle. The police found Jody unconscious. Chips from the butt of the rifle lay nearby where they had broken off in the violent attack.

When I first saw Jody two years ago, the only recollection she had of the event was scant and confused. She vaguely remembered meeting the man and then waking up in the hospital some days later. Jody had been suffering from anxiety, migraines, concentration and memory problems, depression, chronic fatigue and chronic pain of the head, back and neck regions (diagnosed as fibromyalgia). She had been treated by physical therapists, chiropractors, and various physicians. The year before I saw her she had slipped and fallen on her back while ice skating. After this event she was barely able to function.

Jody, like so many head-injured and traumatized individuals, grasped desperately and obsessively in an attempt to retrieve memories of her trauma. She seemed driven by the unconscious belief that if she could only capture the memory, she would somehow be released from the shattering grip of her experience. In our first session Jody struggled to remember, to piece together vague images from the hospital and the faint recollection of talking with the hunter; but nothing would come; only intense frustration....grasping, grasping....trying to go back to the scene and return with the whole self she knew before the injury.

When I suggested to Jody that it was possible to experience healing without having to remember the event, I saw a flicker of hope and a momentary look of relief pass across her face. We talked for a while, reviewing her history and struggle to function. After traumas such as Jody experienced, previously normal people often feel that they are pushed to the edge of insanity. Jody was haunted by the unthinkable fear that she was damaged forever.

Focusing on body sensations, Jody slowly became aware of various tension patterns in her head and neck region. With this focus on the "felt sense," she began to notice a particular (internal-kinesthetic) urge to turn and retract her neck. In allowing this "intention" to execute as slow gradual "micro movements" she experienced a momentary fear, followed by a strong tingling sensation.

By allowing these involuntary "intentional movements" to emerge and "gradually" to complete, Jody began a journey into and beyond the deeply unconscious implicit "memory traces" of her traumatic assault. In learning to

move within a dynamic tension between flexible control and surrender to these involuntary movements, she began to experience gentle shaking and trembling throughout her body. Thus began, ever so gently, the discharge of her truncated energy (not from explicit memory—she had none at this time). Jody's implicit memory was leading her home.

In later sessions, her head would turn away, while her arms and hands moved slowly upward and outward in a protective stance. These spontaneous movements were sometimes accompanied by brief animal-like shrieks almost identical to the distress calls recorded in species as diverse as birds and monkeys. She then felt the impulse in her legs to run, followed by more aggressive postures. She bared her teeth slowly, and, using her hands as if they were claws, experienced the urge to strike back at her assailant. Jody then became aware of (vestibular) sensations of falling. She felt the impact of the fall, followed by sensations of pain and bruising on the front and back of her head.

By completing these various defensive, distress and orienting responses, Jody was able to construct a sense of how she (her body) prepared to react in that fraction of a second when she was attacked. She became aware of head pulling back and away, a flash of the rifle butt coming toward her, her hands and arms moving upwards, the frozen impulse to run and the sense of running, the deep sense of fighting (trembling), the smash on her head, a quick whiff of the assailant's peculiar odor—then, the fall forward onto her face and the repeated blows to the back of her head. In being able to stretch out, in time, this highly impacted shock imprint, she not only implicitly "remembered" the event, but began to experience deep organic discharge and her body's innate capacity to defend and protect itself. In moving ahead in time from where it had been arrested twenty-five years ago, Jody proceeded gradually toward the restoration of her shattered self.

In the Theater of the Body

While explicit memory is accessed primarily through cognition, implicit memory must be reached through the body. The "felt sense," as Gendlin calls it, (though we use it daily) is relatively undeveloped in most "post-industrial" adults. This "felt sense" is made up of kinesthetic, proprioceptive, vestibular and visceral (autonomic) information channels. Afferent flow enters the brain stem as non-conscious (instinctual)

information, and is then elaborated upon by the limbic (emotional) and neo-cortical (cognitive) brain structures. Through the felt sense, interoceptive information (which forms the unconscious background of all experience), can be integrated and brought into a conscious figure.

Jody, through her felt sense, was able to extract the "intention" signal to move her head from the background noise of random tension. *To reiterate; intentional movement is non-conscious -- it is experienced as if the body was moving on its own volition, not by conscious effort.* By following these intentional impulses, various spontaneous (but organized) micro-movements were initiated. This was accomplished by the discharge of the incomplete survival response in the form of gentle shaking and trembling movements, along with beads of cold, then warm perspiration.

Jody was becoming deeply resourced by her biological capacity to defend herself, as well as by the discharge of energy and her new-found ability to move between conscious control and surrender to the realm of involuntary sensation. In that fraction of a second, when the madman raised his rifle, Jody's primitive body/mind oriented and sorted hastily through the possible defensive procedures available to her. Although she did not get to execute most of these implicit procedures at that time, her body had been energetically prepared to do so. In completing these life preserving actions twenty-five years later, she released that bound energy and added to her resources the felt realization that she had, in fact, attempted to defend herself.

Out of Africa

I recently described the particular type of spontaneous shaking, trembling and breathing that Jody and other clients exhibit in their sessions, to Andrew Bwanali, park biologist of the Mzuzu Environmental Center in Malawi, Central Africa. He nodded excitedly, then burst out;

"Yes.....yes.....yes! That is true. Before we release captured animals back into the wild, we make absolutely sure that they have done just what you have described." He looked down at the ground, then added softly; "If they have not trembled and breathed that way before they are released, they will not survive.... they will die." Although humans rarely die from trauma, their lives are severely diminished by its effects. Fortunately, trauma does not have to be a life sentence.

Renegotiation- Somatic Experiencing

"Renegotiation" is a word I termed to describe the process of healing or resolving trauma. It is the gradual, resourced discharge of the highly compressed survival energies, accompanied by a "retrospective" completion of biological defensive and orienting responses that were frozen at the time of overwhelm. It is not a cathartic reliving of the traumatic event, a method that can lead to re-traumatization.

Somatic Experiencing (SE) is the name I have given to this work. It is a naturalistic approach to the healing of trauma developed over the last twenty-five years. SE is based on the understanding of why animals in the wild, though their lives are threatened routinely, are rarely traumatized. Their ability to discharge fully the highly activated energies mobilized for survival and then reorient (resume normal functioning) points to an innate, instinctual capacity for the resolution of trauma. This innate capacity is shared by humans, and is a potent resource when appropriately utilized.

The foundation of Somatic Experiencing is built upon a tradition of somatic education and body-oriented psychotherapy. It draws upon the neurobiological study of the multi-directional interconnection between the body, brain and mind. Post traumatic stress is viewed not as a permanent neuropsychological disease, but as a functional and largely reversible distortion in the multi-dimensional somatic and autonomic pathways that meld the mind and body. SE examines the critical pathways whereby afferent information from muscles, joints and viscera is fed back sequentially to primitive portions of the brain to regulate survival behaviors.

This approach uses education about and awareness of body sensations as a primary tool to alter these pathways. When appropriate, gentle manipulation of the muscles, joints and viscera is employed. The biological strategies that enable animals to restore homeostasis after being aroused by threat are learned by traumatized individuals. Empowered with these innate resources, people can transform trauma. This healing journey occurs primarily biologically and archetypally, not cognitively and biographically.

The Physiology of Trauma

When Jody began to gradually access and discharge the activation bound in the muscles of her head, neck and shoulders, allowing the completion of truncated protective and defensive responses, her nervous

system was able to alter its regulatory "set point" for arousal. Most psychiatric researchers believe that the brain chemistry is permanently altered as a result of trauma. For example, it is thought that neurons in the Nucleus Locus Coeruleus (NLC), (part of the Reticular Activating System—RAS), become stuck in a fully activated state. As a result, this nucleus sends adrenergic (adrenaline-like) fibers into both the limbic and neocortical brain systems, maintaining high arousal levels throughout the brain. In order to combat this phenomenon, medical research is looking for potential drugs that would specifically block NLC-RAS activity.

What is being overlooked, however, is that the NLC receives a major portion of its input from sensory receptors in the head, face, neck and visceral organs. When a person perceives threat through primitive brain structures, muscles in the head, neck and viscera are activated in readiness to initiate the appropriate survival responses. At the same time, fibers from the NLC are busy arousing the entire brain through the RAS. Simultaneously, fibers from the brain stem and limbic system further activate muscles in the head, face, neck and viscera—which, in turn, send more impulses back inward to the NLC,...etc., etc.

If an organism is unable to completely discharge the escalating nervous system activation through life preserving action (i.e., fight or flight), then that mobilized energy will become locked in the somatic (head, face, neck, viscera) -- NLC loop. A classic "snowball rolling down the hill" positive feedback system is created that will reverberate until the survival responses are completed and the energy discharged. If not, the activation will develop into the complex symptoms of trauma. For this reason, preventative measures are vital after overwhelming events. Without them, somatic and dissociative symptoms will form to bind the highly activated, but undischarged survival responses. The formation of trauma symptoms is a non-conscious adaptation whose purpose is to prevent the organism from being further overwhelmed. Though it is much easier to prevent trauma, it is still possible to resolve many of the effects of even deeply entrenched traumatic symptoms.

Each time Jody was able to complete the truncated defensive and protective actions locked in her head and neck and discharge the energy bound there, she was able to remove "fuel" from the NLC/RAS-neuromuscular feedback loop. This resulted in a gradual, progressive deactivation of the global arousal system governing her brain and body.

Memory and Healing

Jody's essential experience of herself began to change as she completed and integrated the truncated implicit procedures. The question of whether she remembered what actually happened is largely irrelevant. In completing the implicit survival procedures, she began to form a fresh narrative. This new story incorporated archetypal imagery, sensations, feelings of death, renewal and rebirth, as well as images from the event. As she gently trembled and quivered, visions of quaking aspens replaced the fearful images of her assault.

One of the paradoxical and transformative aspects of implicit traumatic memory is, that once it is accessed in a resourced way (through the felt sense), it, by its very nature, changes. Out of the shattered fragments of her deeply injured psyche, Jody discovered and nurtured a nascent, emergent self. From the ashes of the frantically activated, hypervigilant, frozen, traumatized girl of twenty-five years ago, Jody began to reorient to a new, less threatening world. Gradually she shaped into a more fluid, resilient, woman, coming to terms with the felt capacity to fiercely defend herself when necessary, and to surrender in quiet ecstasy.

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