Beyond the talking cure:
Somatic experience, subcortical imprints and the treatment of trauma.

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"*We use our minds not to discover facts but to hide them. One of things the screen hides most effectively is the body, our own body, by which I mean, the ins and outs of it, its interiors. Like a veil thrown over the skin to secure its modesty, the screen partially removes from the mind the inner states of the body, those that constitute the flow of life as it wanders in the journey of each day*". Damasio (1999, p.28)

"With sufficient experience, the brain comes to contain a model of the world; at the same time, it also is constantly looking for new ways of putting things together, for new categories to create." (Calvin, 1990, p. 261)

"*So we shall view memories as entities that predispose the mind to deal with new situations in old, remembered ways -specifically, as entities that reset the states of parts of the nervous system."* (Minsky, 1980)

The Therapeutic Challenge

Research in laboratories devoted to elucidating human memory processes have consistently shown that memory is an active and constructive process: the mind constantly re-assembles old impressions and attaches them to new information. Memories, instead of precise recollections, are transformed into stories that we tell ourselves and others, in order to convey a coherent narrative of our experience of the world. Rarely do our minds generate precise images, smells, sensations, or muscular actions that accurately replicate earlier experiences. In fact, most well-known memory researchers, such as Elizabeth Loftus, Dan Schachter and John Kihlstrom emphatically deny that the mind is capable of precisely reproducing the imprints of prior experience.

However, learning from individuals who have been diagnosed with PTSD confronted us with the fact that, after having been traumatized, particular emotions, images, sensations, and muscular reactions related to the trauma may become deeply imprinted on people's minds and that these traumatic imprints seem to be re-experienced without appreciable transformation, months, years or even decades after the actual event occurred (Janet, 1889, 1894; van der Kolk & van der Hart, 1991; van der Kolk & Fisler, 1995; van der Kolk, Osterman, & Hopper, 2000).

It is precisely this failure to transform and integrate the sensory imprints associated with the trauma that causes people with PTSD to behave as if they were living in the past, even though they may be quite aware that their reactions are out of proportion with the current stimulus. However, because of people's infinite capacity for rationalizing irrational feelings and behaviors, traumatized people often do not realize that these feelings or actions are irrelevant to the present. The discrepancy between people's

"irrational" feelings and behaviors, and their rationalizations for them, is a function of human consciousness, which, among other things, serves to protect them from becoming aware of the true meaning of the messages that are conveyed by the areas of the brain that specialize in self-preservation and danger detection.

The extraordinary capacity of the human mind to distort one's experiences is illustrated in the longitudinal study of the psychological and physical health of 200 Harvard undergraduates who participated in the second world war (Lee, Vaillant, Torrey, & Elder, 1995). When these men where re-interviewed about their experiences 45 years later, those who did not have PTSD had considerably altered their original accounts: the most intense horror of the events had been bleached. In contrast, those who had been traumatized, those who developed the "disorder" that we call PTSD, had been unable to modify those war memories and essentially preserved their memories intact, 30 years after the traumatic events.

Thus, while is "normal" to distort one's memories, people with PTSD seem to be unable to put the event behind and to minimize its impact. The process that prevents memories from becoming "processed", i.e. integrated within the large conglomeration of one's autobiographical memory stores is dissociation - failure to integrate all elements of the experience into a coherent whole. Dissociation is the process that prevents traumatic memories from becoming integrated, and that causes them to lead a relatively independent existence from the remainder of a person's conscious experience. If the problem with PTSD is *dissociation*, treatment should consist of *association*.

The traumatic memories that need to be associated are not the verbal account of the past, but the fragmented sensory or emotional elements of the traumatic experience that are triggered when the person with PTSD is confronted with a sufficient number of sensory of emotional elements that are associated with the trauma. When these are activated the entire neural net in which the memory is stored is stimulated, precipitating a re-living of an old, terrifying event (Lang, 1985; Pitman et al, 1990; van der Kolk & van der Hart, 1991).

Thus, the core pathology of PTSD is that certain sensations or emotions related to traumatic experiences keep returning in unbidden ways, and do not fade with time. That does not mean that the *stories* that traumatized people tell to *explain* what is going on do not change: narratives are a function of the interaction between speaker and listener. The words that people use to *explain* what they are feeling and sensing depends highly on the context in which the story is told: the cues and feedback received by the environment, and the language that is culturally acceptable for explaining internal experience . Treating PTSD consists, in large part, of helping patients overcome the traumatic *imprints* that dominate their lives: sensations, emotions and actions that are irrelevant to the demands of the present, but that are triggered by current impressions that keep re-activating old, trauma-based, states of mind.

Until recently we had little knowledge how to help people integrate such disintegrated traumatic imprints. Traditionally, before the advent of contemporary methods of treatment outcome evaluation, many clinicians, from Pierre Janet to Milton Erikson and his followers, considered hypnosis to be the treatment of choice. Unfortunately the efficacy of hypnosis for the treatment of PTSD was never systematically studied. EMDR was the first of a group of new therapies that did not primarily rely on speaking about one's traumatic experiences, but that claimed to be able to rapidly and effectively integrate traumatic memories by asking PTSD subjects to focus intensely on the emotions, sensations and meaning of the traumatic experience, while asking to follow the hand of a clinician who induces slow saccadic eye movements. EMDR had a number of advantages over hypnosis, including the fact that it could easily be put into a treatment protocol. This makes it relatively easy to conduct treatment outcome research. Since it was first articulated by Francine Shapiro, around 1988, it has received intense scientific scrutiny and has been found to be quite an effective treatment of PTSD (e.g. Chemtob et. al, 2000), even though the specific role of eye movements in its therapeutic action remains controversial.

The Subcortical Nature of Traumatic Memories

The power of old memories to come to haunt the present with their uncontrollable intensity and precision confronts us with the fundamental question of how the mind processes data that are emotionally overwhelming. After people have been traumatized, certain feelings, sensations or actions can, without apparent rhyme or reason, generate a predictable set of emotional or physical responses that are utterly irrelevant to what is actually going on. These reactions seem to occur in people who suffer from PTSD because neuronal networks in the brain are activated by sensations, emotions, feelings that correspond to the sensations, emotions, or feelings that were experienced at the time of the trauma. This then tends to activate a response that would have been relevant on the original occasion (such as fight or flight), but fails to resolve the hurt, pain, terror, or helplessness that the person experiences, just as it failed to do so during the trauma itself (Kardiner, 1941).

By definition, an experience is traumatic when a particular event, or series of events, comes to define the way people organize their subsequent perceptions. In the first comprehensive theory of traumatic stress, in 1889, Pierre Janet proposed that this is the result of people experiencing "vehement emotions" at the time of a trauma. These, he thought, made it very difficult to put the whole experience into a satisfactory narrative. Janet was the first to propose that the inability to fully observe and "own" what has happened causes an essential failure of memory: the event is organized, not as a coherent, integrated part of one's self, but as disconnected emotions, visual perceptions, or kinesthetic sensations that are reinstated when people are exposed to sensations or emotions that reminded them of those events.

Janet proposed that there are at least two different memory systems for intense emotional experiences: one is an autobiographical memory system that is verbal, and which serves the social

function of being able to communicate one's experiences to others. The other memory system, which we would call today "implicit" memory, contains the sensory and emotional imprints of particular events that determine the value that people attach to those imprints (Pitman et al, 1993, van der Kolk & van der Hart, 1991). Janet suggested that these two memory systems function relatively independently from each other.

Today we would argue that subcortical areas of the brain, the primitive parts that are not under conscious control and have no linguistic representation, have a different way of remembering than the higher levels of the brain, located in the prefrontal cortex. Under ordinary conditions these memory systems are harmoniously integrated, while, under conditions of intense arousal, the limbic system and brain stem may produce emotions and sensations that contradict one's attitudes and beliefs, which causes people to behave "irrationally."

Contemporary research has shown that high levels of arousal interfere with frontal lobe function (Arnsten, 1999; Birnbaum, Gobeske, Auerbach, Taylor, & Arnsten, 1999), that reliving a traumatic experience interferes with adequate Broca's area functioning (the brain region necessary to put one's feelings into words) (Rauch et. al., 1996) and executive function, located in the dorsolateral prefrontal cortex (Lanius, in Press).. This, and the altered functioning of other brain regions that are necessary for proper appraisal of incoming stimuli (such as the hippocampus, thalamus, and cingulate, see below) seem to be responsible for the fact that trauma imprints are organized as fragmented sensory and emotional traces (van der Kolk & Fisler, 1995; van der Kolk et al, 1996; van der Kolk et al, 2000).

When people remember a particular event they generally do not also relive the physical sensations, emotions, images, smells or sounds associated with that event. Ordinarily, all the remembered aspects of experience coalesce into one coherent narrative that captures the essence of what happened. As people remember and tell others about an event, the story is likely to gradually change with time and telling. The "implicit" memories of traumatic events have a very different quality. When traumas are recalled people "have" the experience: they are engulfed by the sensory or affective elements of past traumas. Traditional psychotherapy has focused mainly of constructing a narrative that explains why a person feels a particular way, with the expectation that, by understanding its context, the symptoms (sensations, perceptions, emotional and physical reactions) will disappear. Or, as Freud put it in *Remembering, repeating and working through* (1914): while the patient lives it through as something real and actual, we have to accomplish the therapeutic task, which consists chiefly of translating it back again in terms of the past".

Freud and Trauma

After visiting the Salpètrière, Freud adopted the concepts about hysteria then current at that institution and returned to Vienna (James, 1894). In 1893 he and his new mentor, Joseph Breuer, wrote a seminal paper entitled " The phenomenology of hysteria"(1893), in which they identified most of the

critical questions about the relationship between trauma, memory, and the therapeutic process. After noting that these patients often lack a narrative memory for traumatic events, they claimed that "hysterics suffer mainly from reminiscences". The main topic of "The phenomenology of hysteria" was the question: what it is about memories of trauma that makes them impervious to the normal wearing away processes typical of all memory? Breuer and Freud postulated that, under ordinary conditions, an emotionally upsetting event is put to rest by an appropriate physical reaction. This is accompanied by an autonomic or muscular discharge, which somehow promotes the mental integration of the experience into autobiographical memory stores. Like Janet, they felt that it is crucial to move beyond emotionally upsetting experiences by associating this experience to other memories that are stored in the mind. This creates a larger psychological context for the particular experience. When proper integration occurs, the event comes to serve as an idea that guides future actions, rather as something that is being revisited over and over again without resolution, apart from one's other life experiences.

In their paper, Breuer and Freud (1893) postulated that when people find adequate physical expression to alleviate their emotional distress, e.g. such as occurs in acts of revenge, they eventually can leave the trauma behind. They essentially proposed, many years before the concept was introduced in psychology (Maier & Seligman, 1976), that "inescapable shock" lies at the origin of traumatic neuroses. However, they did not see physical action as the only way for people to overcome emotional imprints of past experience. In their paper they state their belief that by finding *verbal expression* for the emotional and factual elements of the experience, people eventually can put these intense experiences behind them. With this statement Breuer and Freud set psychotherapy on the road of "the talking cure" for the next century.

However, the basic assumption that finding words to express the facts and feelings associated with traumatic experience can reliably lead to resolution remains to be proven. It might be equally, or more, valid to postulate that performing the actions that would have overcome one's sense of helplessness at the time that the experience occurred, and giving expression to the sensations associated with the memory of trauma will effectively help people overcome their traumas. This is just one of the many questions that remain to be studied.

Breuer and Freud (1893) were struck by another characteristic of extremely upsetting experiences: That there often is little or no verbal capacity to represent the event. Whether this is due to intentional forgetting, involuntary dissociation, or active suppression and avoidance is not the critical therapeutic issue: the net result is that patients often cannot talk about the very things that need to be processed in order to come to terms with what has happened and go on with life. Thus, the hidden nature of the traumatic imprints vexed many schools of psychotherapy. The big question necessary for effective resolution was: how create associative networks that would allow people to integrate and "own" the

reality of what had happened to them, without repeating it, over and over again, without resolution. In other words: how to make these unconscious imprints conscious.

Initially, Freud employed hypnosis, but after having become concerned with the problem of suggestibility he came to resort to the technique of free association in which he hoped that by slips of the tongue and deeper understanding of dreams and other dissociative processes, patients and analysts would gain deeper access to the unconscious. At the same time, Freud discovered that unconscious mental assumptions and interpersonal experiences would be relived in the transference relationship. Henceforth, psychoanalytic therapy came to rest upon the twin pillars of understanding the patients' thought processes, as revealed in free association and in dreams, and the reenactment of earlier interpersonal schemes and derivatives of attachment relationships within the transference.

The Processing of Experience

Humans continuously filter, interpret, transform and make meaning out of incoming sensory input, which may come from inside: muscles, viscera, chemical balance related to food, breathing and fatigue, or from outside: images, touch, smell and sounds. These sensations are meaningless unless they are interpreted and attached to other sensations, configurations, and the larger scheme of things. A basic task of the human mind is to evaluate the significance of all incoming information, and integrate its emotional and cognitive significance. In this process, it needs to rapidly scan millions of possible connections and associations in order to create the proper interpretation about their existential relevance. The mind then needs to create a response that does not only produce internal satisfaction, but that also is in harmony with the demands and expectations of the environment.

From the moment of birth interpersonal processes provide the meaning and context of sensations and emotions. Newborn babies are continuously exposed to stimuli from inside and outside that they do not understand or know how to relieve. Babies depend on their caregivers to change the way they feel, and are programmed to cry out in order to attract attention. Babies leave it to their caregivers to figure out how to relieve their distress, which they do by acting (feeding, changing diapers) and by providing comfort merely with their presence, by touching them, making sounds (prosody) and movements (rocking, etc.).

If they are well cared for, children come to make associations between bodily signals, distress and various ways of feelings better and, as a consequence, they learn to utilize their own bodily signals and emotions as guides for action. As primates, we are programmed to look for others to provide us with the soothing and regulation that we cannot provide for ourselves. We seek help when we are either unable to understand and cope with uncomfortable feelings and physical sensations, or when we lack internal schemes to serve as guides for relief. This makes people prone to blame other people as the source of their distress and expect others to provide relief. This dependency may easily lead to the sort of tensions and

misunderstandings that everybody, but particularly the parents of small children, and therapists of traumatized individuals, are intimately familiar with. If comfort does not alleviate distress, people keep looking for other means to provide relief. This may range from helplessly clinging to others, ingesting drugs or alcohol that alter the way they feel, or engaging in physical acts such like bulimia or self-mutilation which they have learned will cause shifts in their internal world.

Regardless of the quality of early caregiving experiences, one's bodily awareness remains the very foundation of one's consciousness. People continuously try to figure out the meaning of their sensations and most of the time they can comfortably put them into the context they belong. As people mature they develop an ever larger capacity to create mental associations to particular physical sensations that make sense to them, and hence prevents the emergence of anxiety. However, when meaning of physical sensations is mysterious, or is associated with extreme arousal (or numbing), people may be unable to figure out what to do to manage their sensation and make them relevant. The sensations have no chance to be associated with potential solutions, and people either go into a panic, or shut down in an effort to ignore them or push them away.

Trauma and Physical Sensations

The uniqueness of trauma is that certain sensations are carved into mind and body that are prone to be interpreted within the narrow definition imposed by a traumatic past. Examples are: the reactions of combat veterans to the sound of firecrackers in the summer (but not in the winter, because the temperature is different), or how incest survivors may react to certain physical sensations they associate with violation. After developing PTSD, the mind loses its flexibility to attach incoming sensory information to a whole range of associations: trauma becomes a black hole that connects all sensations, "like the rain drops falling on the roof are collected down the rainspout" (Tank & Hopfield, 1987, p.106; Pitman & Orr, 1990). If PTSD consists of a frozen sensory world, the therapeutic challenge is to open the patient's mind to new possibilities so that he or she can encounter new experiences with openness and flexibility, rather than interpreting the present as a continuous re-living of the past.

Central to PTSD is an inability to properly place certain physical sensations into the context of one's current experience and to, instead, automatically react with actions, such as hyperactive physical readiness, or freezing. Those responses appear the sensorimotor equivalents of visual flashbacks – intrusions from the past that are irrelevant in the present time. It appears that the sensorimotor processes from the original traumas have not been assimilated, and are easily triggered again, if a sufficient number of sensory elements of the original trauma are activated. The traumatized person is unlikely to be aware of the physical sensations that precipitate fearful emotions and threatening actions. They are not consciously experienced as being caused a reminder of something that occurred in the past - the hyperarousal or freeze reaction usually has no historical context. It is as if traumatized people lack a central organizing force to

help them place what is happening in its proper context- in time and space. Trauma-related sensations are frozen in time, and the sufferer may believe that they will never end and that they can do nothing to make them stop.

When they experience such intense emotions, people follow the human inclination to make meaning out of what they feel. In their attempt to create a context, traumatized people try to figure out what in their current environment makes them feel this way: they search for some current stimulus "out there" that explains why they are so upset. They tend to blame themselves and think they're not normal. This is understandable, because something or somebody likely served as a trigger of the sensations that precipitate such dread, shame, fury or disgust. However, the attempt to find an explanation for these sensations in the present is likely to be lead to an attribution to the wrong stimulus and thus lead to "false cognitions".

The Neurobiology of Trauma

While the basic psychological formulations of how the mind processes traumatic experiences had largely been formulated by the end of the last century (and were rediscovered episodically throughout the 20th-century – van der Kolk et al, 1996), it has only been in the last 20 years that we have gained a real understanding of how the brain mediates these processes. Understanding these brain processes, in turn, has started to help us refine the psychotherapeutic interventions that are necessary to overcome trauma.

Numerous studies have shown that people with PTSD, when confronted with elements of the original trauma, have psychophysiological reactions and neuroendocrine responses that reflect their having been conditioned to respond to certain traumatic reminders as if they were re-exposed to the actual trauma itself. In other words, their bodies continue to react as if they were traumatized, even though the event may have occurred many years the past. As Kardiner put it in 1941: "their focus of attention is narrowed down to stimuli related to threat". When confronted with a sufficient number of sensory elements that match the sensory imprints at the time of the original trauma (such as being touched the particular way, being exposed to certain smells or in seeing things that remind them of the earlier event), patients with PTSD activate biological systems as if they were traumatized all over again**.**

One of the many biological systems that have been identified as being affected by traumatic experiences is the part of the limbic system that is centrally involved in interpreting the emotional significance of experience: the amygdala. Research in recent years has shown that the limbic system plays a significant role in causing traumatized individuals to interpret relatively innocuous reminders as harbingers of return of the trauma. A part of the limbic system, the amygdala, serves as the "smoke detector" that interprets whether incoming sensory information is a threat. The amygdala forms emotional memories in response to particular sensations, sounds, images etc. that have become associated with threat to life and limb. These emotional interpretations are thought to be "indelible", i.e. extraordinarily

difficult to extinguish (LeDoux, 1996): once the amygdala is "set" to remember particular sounds, smells, bodily sensations, etc. as dangerous, the body is likely to respond to any of these stimuli as a trigger for the return of the trauma. The challenge of any effective psychotherapy, therefore, is to decondition the amygdala from interpreting innocuous reminders as a return of the trauma.

The Tyranny of Language

In an earlier paper (van der Kolk, 1994) I have outlined how it is likely that in traditional, insight oriented psychotherapy, people learn to understand that certain emotional or somatic reactions belong to the past, and are irrelevant to their present lives. This may help them override automatic physiological responses to traumatic reminders, but not abolish them. While providing a deeper understanding why they feel the way they do, insight of this nature is unlikely to be capable of reconfiguring the alarm systems of the brain.

In a neuroimaging study utilizing PET scans, we (Rauch et al., 1996) showed that when people relive their traumatic experiences there is decreased activation of Broca's area and increased activation of the limbic system in the right hemisphere of the brain. This suggests that, when people with PTSD are re-living their trauma, they have great difficulty putting that experience into words. In fact, relatively increased activation of the right hemisphere, compared with the left, would imply that, when people re-live their trauma, they are imbedded in the experience: they are having the trauma, but lack the capacity to analyze what is going on in appropriate space and time.

Experience shows that when people are asked to put their trauma into words, while they are in the process of re-living it, this can be enormously upsetting, and sometimes even impossible. Re-living the trauma without being firmly anchored in the here-and-now leaves people with PTSD often more traumatized than they were before. Recalling the trauma can be so painful that many patients choose not to expose themselves to situations in which they are asked to do so, including to exposure therapies.

Research with such therapies has shown that, if people are capable of sticking with treatment and re-live the trauma in words and feelings in a safe therapeutic context, there is a substantial likelihood that they will overcome their PTSD (Foa et al.1999; Resick & Schnicke, 1992). However, these forms of treatment also have very large dropout rates (Pitman et. al., 1991, Ford &Kidd, 1998; Spinazzola et. al., 2000), probably because patients feel too overstimulated by the experiencing of the trauma, without getting rapid relief. So, when treating PTSD one central challenge is how to help people process and integrate their traumatic experiences without making them feel traumatized all over again, or, in the language of neuroscience: how to process trauma so that it is quenched, rather than re-kindled (Post, Weiss, Smith, Li, & McCann 1997)?

Clinical Dilemmas Facing the Therapist of Traumatized Patients

Clinicians treating individuals with PTSD are confronted with a number of issues that complicate

the capacity to provide effective psychotherapy.

1. Speechlessness. Traumatized individuals often lack the capacity to communicate the essence of what has happened to them in words. Instead, the imprints of their trauma consist of sensations and perceptions that may have no verbal equivalents. Confronted with sensations that re-instate a traumatic state, people with PTSD simply have their feelings, maladaptive behaviors, and uncomfortable bodily sensations, without knowing where they come from. While words may provide validation, a context, a capacity to provide an explanation for the origins of their sensations and emotions, they are unlikely to neutralize the emotional associations of their sensations and make them go away. In addition, many traumatized individuals suffer from alexythymia, a lack of capacity to interpret the meaning of their bodily sensations: they simply may not know what they feel.

2. Re-traumatization. When they recall the trauma, many people with PTSD become so emotionally distressed that the recollection of the trauma itself feels to them like a re-traumatization. As a result many individuals with PTSD avoid talking psychotherapy.

3. The relationship. Many people with PTSD have seen their trust shattered and are reluctant to make themselves vulnerable to other human beings, particularly when it comes to issues that make them feel frightened and ashamed. Many clinicians assume that a safe therapeutic relationship is the cornerstone of any therapeutic enterprise. Most clinicians seem to believe that providing a relationship in patients can let down their defenses and abandon their distrust is essential for being able to access memories of the most painful and shameful elements of their past. At the same time, clinicians working with traumatized individuals are all too familiar with the fragility of the therapeutic relationship in PTSD: the frequent disruptions of trust, the abrupt terminations, the numerous different therapists who have been asked to provide relief, over time, the intense transference dilemmas in which love and hate in all their original intensity can make therapeutic, i.e. reflective and analyzing, work virtually impossible. Maybe the therapeutic relationship should attempt to provide a context in which the patient is encouraged to actively mobilize defenses, even in relation to the therapist, and become discerning in what he trusts and what he doesn't. Only when the patient possesses adequate defenses can memories be accessed without retraumatising the patient.

4. Avoidance. Many traumatized individuals who are in psychotherapy seem to have been able to construct a narrative of the trauma that satisfies their need to communicate the essence of what they went through, but that leaves out some of the critical elements of the experience. It may be exactly those elements, the sensations that the patient actively avoids confronting and re-living in the therapy relationship, that are most prone to return as flashbacks, nightmares and behavioral re-enactments.

5. Physiological conditioning. Even after people remember the totality of the trauma, understand how they re-enact it in their daily lives, re-establish trusting interpersonal relationships and create ever

larger islands of safety and competence, people with histories of PTSD continue to be vulnerable to react physiologically to reminders of the trauma as if they are back in the past.

The Therapeutic Challenge

Given these various dilemmas, an ideal treatment would help people process the past without their reexperiencing it as if it were occurring right now all over again. Such treatment would be able to decondition people from their physiologically inappropriate responses which came into being at the time of the trauma, but which are no longer relevant under ordinary conditions. While ideal treatment would be expected to occur within a respectful therapist - patient relationship, it would not force the patient to re-live the pain, disappointment and shame derived from earlier interpersonal betrayal within that relationship. Moreover, effective treatment should minimize the time spent on re-living the past and its concomitant emotional devastation, and help patients to be fully present in the here-and-now, without the residual dissociation and/or hyperarousal that is characteristic of PTSD.

Top-down versus Bottom-up Emotional Processing

More than a century ago, William James formulated the James-Lang theory of consciousness, which held that the feeling of emotion is the result of perceiving the body's change. This means that consciousness is fundamentally a product of the interpretations that the central nervous system attaches to the physical sensations that are the products of bodily states. One central finding of contemporary neuroscience, as articulated by such authors as Antonio Damasio (1999), Jaak Panksepp (1998) and Steven Porges (1995, 2000) is that sensate experience plays a critical role in generating emotional states.

Damasio (1999, p.29) states that “the collection of neural patterns which constitute the substrate of a feeling arise in two classes of biological changes: changes related to body state and changes related to cognitive state.” Most forms of traditional psychotherapy have focused largely on changes related to the interplay between emotions and thought. When a person is upset, the therapy attempts to grasp the meaning of what gives it such emotional power, while happenings in a patient’s life are examined for their emotional significance. Most therapies have essentially ignored changes related to bodily states: the sensate dimension of experience. Emotional states are generated by the state of the body's chemical profile, the state of one’s viscera, and the contraction of the striated muscles of the face, throat, trunk, and limbs (Damasio, 1999).

Infants learn to first interpret their physical sensations in the context of their physical interactions with their mothers. The only tool that a mother has to modulate emotional states of a baby is by directly changing the infant’s physical sensations: by rocking, feeding, stroking, changing sources of physical discomfort, such as wet diapers, as well as by making soothing noises and engaging in other comforting physical interactions. The infant is a “subcortical creature…[who] lacks the means for modulation of behavior which is made possible by the development of cortical control." (Schore, 1994, p. 30). This is

strikingly similar to the experience of traumatized people who also appear to be at the mercy of their sensations, physical reactions and emotions, which makes it difficult for them to modulate how they feel. This physiological hyperreactivity is characteristic of PTSD (Shalev, 1996).

Even as they mature, human beings continue to rely on the feedback from their somatic state to signal whether any particular stimulus is dangerous or agreeable, and, even though they vastly expand their repertoire of soothing activities, they continue to rely on being able to establish physical (sensate) homeostasis to establish as sense of “flow”, or “being grounded”. Many different brain systems are involved in the harmonious integration of mental functioning. Self-regulation starts at the level of the brain stem – a part of the brain that is essentially hidden from conscious experience, and cannot really be modified by reason. As Damasio (1999, p.58) says:

We are about as effective in stopping an emotion as we are at preventing a sneeze. What we achieve is the ability to disguise some of the external manifestations of emotion without being able to block the automatic changes that occur in the viscera and internal milieu.

Once people are traumatized and develop PTSD (or if they were abused and neglected as children and, as a result, lack the experience of having been involved in a healthy “regulatory dyad”, of which a healthy mother-child interaction is the prototype), they loose the capacity for effective regulation of emotional states, which is expressed as a hypersensitivity to experience unpleasant experiences as existential threats. This hypersensitivity is based on deficient internal emotion modulation mechanisms. Lacking the capacity to sooth themselves, they rely on actions, such as fight or flight, or pathological self-soothing, such as self-mutilation, bingeing, starving, or the ingestion of alcohol and drugs, to regulate internal homeostasis.

Fischer, Murray, and Bundy (1991) have stated that:

The brain functions as an integrated whole, but is comprised of systems that are hierarchically organized. The "higher level" integrative functions evolved from and are dependent on, the integrity of "lower-level" structures and on sensorimotor experience. Higher (cortical) centers of the brain are viewed as those that are responsible for abstraction, perception, reasoning, language, and learning. Sensory integration, and inter-sensory association, in contrast, occur mainly within lower (subcortical) centers. Lower parts of the brain are conceptualized as developing and maturing before higher-level structures; development and optimal functioning of higher-level structures are thought to be dependent, in part, on the development and optimal functioning of lower-level structures. (p. 16).

When the organism perceives a threat, this activates pre-ordained fixed physiological and motor sequences, such as such the startle reflex and various expressions of the fight/ flight/ or freeze response**.** The simplest sequences are involuntary reflexes, located in the spinal chord (e.g., the knee jerk reaction). These are the most rigidly fixed, while more complex response patterns are influenced by early

experiences, such as the automatic motor responses that are come on line at an early young age, such as walking and running.

The degree to which these lower responses can be inhibited depends, in part of one's relative level of emotional arousal, which depends on the activation of brain stem arousal centers. Under ordinary conditions, one can suppress one's anger or irritation, or ignore the sensation of hunger, even while the appropriate physiological processes associated with these states, such as increased blood pressure, the secretion of saliva and contraction of stomach muscles, continue. This inhibition is called "top-down processing" (LeDoux, 1996, p. 272): higher (neocortical) levels of processing can and often do override, steer or interrupt the lower levels, elaborating upon, or interfering with emotional and sensorimotor processing (Ogden & Minton, in press).

Much adult activity is based on top-down processing: higher cortical areas act as a "control center". Neocortical areas such as the orbitofrontal cortex, the medial frontal cortex and the dorsolateral frontal cortex hierarchically inhibit subcortical activity (e.g. Schore, 1994). It is as though people most of the time hover above their somatic and sensory experience, knowing it is there, but not allowing it to dominate their actions. Under ordinary conditions, consciousness allows people to achieve relative homeostasis and control the machinery of emotion, attention, and regulation of body states. Or as Damasio (1999, p.28) claims:

> *We use our minds not to discover facts but to hide them. One of things the screen hides most effectively is the body, our own body, by which I mean, the ins and outs of it, its interiors. Like a veil thrown over the skin to secure its modesty, the screen partially removes from the mind the inner states of the body, those that constitute the flow of life as it wanders in the journey of each day.*
>
> *The … elusiveness of emotions and feelings is probably a symptom, an indication of how we cover the presentation of our bodies, how much mental imagery masks the reality of the body. Sometimes we use our minds to hide a part of our beings from another part of our beings rather than concentrating resources on the internal states, it is perhaps more advantageous to concentrate one's resources on the images to describe problems out in the world, on the options for their solution and their possible outcomes. But this has a cost. It tends to prevent us from sensing the possible origin and nature of what we call self."*

Bottom-up processing represents a different way of processing information. Young children and threatened adults cannot inhibit emotional states that have their origin in physical sensations. Top-down processing is based on cognition and is operated by the neocortex. This allows for high-level executive functioning by observing, monitoring, integrating and planning. It can only effectively function if the input from lower brain levels is inhibited.

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 re-activated unintegrated fragments of traumatic states. Top-down processing is focuses on inhibiting rather than "processing" (integrating) unpleasant sensations and emotions. Ogden and Minton (in press) describe bottom-up processing as follows:

> *"Patients are asked to mindfully track the sequence of physical sensations and impulses (sensorimotor processes) as they progress through the body, and to temporarily disregard emotions and thoughts that arise, until the bodily sensations and impulses resolve to a point of rest and stabilization in the body. The bottom-up element of the process consists of people learning to observe and follow the unassimilated sensorimotor reactions (primarily, arousal and defensive reactions) that were activated at the time of the trauma"*.

Bottom up processing, by itself, does not resolve trauma, but if the patient is directed to track and articulate sensorimotor experience while consciously inhibiting emotions, content, and interpretive thinking, sensorimotor experience can gradually be assimilated.

Awareness, as opposed to avoidance, of one's internal states allows feelings to be known, and to be used as guides 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 sensations one introduces new options to solve problems. This allows people to not react reflexively, but to find better ways to adopt. "Consciousness establishes a link between the world of automatic regulation and the world of imagination - the world in which images of different modalities (thoughts, feelings, and sensations) can be combined to produce novel images of situations that have not yet happened" (Damasio, 1999, p.258).

Learning about EMDR

Five years ago a friend and colleague, Steve Lazrove, visited me and showed me two videotapes of his treatment of complex PTSD patients utilizing EMDR. Up to that time I had been highly skeptical of this newfangled technique which, I knew, had made so many converts among mental health professionals. I considered it yet another fad, rather like transcendental meditation, or est. However, in the videotapes, I witnessed people who had obvious intense physiological reactions and psychological distress in response to recalling their traumatic experience, which seemed to entirely disappear following a few sessions of EMDR. An event which initially seem to be re-lived with timeless intensity had, within a few weeks, merely become a story of something belonging to the past, devoid of much further interest. Since I had tried for many years to help patients gain control over their traumatic memories and never had achieved treatment results anywhere close to what I saw in the videotapes, I decided to take the EMDR training. I did not find the theoretical part of the training very useful, but was most intrigued with what

happened during the EMDR sessions, both as subject and as object.

In my own session I thought about the recent closing of my Trauma Clinic and the intense distress that that continued to cause me. During the EMDR session I had a rapid succession of hypnopompic images of my family childhood scenes which appeared to contain some elements of the closing of the clinic. After half an hour of processing these images, my distress upon recalling the announcement of the clinic closing had considerably diminished. The next element of the EMDR training consisted of my administering EMDR to a therapist colleague who wanted to address some painful adolescent incidents with his father, but who did not want me to know any of the details about what had happened and the distress he felt. I was struck by the intense affect that seem to be precipitated by the EMDR session, and the almost total absence of verbal interchange between him and me. In fact, my subject was quite hostile to me throughout the entire EMDR session and at the end of our episode told me that he found meeting with me so unpleasant that he would never refer a patient to me. He also told me that he felt that he had resolved these very painful issues with his father.

I left my EMDR level I training greatly preoccupied with three impressions about EMDR which have continued to fascinate me to this day: (a) That EMDR seems to loosen up free associative processes, giving people very rapid access to memories and images of their past, possibly allowing a person to, in some way, associate current painful life experiences to prior life events that have been successfully mastered; (b) That EMDR seems to be able to accomplish its therapeutic action without that subject having to articulate in words the source of his distress. In other words, it seemed to be possible for EMDR to be effective while people remained in a relative state of speechlessness; (c) That EMDR may have a beneficial action even in the absence of a trusting relationship between patient and therapist.

Since that time all these initial impressions have been confirmed by further experience, while at least one additional source of amazement has been added. It appears that EMDR is capable of softening the pain of past experience, while it can also enhance feelings of pleasure and serenity associated with others.

Further Experiences with EMDR

After we completed our first collaborative efforts to image people having traumatic memories (Rauch et al., 1996) we became very interested in pursuing the possibility of imaging how the brain of people with PTSD may change following effective treatment. When the clinicians at the Trauma Center began to show each other videotapes of patients with PTSD that seemed to demonstrate dramatic improvements after only a few sessions of EMDR, we decided to embark on a pilot study of treatment outcome using EMDR in which we would use changes in brain function as one of the outcome measures. We recently completed that study and will report the full data set elsewhere. However, in the study we found that 8 of the 12 enrolled subjects had more than 30 percent decrease in their CAPS scores after

three sessions. Generally, these decreases in PTSD scores were accompanied by a concomitant decreased physiological reactivity to a personalized trauma script.

Our brain scan images suggest that several study subjects had decreased pre-frontal lobe activation when they were exposed to their personalized trauma script prior to treatment. Following three sessions of EMDR there appeared to be an increase in pre-frontal lobe metabolism. This would reflect increased frontal lobe functioning which would facilitate being able to make sense of incoming sensory stimulation. This increased frontal capacity appears to be reflected in the change in our subjects' accounts of their traumatic memories. Following EMDR treatment their narratives of the trauma had a much more symbolic quality than before. For example, one subject following EMDR treatment reported:

I remember it is it as though it was a real memory, but it was more distant, more manageable. It did not have the vividness that I'm used to having. Typically, I drowned in it, but this time I was floating on top. I had a certain our in calling up the memory. I did not feel as helpless I had to feeling that I was in control, that I was not going to drown.

Similarly, another subject said pre-treatment condition, "I saw myself really skinny and naked in the shower. I just see me, with my skin kind of listening. He was dressed and I wasn't." After the EMDR treatment the same subject said, "It wasn't as vivid. I did not see myself on the floor, skinny and wet and frightened. I just kind of listen to the tape and didn't see anything, until he has me against the wall." A third subject reported after EMDR treatment, "This time it was like a cohesive unit. I felt each and every step of it before. Now, it is like an event. It is like a whole, instead of fragments, so it is more manageable." These sort of changes in personal narratives suggest that EMDR is capable of helping people generate associations between previously dissociated, fragmented sensory impressions.

EMDR as Accelerated Information Processing

The central challenges of psychotherapy have always been the quest to help patients gain control over the feelings that are usually blocked off, but that intrude in behavior and emotion in unbidden ways. Over the years, different schools of psychotherapy have attempted to use different techniques to facilitate access to those feelings and promote harmony between emotions, cognitions and behavior. Two well-known tools to promote such associations within the psychoanalytic tradition have been hypnosis and free association. Psychoanalysis found the understanding of dreams and their analysis to be an important tool in helping people understand and make associations between different life events, motivations, and affect experiences. For reasons that are not currently understood, EMDR seems to provide a third avenue to facilitate such linkages, a method that appears to work much faster than any other non-pharmacological tool that has hitherto been employed.

While different patients have very different experiences during EMDR treatment and even patients themselves may have very different experiences from one session to the next, many patients

report very rapid access to material that they had not consciously linked as being relevant to their current quandaries. Some patients are much more articulate about the images and thoughts that come to their minds during EMDR sessions that others.

The Integrative Capacity of EMDR: Transcript of One Session

I hereby would like to illustrate the capacity of EMDR to help patients integrate their experiences. The reason to give a transcript is to allow an evaluation of the therapeutic process, which cannot be captured in rating scales, or other quantitative methods. This is a transcript of one EMDR session with a 24 year old woman during her fourth treatment session. She had been in individual psychotherapy for three years with a therapist whom she trusted and felt understood by, but with whom she felt she had stopped making progress. She functioned well in her current professional position, but had severe impairments in her interpersonal relationships which she ascribed to a long history of paternal incest and numerous other incidents of sexual abuse at the hands of her father and his friends. While competent in her profession, she had never managed a sustained close interpersonal relationship and was terrified of being involved in intimate relationship with either men or women.

At the end of each set of eye movements the therapist says, “Take a deep breath,” followed by, “what do you get now,” or “what comes to mind now.” Carefully tracking emotional changes in the patient, he says, “stay there,” or “feel that” when the patient seems to have arrived at a new level of emotional arousal, or a new emotionally significant theme. Other than those sentences, the therapist merely remains silent and attentive, staying “out of the way” of the patient’s associations.

Patient: I realize that I have scars -- from when he tied my hands behind my back. The other scar is when he marked me to claim me as his, and there (points) are bite marks.

I remember being doused in gasoline -- he took Polaroid pictures of me -- and then I was submerged in water. I was gang raped by my father and two of his friends; I was tied to a table, I remember them raping me with Budweiser bottles.

Therapist: applies EMDR.

Patient: Never again! I went to model mugging, it was great ! They really kicked butt! I saw them backing off. I yelled don't you see you are hurting me. I am not your girlfriend.

Therapist: applies EMDR

Patient: I'm picturing my life now- my big me holding my little me -- saying "you are safe now ".

Therapist: applies EMDR.

Patient: I have pictures of a bulldozer flattening the house I grew up in. It's over!

Therapist: applies EMDR

Patient: I rented the movie "A bastard out of Carolina". I saw how little I was -- and the brutalization of the little girl. It was not my fault.

Therapist: applies EMDR

Patient: I have an image of two me's. -- this smart, pretty, little girl -- and that little slut --. All these women who could not take care of themselves or me, or their men -- leaving it up to me to service all these men.

Therapist: applies EMDR

Patient: I am thinking about how much I like Jeffrey (he is in Europe now). Thinking that he might not want to hang out with the. Thinking "I can't handle it". I have never been someone's girlfriend before and I don't know how.

Therapist: What are the basics that you feel you don't know?

Patient: All the roles were so conditional. Now, there is a person who just what's to be with the -- it is too simple. I don't know how to just be still and be myself around men. Sexually, I am petrified.

Therapist: applies EMDR

Patient: (cries profusely). I had an image of Jeffrey and I sitting in the coffee house. My father comes in the doorway. He starts screaming at top of his lungs and he is wielding an ax; he says "I told you belong to me" -- he puts me on top of the table -- then he rapes me, and then he rapes Jeffrey. After impact model mugging I will know how to fight him off-- but not yet.

(Cries) How do you can you be “open” with somebody when you have visions of your dad raping you, and then raping us both".

Therapist: What are you feeling in your body when you say that?

Patient: I feel it in my forearms, in my shoulders and my right chest. I just want be held.

Therapist: applies EMDR

Patient: I heard Jeffrey say: "it's okay, that he was sent here to take care of me. And that it was not anything that I did and that he just wants to be with me for my sake.

Therapist: What do feel in your body now?

Patient: I feel really peaceful. I little bit shaky -- like when you're using new muscles. Some relief. He knows all this already.

I feel like I'm alive and that it is all over. I have to feeling that I do not need to be frozen anymore, because I am bigger and smarter than he. But I am afraid that he has another little girl and that takes me very, very sad. I want to save her.

Therapist: applies EMDR

Patient: I need to throw up. I had to throw up a lot as little girl. I have intrusions of lots of smells -- bad cologne, alcohol, and the smell of vomit. I believe I need to do something with this. There is a reason that I am so smart and have not become a drug addict or a prostitute. There is a sense of purpose in all this.

Therapist: applies EMDR

Patient: I really feel my mom here now. It is really nice. It feels like she wants me to forgive her. I have the sense that same thing happened to her when she was a little girl. She has been dead for six years now. But she is okay now and she is really proud of me.

Therapist: applies EMDR

Patient: I can really feel what it was like to hug her. (Cries for several minutes). I can really feel her bones -- she is apologizing to me over and over. She's telling me that this happened to her -- that it was my grandfather (cries profusely). She's also telling me that my grandmother is really sorry for not being there to protect me. That she tried to protect me by sending me Richard.

I just want to get all the memories out, I just want to get it out and over with.

Therapist: applies EMDR

Patient: I am remembering the gang rape in the garage. Feeling a tongue in my mouth. Felt my grandmother being there, holding my hand. That gave me a warm and safe sensation.

Therapist: applies EMDR.

Patient: I feel like it's over. I felt my grandmother holding me in my current age -- telling me that she is so sorry she married my grandfather. That she and my mom are making sure that it stops here (smiles and laughs).

Therapist: applies EMDR.

Patient: I have an image of pushing my father out of the coffee house with Jeffrey locking the door behind him. He stands outside. You can see him through the glass-- everybody makes fun of him.

Wrap up, end of session

EMDR and the Transformation of Experience

This session illustrates how, with use of EMDR, a person is able to transform her experiences and integrate her memories of what has happened to her, combining them with her wishes and imaginations, which allow her to move towards a subjective sense of completion and control. While, initially, she reports stark images, bodily sensations, and other imprints of horrendous childhood experiences (the reality of which were never questioned, and do not need to, because this is her subjective experience which dominates her perceptions of the present). During the EMDR session she is able, with little input from the therapist, to combine these images and sensations with her wishes to go on with her life. The three elements of EMDR that struck me during my own initial experience are also remarkable elements of this EMDR session. These are 1) the lack of, or minimal, input from the therapist, 2) the relative absence of words to describe the details of the traumatic experience, and 3) the activation of new images and thoughts that have, at best, weak associations to the core elements of the trauma.

A). EMDR promotes the activation of images and thoughts with only weak associations to core

elements of the trauma. The apparent capacity of EMDR to activate a whole variety of unexpected to sensations, feelings, images, and thoughts that are ordinarily not accessed in conjunction with other memories strikes me as the single most remarkable feature of this procedure. This capacity for association may be how people ordinarily integrate day-to -day experience into the totality of their self-experience. Sigmund Freud searched for ways in which to activate subconscious connections and came to rely on free association as the best methods available to him. It is possible that EMDR, as Francine Shapiro (1995) claims, indeed promotes accelerated information-processing, the very thing that Freud was looking for when he invented the method of free association. This lack of association, and the persistence of stark, unmodified and unsymbolized, imprints of sensory and affective elements of the trauma is characteristic of traumatic memories (van der Kolk & Ducey, 1989).

Robert Stickgold (2000) has pointed out the similarity between the associative process produced by EMDR and what seems to occur in REM sleep. He points out how REM sleep activates cholinergic activity in the brain. He has proposed that cholinergic activity during REM sleep promotes the loose association between various elements of experience. It is these loose associations that give dreams their irrational quality, but also promote the sprouting of associative networks that open up the possibility of multiple, flexible associations. Unlike in traumatic memories, where one sensation precipitates very specific associated memories, in REM sleep, seemingly like in EMDR, associative networks are highly flexible. In some way (hopefully the future subject of a whole new line of inquiry), EMDR seems to foster trauma related sensations to be integrated into new associations that are not necessarily connected with the traumatic past.

B). The therapeutic alliance is not central to the ability to process information, but therapeutic attunement is. For effective therapy to occur it must provide some degree of safety and structure. These are necessary to prevent the activation of interpersonal projections of threat or rescue. Therapy must help people fully experience their sensations and emotions without projecting them onto the environment, or re-activating a sense of helplessness and dyscontrol. Effective therapy helps people accept trauma-related feelings for what they are: reminders of the past.

The basic human position is social: that danger comes from outside and that we can manage emotions and sensations by controlling and effectively responding to the external world. People tend to project internal states of disorganization or fear onto the outside in order to defend themselves and regain a sense of power and control. People are programmed to control and inhibit when they feel out of control. Being unable to tolerate and utilize physical sensations and emotional states increases anxiety and the urge to control: a controlling person is an anxious person. Being able to manage the sensations as distinct finite chunks that change as a person attends to them creates a sense of mastery and ownership. This is the beginning of establishing new islands of safety and purpose, in which people come to trust the process of

the body, instead of trying to fight and dominate it --using the mind to support body processing.

When people feel safe, they tend to have pleasurable physical sensations, accompanied by feelings of openness and expansion. That, in turn, opens up new possibilities. Early experiences of safety, comfort and soothing give people a reservoir of pleasurable and safe memories. When they feel threatened and under stress people with that repertoire can evoke those feelings and apply them, at least for a while, to deal with the stress at hand.

This is opposite of what happens with traumatized people. They often are unable to distinguish between internal and external. The task for them then is to gain awareness of the threatening sensations they experience and place them where they belong, in their proper time and place. These sensations need to come to be organized in such a way that they come into harmony with current reality.

Good therapy activates and repairs these damaged internal regulatory processes by facilitating the organization of inchoate trauma-related sensations into new metaphors and new contexts**.** If the central deficit in PTSD is a decreased ability to associate new information to existing experience, but, instead, to hyper-associate current sensations to past pain, the task of therapy is to help patients form new associations that do not lead to a re-living of the past. This is not the same as telling stories: it consists of physically experiencing new possibilities by welcoming and allowing these split off bodily feelings to run their course. Having experiences that contradict prior associations may be capable of stimulating such flexibility.

One of the hallmarks of interpersonal traumatization is that people who have been victims of abuse and betrayal are likely to interpret a host of current interactions as a re- activation of the past: they easily become distrustful, frightened, aggressive, suspicious, or withdrawn in response to even minor provocations. The clarification and understanding of traumatic reexperiencing within the transference relationship often becomes a central aspect of many psychotherapeutic endeavors with chronically traumatized individuals. Even when patients are rationally convinced of the benign intentions of the therapist, minor misunderstandings or transgressions often can trigger full-blown re-experience of trauma related affects, images, and sensations.

While meticulous attention to these transference pitfalls is essential for successful therapy outcome, the relationship itself is unlikely to be able to thoroughly rearrange the patient's conditioned emotional responses and associated physiological abnormalities. The notion that a caring relationship between therapist and patient can provide a corrective emotional experience that can undo the damage of the past is fraught with difficulties. Any technique that can help people deal with their traumatic experiences and that does not necessarily involve a reliance on a trusting relationship may circumvent the ubiquitous threat of traumatic reenactment.

Conclusions

While knowledge of the elements of how trauma impacts mind and body is well over a century old, there has been a gradual refinement of that body of knowledge. One of those areas is the understanding that trauma is not primarily imprinted on people's consciousness, but, instead, becomes deeply imbedded in people's sensate experiences. Talking and insight may help people regain a sense of mastery, but they are unlikely to change people's sensate experiences that form the engines of continues traumatic reliving. The process that started with showing that bilateral eye movements can help people to rapidly and effectively process traumatic sensations and emotions, and their associated attributions of self and other, was a remarkable step in exploring new ways of helping people move beyond the tyranny of the past.

At this point we can only speculate about its mechanisms of action, and we are only at the beginning of the exploration of the precise elements of therapeutic action. Aside from its remarkable therapeutic efficacy, this novel treatment changes our most fundamental paradigms about how therapy changes psychological programs. Providing bilateral stimulation obviously does not directly affect consciousness, it is likely to act on subcortical processes that have little or nothing to do with insight and understanding.

The efficacy of EMDR as a therapy is relevant for the exploration of the basic underlying mechanisms of post traumatic stress, such as how trauma affects subcortical processes of emotion regulation, arousal modulation, threat information and memory processes. It promises to shed light on the fundamental question of how the mind comes to integrate experience in such a way that is prepared for future threat, while being able to make a distinction between what belongs to the present and what belongs to the past.

Only careful clinical observations, controlled experimentation and the integration of these with the knowledge base of multiple other disciplines, such as neuroscience, learning theory and developmental psychopathology, will allow us to fully appreciate the richness of this new method of psychotherapy that shows such promise to help people move beyond the tyranny of their traumatic histories.

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