Sourcing Image Formation in a Depth Psychological Approach to Posttraumatic Stress Disorder

by
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Abstract

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Although recognition of the constellation of emotional and mental events that comprise trauma date back to the late 19th century, contemporary curative approaches are derived from World War II desensitization treatments for battle fatigue that appear today in exposure-based therapies. To bring trauma therapy up to date, application of a phenomenological research method to critique contemporary treatments for posttraumatic stress disorder requires a multisystemic approach to the mind–body constellation that is clinically informed by state-of-the-art neuroscientific research relating to the pathophysiology of trauma. Particularly important is understanding the necessity of cross-hemispheric integration of emotional and cognitive imprints that persist after traumatic events. Mindfulness-based therapies such as the metacognitive model, emotion-focused therapies, and breath training such as samatha meditation techniques as well as the incorporation of somatic and ecopsychological approaches such as saltwater immersion are all effective, long-term, compassionate solutions that create lasting recovery from trauma and its adverse consequences to the life and well-being of the trauma victim.

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Dedication

This is dedicated to the wounded veterans and their sacrifices that have created the incredible freedoms we enjoy as Americans.

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Chapter I
Introduction

Area of Interest

It is epochal of the modern age that new technology will quickly outpace old reforms and create new paradigms as well as greater complexity. Today, trauma treatment is informed by an ever-growing technical and clinical map of its origins that expands our understanding of its neurophysiology and insinuates progressive treatments in the future. Recognition of posttraumatic stress disorder (PTSD) as a syndrome dates as far back as the late 19th century to the French neurologist Jean-Martin Charcot's diagnosis of hysteria and the research conducted at the hallowed institution of Salpêtrière, a psychiatric teaching hospital in Paris, in its day, "a temple of modern science" (Herman, 1997, p. 10). In her documentation of the era's interest in hysteria, trauma specialist Judith Herman (1997) reported that Charcot's Tuesday Lectures were punctuated with the actual screams of hysterical patients to illustrate this mysterious condition for the interest of students and medical luminaries alike. Pierre Janet, William James, and Sigmund Freud all came to investigate and observe Charcot's work at Salpêtrière (p. 10). Herman stated that, later, with the wars of the 20th century, hysteria transmogrified into new diagnoses: shell shock, after World War I, and after World War II, combat neurosis. In the wake of the Vietnam War and feminist research on rape victims, which notably echoes Charcot's earlier work with hysterical patients (pp. 20-28), PTSD was officially recognized by the American Psychiatric Association (1980) and

introduced in its third edition of the *Diagnostic and Statistical Manual of Mental Disorders*. As found historically with psychological treatments that are due for revisioning, I have noticed that there is sometimes more guesswork and posturing regarding effective treatment for PTSD than there are actual results with longitudinal efficacy. This discovery quickened my curiosity and innervated my wish to investigate.

Guiding Purpose

Trauma and its victims are part of the everyday agenda for the clinician who works in the field. How then does the responsible depth psychologist effectively approach the reality of trauma in a clinical setting while simultaneously maintaining loyalty to the theoretical underpinnings of the depth tradition based in Jungian psychology? The deeper one delves into the issues of trauma, the more apparent it becomes that trauma is pervasive and, from the perspective of PTSD, that it is understudied in terms of its co-occurrence with other major disorders. Furthermore, a large research base promulgates an amalgam of treatments for PTSD, yet ultimate questions remain regarding their efficacy. In light of the fact that, in this period of history, technical advances frequently outpace our ability to know or even infer their implications, as clinicians it is important that we continually reevaluate new research for its applicability to our field and commit ourselves to using this knowledge to advance treatment paradigms and improve client care.

Rationale

In some cases, when reviewing the actual techniques of certain persisting treatments for PTSD, the only explanation for their continued use seems to be more a commitment to the researchers' agendas and profiles in the scientific community than to

the actual well-being of the individuals they seek to treat. As healers, it is important that we sacrifice hubris regarding our status in the profession in favor of humility that allows others to contribute better ideas. This thesis aims to evaluate the field of trauma psychology by leaning into the advances and advantages of neuroscientific technical imaging and, in that process, query favored treatments, investigate actual levels of treatment efficacy, and reevaluate their curative promise. Just as technical images inform modern understanding of trauma psychology, so does image drive the psyche in trauma. Analytical theorist James Hillman (1981) noted that "images are the fundamentals which make the movements of psychodynamics possible" (p. 7). PTSD can thus be seen conceptually as a conglomeration of trauma-driven images that persistently drive behavior through manifestations of its imprint in the psyche.

Methodology

Research problem. Image can serve as a foundation for our modern understanding of PTSD and contribute both conceptually, clinically, and curatively to the etiology and treatment of this pervasive condition. Current research findings revealing damage to neuroanatomical structures caused by the phenomenon of trauma and the long-term personal and social consequences related to the symptomology of PTSD demand a reevaluation of older treatment paradigms as well as a forward-looking appraisal of alternative and more efficacious approaches to a cure. Research has now shown that PTSD is a multisystemic mind-body condition that affects a person emotionally, cognitively, physiologically, neurophysiologically, and neuroanatomically (van der Kolk, 2001, pp. 49-51). Today, the treatment of choice for PTSD is exposure therapies. These techniques have proven to fall short in bedside manner in the area of patient care as well

as longitudinally with questionable scores in long-term efficacy (Ghafoori & Davaie, 2012; Wells, Walton, Lovell, & Proctor, 2014). Because of the multisystemic nature of PTSD, treatments need to envision compassionate avenues to emotional and cognitive integration of traumatic memory as well as incorporate a holistic mind-body approach. These alternatives can be found in metacognitive psychology, emotion-focused therapies, mindfulness practices, as well as in somatic treatments. In addition, a depth psychological approach founded in the traditional of analytical psychology can accommodate a compassionate therapeutic alliance that reframes the experience of trauma in the psyche and opens broad potentials for dialectic possibilities between therapist and client.

Research question. Through an introspective investigation of its role as a common point in both the depth and clinical interpretations of PTSD, this thesis seeks to investigate the ubiquitous presence of image and its influence on the mind. My research question is the following: How can we, as depth psychologists, cross over from the depth tradition into the larger clinical community and apply responsible and innovative depth psychological treatments for trauma?

Research methodology. A phenomenological research method allows an experiential overview of the qualitative research relating to the etiology of trauma, the goals of treatment compared to their effect and efficacy, and proposed alternatives to treatment in light of a contemporary state-of-the-art evidence base. Phenomenological philosopher Maurice Merleau-Ponty (1964/1968) noted that,

> [phenomenological reflection] must suspend the faith in the world only so as to see it, only so as to read in it the route it has followed in becoming a world for us; it must seek in the world itself the secret of our perceptual bond with it. . . . It must question the world, it must enter into the forest of references that our interrogation arouses in it, it must make it say, finally, what in its silence it means to say. (pp. 38-39)

Phenomenology can reach beyond the subjective experience of illness and embrace the real-world experience of trauma survivors (Finlay, 2012, p. 172). In process and practice, this methodology opens the way to a cohesive theoretical map that fosters the objective analysis of relevant issues and fosters a knowledgeable and engaged approach to the study of trauma, its etiology, and treatment paradigms.

No apparent ethical conflicts exist within this approach to the research. The evaluative critique of certain treatment paradigms in this thesis is intended to clarify relevant issues relating to these modalities.

Overview of the Thesis

Chapter II defines trauma in terms of image through a depth psychological lens. The etiology of trauma is further explicated in terms of complexes and archetypes and then physiologically defined in an exact neuroscientific context. The chapter concludes with an explanation of the implications of these studies' findings in the context of current trauma treatment practices. In Chapter III, the role of image is extrapolated in the context of recovery. PTSD treatments are reviewed through a neuroscientific lens that analyses the potential of the change process offered by neuroplasticity and the neuroscientific contributions to the pathophysiology of PTSD. The conclusion offers proposals for specific therapeutic alternatives with a brief review of creative somatic options. Chapter IV critiques the role of exposure therapies and reframes the viability of PTSD treatments in light of current neuroscientific findings. An overview of alternative therapies is reviewed.

Chapter II
Literature Review

Over the last 2 decades, technological developments in the area of neuroscientific research have transformed the contemporary understanding of the neurophysiological and psychological effects of trauma, its developmental trajectory, and the life-altering consequences of untreated trauma. At the same time as neuroscientific research provides access to long-held secrets of the brain, it also reveals the neuropathological consequences of trauma and explains why the imprints of trauma continue to haunt its victims unrelentingly. With the advent of advanced imaging technology, trauma research has advanced the modern ability to map specific brain states, thus accelerating advances in treatment that contribute to the current understanding of trauma and paradigms of trauma resolution.

Normally, full resolution of an event occurs when perceptions are presented as images in prelingual parts of the brain that are then processed and integrated as cognitive events (van der Kolk, 2001, p. 56). In trauma, integration of certain images is stalled by an individual's proximity to a powerful event that leads to a subsequent failure of cognitive and cross-hemispheric processing (p. 56). Trauma then takes the form of a conditioned sequence of images that dysregulates emotional processing and contributes to related thinking and behavior that conforms to the trauma's negative imprint (pp. 56-57).

Today, exposure therapies are frequently the treatment of choice despite statistics that point to their questionable efficacy (Wells et al., 2014; van Minnen, Harned,

Zoellner, & Mills, 2012). These modalities attempt to integrate trauma memories through accessing prelingual and nonrational image processing centers in the brain in an effort to desensitize imprinted trauma-based reactions and therefore reprogram future cognitive and physiological responses to life events. Exposure treatments, however, are slowly being outmoded because of advances in the knowledge base relating to trauma and the possibilities offered by alternative treatments that focus more globally on healing trauma.

The research question provided in Chapter I queries the role of image processing in trauma and searches for alternative answers to current treatment paradigms. Depth psychology, and by extension analytical psychology, sheds extensive light on image and the leading roles it plays in the human psyche. Interestingly, the implications of these roles are also revealed from a scientific perspective by technical image processing and its ability to expose brain activity through images. Recounted below is an analysis of trauma from the perspectives of both analytical psychology and neuroscience followed by an overview of contemporary treatment modalities. Crossing over in both traditions is the preeminent and critical role of image that is inherent to the attribution and analysis of image processing in singular approaches to trauma.

Image

Image is the foundation of the Jungian concept of the self and also of analytical psychology's theory of archetypes. Jungian analyst Edward Whitmont (1991) agreed that image rests in thinking and emerges vertically upwards from the depth of the psyche out of the collective unconscious as a preverbal and visual notice of the psyche's communication (p. 28). Eric Shalit (2010), also a Jungian analyst, viewed image as no less than a "nuclear force around which the images of soul and psyche gravitate" (p. 86).

Pioneering depth psychologist Carl G. Jung (1952/1980) moved this idea further into theology and reflected that man is made in God's image:

> God has indeed made an inconceivably sublime and mysteriously contradictory image of himself, without the help of man, and implanted it in man's unconscious as an archetype. . . . This image contains everything he will ever imagine concerning his gods or concerning the ground of his psyche. (p. 667)

Referring to this archetype, depth psychologist and trauma expert Donald Kalsched (1996) commented,

> Among the many such *coincidenta oppositora* in the deep unconscious is one central archetype which seems to stand for the very principle of unity among all the opposing elements of the psyche and which participates in their volcanic dynamism. This central organizing agency in the collective psyche is what Jung called the archetype of the Self, both light and dark. It is characterized by extraordinary luminosity, and an encounter with it can involve either salvation or dismemberment, depending on which side of the Self's numinosity is experienced by the ego. . . . Until the ego develops, the unified self cannot actualize—but once constellated, it becomes the *ground* of the ego and its *guide* in the rhythmic unfolding of the individual's inborn personality potential. (p. 18)

Hillman (1981) further explained,

> When *image* is thus transposed from a human representation of its conditions to a sui generis activity of soul in independent presentation of its bare nature, all empirical studies on imagination, dream, fantasy, and the creative process in artists . . . will contribute little to the psychology of the image if they start with the empirics of imagining rather than with the phenomenon of the image—which is not a product of imagining. (p. 8)

What are the ramifications of this primacy of image, and what is the influence of image on mentation, behavior, and mental illness? According to Hillman (1981), image is the unadulterated core of self perception that relates intimately to how the self processes reality. By inference, then, image must also be implicated in the formation of mental illness due to non-reality-based image processing.

A Neuroscientific Theory on the Formation of Complexes

From his theory of image formation, Jung extrapolated the emergence of complexes that result during environmental interactions that eventually prevail over reality-based perceptions (Silverstein, 2014, pp. 101-102) with negative developmental consequences. Psychologist Steven Silverstein (2014), who assessed the validity of Jung's ideas on schizophrenia in light of current neuroscience, related Jung's complex theory to a combination of images and ideas held together by a strong feeling that influences perception and behavior (p. 102). Jungian analyst Murray Stein (2008) made the distinction that in contrast to the ego complex, which creates focus, complexes bind motivation and definition in the psyche in a way that offers the possibility of unification with the divine (p. 307). Drawing from Jung's theory, Silverstein (2014) explained that a complex becomes an autonomous network of associations, separate in character and nature from the individual, that continues to grow in strength as events transpire and memories assimilate into the emergent complex, which then negatively interferes with ego function. Eventually, he said, decision-making and conscious action is overseen by the unconscious habituated pattern of a complex instead of spontaneous reality-based interpretations generated by the ego complex.

From a neuroscientific point of view, the formation of a typical trauma complex is consistent with mid-20th-century neuropsychologist Donald O. Hebb's notion that "cells that fire together wire together" (Silverstein, 2014, p. 104) and the premise of neuroplasticity (Davidson, Jackson, & Kalin, 2000, p. 890). Consistent with observations on the formation of neurological networks early in life (Davidson et al., 2000), Silverstein (2014) posited that "plasticity in the neural circuitry underlying emotion is likely to play

an important role in understanding the impact of early environmental factors in influencing later individual differences and risk of psychopathology" (p. 890). According to Silverstein, a complex can thus be considered to be formed by the mutual excitation of neurons that develop through resonant mental or environmental events and bond in networks that form or strengthen the network. He proposed that an exponential see-saw effect occurs between the ego and the complex whereby, as the ego weakens, the complex strengthens and distorts accurate perceptions of reality in favor of the tilt that is the character of the complex (p. 107). He added, "When cortical connectivity is weakened in general, any newly formed network will be less influenced than it should be by ongoing brain activity, and, by extension, by the statistical structure of reality" (p. 107). Silverstein proposed that complexes synergistically replace weaker ego-congruent networks with ones characterized by the hyperexcitability of traumatic or otherwise powerful events and thereafter construct reality through the dystonic neurosis of the stronger interference (p. 107).

The Neuroscience of Image and Trauma Formation

Neuroscientific research has found that mental images are traced as brain activity in the ventral and dorsal pathways. This event occurs during visual perception of an actual object as well as during mental visualization in the absence of an object (Mazoyer, Tzourio-Mazoyer, Mazard, Denis, & Mellet, 2002, p. 205). In other words, images based on language, such as in the process of mentalizing directions, also have the same psychophysical visual coding in the brain as images that derive from actual sight (p. 205). Images therefore form in the mind based on verbal instructions and can also be derived from either a visual or language-based origin.

Kalsched (1996) stated that after a traumatic event, memories of the event are stored in images that form around a complex which later, when stimulated by clusters of environmental stimuli that resemble the original trauma, is characterized by episodes of strong affect promulgated by imprints of the original trauma that continue to live unabated in the psyche (p. 13). He noted that Jung addressed these complexes as relentless *feeling-toned complexes* that split off from consciousness and are featured as demons in dream images (p. 13). Their stock in trade is evidenced in emergent dissociative states of consciousness that manifest in states of aggression that control and split the psyche against itself and lead to explosive fits of strong affect that are outside the will, control, or consciousness of the individual (p. 13). Kalsched observed that this "splitting is a violent affair—like the splitting of an atom" (p. 13). Strong aggression highlights the presence of primitive defenses in the psyche and thus provides the energy for disassociation (p. 14). He emphasized that "outer trauma alone doesn't split the psyche . . . [but that] an inner psychological agency—occasioned by the trauma—does the splitting" (p. 14).

Kalsched (1996) theorized that when a person experiences trauma, a disabling affect is metabolized and transmogrified into symbolic processes either in language or image and then developmentally assimilated into an individual story that continues to live and shape the victimized psyche (p. 17). He noted that the psyche's need to disown traumatic elements is characterized by unconscious outward aggression at the same time as traumatic memories are subjectively repressed (p. 17), thus creating a complex that literally feeds on itself at the same time as it grows in strength and character. Kalsched observed the basically universal phenomenon that people who have been traumatized

cannot mobilize the aggression to disidentify from the negative aspects of experience because of an internalized sense of *bad me* caused by trauma (p. 17). He posited that unconscious repression disallows entry to implicit memories of the event and, in its own way, serves to protect the psyche. Over time, he said, these inner demons run the lives of trauma victims taking the form of an inner persecutor with whom the victim identifies and who interferes with normal development processes for the affected individual (p. 25).

In Kalsched's (1996) conception of the dynamic of traumatic reaction, imprints characterized by negative psychic force fields are managed by an inner saboteur who surfaces during misguided attempts to achieve homeostasis. As imprints of trauma persist, functional integration and normal development is divided in a psyche split by a persecutor complex (p. 26) that manifests in self-destructive behaviors, rage, and resistance to a reality-driven existence. Kalsched (1998) referred to this persecutor complex as a *guardian being* that works as a psychically driven immune defense, which does not positively serve the life of the psyche or its potential growth but instead turns against it in a misguided effort to prevent retraumatization (p. 6). He observed that the trauma survivor therefore exists in a compromised state wherein the vulnerable psyche is at war with itself and outwardly attacks the parts of experience it perceives as alien in an effort to disown experiences that nevertheless bind the individual in a complex derived from the original trauma (1996, p. 24). Healthy object relations are thus negated, said Kalsched (1996), and fantasy experience is erected to protect the wounded psyche from further assault (p. 24).

Posttraumatic Stress Disorder

PTSD is an anxiety disorder that is brought on by the experience of trauma or by the witnessing of traumatic events (Nelson, 2013, p. 172). Symptoms associated with PTSD include "intrusive memories, emotional avoidance, and heightened physiological arousal following exposure to a traumatic event" (Lenz, Bruijn, Serman, & Bailey, 2014, p. 360). Secondary symptoms include "guilt, decreased quality of life, impairment of mental health, degree of social functioning, and health perceptions" (Galovski, Blain, Mott, Elwood, & Houle, 2012). The epidemiology of trauma that leads to PTSD is narrowly defined as exposure to combat, assaultive violence including sexual trauma, and witnessing someone being injured or killed (Perrin et al., 2014, p. 447). According to conclusions drawn from surveys of random samples in urban areas of eight countries, 20% to 90% of the general population will be exposed to extreme traumatic stressors at least once in their lifetime (Perrin et al., 2014, p. 449) although only 6.8% to 7.2% will result in symptomology for PTSD (Sannibale et al., 2013, p. 1397), with women statistically showing the highest occurrence (Perrin et al., 2014, p. 454). Symptoms of PTSD have been found to result from a purported inability to integrate traumatizing events and the trauma remaining is a disassociated form of the event in the effected individual (Herkt, Tumani, Grön, Kammer, Hofmann & Abler, 2014, p. 2). Although many people are exposed to extreme stress and develop intrusive symptoms, not all will develop the panoply of symptoms characteristic to PTSD (van der Volk, 2001, p. 50). In these other cases, the usual symptomology is incomplete, with only vague memories reminiscent of the trauma combined with daytime flashbacks, panic attacks, and nightmares that cannot be voluntarily controlled (Herkt et al., 2014, p. 2). Bessel van der

Kolk (2001), a psychiatrist whose research focuses on posttraumatic stress, theorized that the process of *kindling*, that is, the persistence of intrusive and repetitious thoughts, sets up a chronically disordered pattern of arousal that contributes to maintenance of the syndrome in an individual (p. 50). To compensate for vigilance-associated hyperarousal, the traumatized individual begins to set up patterns of avoidance to block reminders of the trauma and eventually becomes numb to both everyday and trauma-related experience (p. 50). Numbing extends to all aspects of the individual's environment and is punctuated by agitated responses to emotional triggers (p. 50). These reactions, said van der Kolk, are probably part of a generalized pattern whereby people with PTSD, who are unable to detect and neutralize qualitative differences between stimuli, necessarily shut down to their environment in order to compensate for perceptual overwhelm (p. 51).

Trauma's neurobiological impact depends on the individual's developmental stage at the time of the trauma (Vosmer, 2012, p. 499) and is often associated with delayed development (Amir, Brown, & Amit, 1980; Vosmer, 2012, p. 499) and attachment issues (Arikan & Karanci, 2012, pp. 209-211; Vosmer, 2012). Symptoms of PTSD in children include hyperarousal, reexperiencing through traumatic memories, and avoidance (Vosmer, 2012, p. 499). Onset for traumatized children often begins around the age of 12 and a half years (Biederman et al., 2013, p. 83) and the younger the age of the onset of the trauma, the more likely is the possibility of PTSD (van der Kolk, Roth, Pelcovitz, Sunday, & Spinazzola, 2005, p. 394). Other symptoms for PTSD include emotional dysregulation (van der Kolk, 2001, p. 54), anxiety disorders, hyperarousal, and behavior disturbances (Vosmer, 2012, p. 500) along with associated comorbidity of attention deficit/hyperactivity disorder (ADHD) that leads to psychiatric and

psychosocial dysfunction (Biederman et al., 2013). Later psychological sequelae include diagnoses such as alcoholism, social phobia, anxiety disorders, agoraphobia, panic disorder, and separation anxiety disorder (Biederman et al., 2013, p. 83) as well as character disorders (van der Kolk et al., 2005, p. 390), bipolar disorder (Spinazzola, Blaustein, & van der Kolk, 2005, p. 426), and problems in intimacy and relationships (Zurbriggen, Gobin, & Kaehler, 2012).

Significant variance in PTSD is evident between early trauma victims and later onset, with greater symptomatology showing in early trauma as well as in cases characterized by prolonged traumatic events (van der Kolk et al., 2005, p. 394). Prolonged traumatic events or repeated episodes of trauma can lead to *complex PTSD* (C-PTSD) (Herman, 1997), which is similar to but distinct from PTSD. C-PTSD includes symptomatology relating to emotion dysregulation, self-perceptions, distorted relationships, and somatization (Roth, Newman, Pelcovitz, van der Kolk, & Mandel, 1997; Spitzer, Chevalier, Gillner, Freyberger, & Barnow, 2006; Taylor, Asmundson, & Carleton, 2006; van der Kolk et al., 2005).

PTSD's co-occurrence with other disorders. Although PTSD has been extensively studied over the past 2 decades, its etiology as the source of other disorders has been empirically neglected despite trauma's obvious insinuation in their formation (Spinazzola et al., 2005, pp. 426-427). Because PTSD is usually considered separately from other comorbid conditions, it is delimited in the possibility of its due credit in their formation because empirical studies usually focus on PTSD symptom criteria only (Herman, 1992, p. 93; Spinazzola et al., 2005). Clinicians are understandably cautious when approaching a sensitive issue such as sexual or physical abuse and may tiptoe

around it in an effort to maintain therapeutic boundaries and respect for a client's willingness or sensory ability to approach difficult subjects. Nonetheless, when the etymology of an individual's particular psychopathology can be sourced at an original trauma, it makes sense to unravel the pathology beginning at the point of the trauma, while taking into account other negative environmental and personality factors that have subsequently contributed to the individual's symptom profile. On this point, van der Kolk et al. (2005) observed that

> psychiatric problems that do not fall within the framework of PTSD are generally referred to as "comorbid conditions" as if they occurred independently from the PTSD symptoms. By relegating them to seemingly unrelated "comorbid" conditions, fundamental trauma-related disturbances may be lost to scientific investigation, and clinicians run the risk of applying treatment approaches that are not helpful. (p. 396)

Regardless of the discrepancy between the identification of trauma symptoms and accurate attributions of their etiology, research studies historically place PTSD and C-PTSD in separate categories from personality disorders despite obvious relationships between original trauma and the related symptom clusters. To disregard the symptomology of trauma and its consequent effect on the life and personality of trauma survivors can result in partial diagnoses and misdirected treatments of the people who turn to the medical community for help.

Routine comorbidities that co-occur with PTSD present at rates of 80% among cases most commonly presenting for major depressive disorder or alcohol abuse (Sannibale et al., 2013; van der Kolk et al., 2005, p. 390). These comorbid disorders are often treated independently of PTSD, in contrast to treatments for PTSD that focus exclusively on the imprint of the traumatic memory and exclude treatment for the co-occuring disorder (van der Kolk et al., 2005, p. 396). Unfortunately, noninclusive

treatment regimes that narrow the field to PTSD symptoms neglect other trauma-related problems that masquerade in the disturbances of other disorders and consequently do not address the comorbid conditions frequently seen in clinical practice (Spinazzola et al., 2005, pp. 426-427, 434). Inclusive treatment regimes will generally first approach the functional impairments caused by the trauma that interfere with daily life before moving into incorporating treatments that specifically address trauma-related exposure (van der Kolk et al., 2005, p. 396). More research is called for in terms of advancing innovative treatments that take into account the complex symptom profiles that often co-occur with PTSD and that may not have occurred but for the presence of PTSD (Spinazzola et al., 2005, pp. 426-427).

The neural basis of PTSD and processing extreme stress. According to research reported by van der Kolk (2001), in response to negative stress events, the human body organizes multisystemic responses on hormonal and physiological levels. Following exposure to extreme stress, endogenous, stress-responsive neurohormones are released in order to enable the organism to respond effectively to stimuli in ways that increase glucose release or enhance immune function (p. 52). The amygdala and the hippocampus, integral parts of the limbic function, are also critically affected by stress. The amygdala integrates internal representations of experience by assigning meaning to memory images that reflect emotional experience as well as guides behavior that relates to the associated meaning of the experience for the organism (p. 53). Adjacent to the amygdala, the hippocampus records and categorizes in memory the spatial and temporal aspects of the experience via short-term memory, whereby it either moves the memory into permanent storage or forgets it (p. 54). The hippocampus then sorts the information

spatially with previously stored related information and categorizes it according to rewards (p. 54). Symptoms of PTSD are attributed to hippocampal atrophy and are evidenced by symptoms such as behavioral disinhibition and environmental hyperresponsiveness (p. 56). Reductions in hippocampal volume have also been associated with difficulty in distinguishing between negative and novel conditions and thus facilitate reexperiencing symptoms (Levy-Gigi, Szabo, Richter-Levin, & Kéri, 2014, p. 151).

In van der Kolk's (2001) review of various studies, he reported that after narratives relating to personal traumatic events are read back to subjects with PTSD, increased activation of the amygdala was measured along with parallel activity in the right visual cortex as they visually reexperience their reported traumatic event (p. 55). This reexperiencing of trauma in the visual cortex is particularly relevant to the reliving of traumatic memories in terms of images that later reemerge in behavior characterized by seemingly irrational nonverbal emotional events. Van der Kolk supported this hypothesis in his inference that these patients "experience emotions as physical states rather than as verbally encoded experiences" (p. 55) and pointed to the conclusion that in PTSD, *memories are stored as nonverbal physical states encoded by images*. In support of this conclusion, at the same time as the visual cortex is activated during trauma recall, the part of the brain that produces speech shuts off (p. 55), reducing the left hemispheric capacity for rationalization necessary for cognitive operations (van der Kolk & Ducey, 1989, p. 272). Van der Kolk (2001) noted that

> Broca's area, the part of the left hemisphere responsible for translating personal experiences into communicable language, . . . [has] a significant decrease in oxygen utilization during exposure to traumatic reminders. . . . The brain is

> "having" its experience: the person may feel, see, or hear the sensory elements of the traumatic experience. (p. 55)

This neurological shutdown in Broca's area underscores the necessity of emotional and cognitive processing that comprises cross-hemispheric integration in healing trauma.

PTSD is characterized by "extreme reactivity to the environment without intervening reflection" (van der Kolk & Ducey, 1989, p. 272). High levels of amygdala stimulation reduce hippocampal volume and presuppose the misconstruing of threat responses that result in exaggerated fight or flight responses (van der Kolk, 2001, p. 56). Van der Kolk (2001) noted a correlation between the activation of a traumatic memory a person suffers during trauma recall and marked asymmetry in right hemispheric activation that explains a triggered, nonintegrated experience. The right hemisphere modulates expression of global nonverbal emotional communication and allows for assimilation and holistic integration across sensory modalities (p. 56). The left hemisphere is problem solving: it categorizes perceptual meanings into *novel images* and then manipulates words and symbols to express them into culturally derived sets of meaning (p. 56). According to van der Kolk, vigilant states of emotional arousal are attributable to deactivation of left hemispheric activity and explain subsequent exaggerated responses promulgated by antecedent traumatic events that have affected the right hemisphere's role in perception and processing emotional expression (p. 55). He observed, "A relative decrease in left hemispheric representation provides an explanation of why traumatic memories are experienced as timeless and ego-alien; the part of the brain necessary for generating sequences and for cognitive categorization of experience is not functioning properly" (p. 57). In summary, physiologically, and under stress, people with PTSD later reenact scenes derivative of early trauma: they see, feel, and hear

experience but because of faulty, stress-based neurophysiological processing of memories, they are detached from subjective experience and without the neural capacity to negotiate reality functionally with reality-based responses.

Image processing in PTSD. Approaching trauma from other perspectives, clinical psychologists Mary Long and Randall Quevillon (2009) discussed three underlying information-processing theories that explain intrusive imagery in PTSD and are inherent assumptions in most exposure therapies (p. 69; Witvliet, 1997). One of these theories, developed by research psychologist Peter Lang (1977), proposes a bioinformational model that suggests that traumatic or fear-induced images are encoded in neural memory structures that activate cognitive schemas and produce negative affect (Long & Quevillon, 2009, p. 70). Long and Quevillon (2009) stated that according to Lang's model, to reprocess the image, the client engages "affectively and physiologically in the traumatic image through a vivid, detailed description of the image experience" (p. 70). The authors reported on a second theory (Foa & Kozak, 1986) that extends Lang's theory of information processing and puts more weight on meaningful internal structures related to the trauma that must be activated through prolonged imaginal exposure in order to replace negative imagery with corrective information (Long & Quevillon, 2009, p. 70). Extending this theory is yet a third (Chemtob, Roitblat, Hamada, Carlson, & Twentyman, 1988) which asserts that memories are organized hierarchically with a bias to attend to threat (Long & Quevillon, 2009, p. 70). In this third model, said Long and Quevillon (2009), ongoing triggers stimulate further activation of PTSD-related images, affect, and behavior that is hierarchically predisposed to react to threat and to result in hypervigilance and "misinterpretation of ambiguous cues" (p. 70). Similar to the

other scenarios related above, the neural network must be accessed to enable the occurrence of corrective processes such as habituation and integration of positive schemas (p. 70). Among exposure therapies, these examples exemplify prototypical approaches to engaging images in the memory process that comprise the current standard of practice for treating trauma.

Exposure-Based Interventions for PTSD

Eye movement desensitization and reprocessing (EMDR). EMDR is the most common treatment modality for PTSD. Therapeutically, an EMDR session engages the client with titrated exposure to traumatic material at the same time as visual, auditory, and sensory information relating to the original trauma is processed by the client (Herkt et al., 2014, p. 1). EMDR targets trauma by desensitizing anxiety and reprocessing negative schemata through a modality called *adaptive information reprocessing* (Chen, Hung, Tsai, Chu, & Chung, 2014, p. 1). Through the use of cross-hemispheric eye movements, EMDR accesses information processing centers in the brain in order to create novel responses and replace traumatic memories with positive emotional and cognitive schemas (pp. 1-2). EMDR is purported to address pathology and personality development and has been proven to result in significant reductions of anxiety, depression, and subjective distress as well as other symptoms of PTSD (p. 2, p. 15). Successful treatments are evidenced neurobiologically in decreased activity in limbic zones with increased activation of "prefrontal brain regions related to cognitive control after completion of successful treatments" (Herkt et al., 2014, p. 2).

Virtual reality exposure therapy (VRET). VRET is another exposure-based intervention that is commonly used today to provide treatment for combat-related PTSD

in military service personnel and veterans in safe environments (Nelson, 2013, pp. 171-172). In her review of related studies, research assistant Rebekah Nelson (2013) found that exposure therapy uses cognitive and behavioral techniques that accustom the client to anxiety sources using two interventions: in vivo and imaginal exposure (IE). These modalities may be poorly tolerated because of the distinct settings of combat-related trauma and the tendency over time to suppress thoughts that trigger PTSD symptoms (p. 172). A patient may be retraumatized by such treatments because of remembering traumatic images that had previously been repressed and were inaccessible to processing outside the trauma-related network.

VRET employs technology-based treatments to mimic exposure to duplicate sensory-based environments reminiscent of the original trauma (Nelson, 2013, p. 172). Nelson (2013) noted that these environments may include exploding improvised explosive devices, the smell of tires burning, bumps in the road, the clap of overhead helicopter rotors, and anything else necessary to recreate the scene. This treatment has proven to be more effective for younger clients who are more used to technology than older veterans who have not grown up in technological environments (p. 176). Furthermore, treatment is more effective when administered as close in time to the original trauma as possible, thus older veterans may not receive the benefits of VRET after they have been out of service because they have spent a longer time suppressing their symptoms (p. 177). In addition, Nelson found that a negatively affected therapeutic alliance has shown to be correlated with therapists multitasking in the process of controlling complex computer software while administering client treatments.

Nonetheless, VRET has proven to be generally successful in treating active duty members as well as for combat-related PTSD in veterans.

According to Herman (1997), in 1947, one of the postwar treatments for trauma was *narcosynthesis*, which presaged contemporary exposure therapies. Derived from treatments used during wartime, its purpose was to cultivate an immediate intervention on the front lines in order to return the afflicted soldier as quickly as possible to battle (p. 25). Utilizing sodium amytal, or in other cases hypnosis, the focus was on "recovery and cathartic reliving of traumatic memories, with all the attendant emotions of terror, rage, and grief" (p. 25).

Unfortunately, in the realm of exposure therapies, narcosynthesis is not dissimilar to VRET, as VRET also desensitizes military personnel from traumatic residue so that they may return to active duty. Arguably, the same is true for the inheritance of most contemporary exposure therapies: by recounting details of traumatic events, clients are benumbed by their own stories and the accompanying emotional catharsis—touted as "cured"—and then sent back out to the battlefield of family, work, and community. Although exposure therapies may cognitively and emotionally reprocess a traumatic event, at the same time, this method further impresses neural networks preestablished by the trauma itself, and because of the reinforcement of these impressions, its use cannot guarantee lasting recovery or immunity from relapse.

Prolonged exposure therapy (PE). PE is a well-researched exposure-based protocol that is also therapeutically applicable for the effects of trauma (van Minnen, Harned et al., 2012, p. 31). Nonetheless, clinicians are reticent to use this treatment because of the inherent risks related to the consequences of reexposure to previous

trauma during the desensitization process (p. 1). In the dialectic between client and therapist, PE works to reprocess negative cognitions emotionally by activating fear-extinction mechanisms absent the schismatic fear outcomes of the original trauma (p. 1). This method necessitates targeting avoidance behaviors relating to the trauma memory to reprocess memories (Thompson, Luoma, & LeJeune, 2013, p. 135). PE includes the following: *in vivo* exposure in safe situations to reminders and other stimuli related to the traumatic incident; imaginal exposure (IE) to the trauma memory with processing of thoughts and feelings related to the trauma; breath training; and education about trauma (Hoffart, Øktedalen, Langkaas, & Wampold, 2013, p. 471; Zalta et al., 2014, p. 173). Psychologists Brian Thompson, Jason Luoma, and Jenna LeJeune (2013), who practice evidence-based psychotherapy and conduct research at Portland Psychotherapy Clinic, explain that in vivo exposure includes "safe but distress-evoking activities or situations that are typically avoided" (p. 135) and that IE comprises "repeated recitation in the present tense of the target memory followed by a debriefing of the exposure" (p. 135). Other research established the efficacy of PE's operational focus on emotional processing theory (EPT) (Zalta et al., 2014, p. 172). EPT attributes PTSD symptoms to cognitive and behavioral avoidance behaviors that are bound by perceptions of an incompetent self who is powerless over a world fraught with threat and danger (p. 172). Progress is made through reprocessing of erroneous perceptions achieved through disconfirming information via repeated exposure and emotional processing (p. 172). Ultimately, "through *in vivo* and imaginal exposure, patients learn that avoided situations are safe and that they are capable of coping with distressing situations and memories" (p. 172).

Because IE involves repeated replays of an individual's trauma, there is always the looming possibility of retraumatization that will undermine successful treatment outcomes. For this reason, much controversy surrounds this treatment protocol, and therapists are less likely to consider this treatment as an option for their patients because of the potential of retraumatization and the unpredictability of this factor. Critical to this approach is a strong therapeutic alliance between client and therapist. Repeated exposure to past traumatic and negative emotional events during and between treatments necessitates the safe container of a well-established therapeutic relationship in order for the client to endure and mitigate the overwhelming stresses that emerge as a result of reliving traumatic events (Hoffart et al., 2013, pp. 471-472). Through repeated exposure to experiences directly aimed at emotional neutralization of traumatic memories, IE can be effective in reducing trauma-related fear; however, it is not proven to be efficient in reducing shame, guilt, and anger. In fact, there may be a problem in the induction of reinforced negative affect through this treatment because exposure does not address shame and guilt (Dalgleish & Power, 2004). Therapists who choose PE and other exposure therapies must gamble with the possibility that this protocol will not only be partially effective but also carries the inherent risk of retraumatization, recidivism, and failure.

Imagery Treatments

All imagery treatments are designed to undermine intrusive imagery that is intrinsic to trauma residue. Based in early dynamic theory, imagery rescripting (IR) is a cognitive-behavior alternative to PE that does not create overwhelming memories for the client (Hoffart et al., 2013, p. 472; Long & Quevillon, 2009, p. 68). Commonly used to

treat nightmares, it can also be applied as a PTSD treatment. IR is "a unique imagery technique in which a distressing image is modified in some way in psychotherapy to change associated negative thoughts, feelings, and/or behaviors" (Long & Quevillon, 2009, p. 67). Distressing images and outcomes can be reimagined, for example, with positive schemata that reframe the traumatic experience and empower the victim. Mechanisms of change have not been empirically determined in imagery treatments although imaginal exposure is possibly a tacit mechanism that challenges the impact of trauma images with present experience and catalyzes the mind's ability to reframe and recreate image scenarios positively (Beck, Emery, & Greenberg, 2005; Germain et al., 2004; Krakow, 2004).

Summary

For depth psychologists, understanding the basis of trauma from multiple perspectives can deeply inform an approach to treatment that is effective and nontraumatizing. Understanding traumatic imprints from a depth psychological perspective, including image and its role in memory and trauma formation, is invaluable in therapeutic interactions and can be profoundly compassionate as well as efficacious in practice. Although these treatments are often not utilized because they are currently considered alternative and lack the research foundation that is accorded exposure modalities, they are likely the promising future of trauma therapies. The next section discusses the efficacy of exposure therapies and proposes alternative holistic and compassionate treatment paradigms with consideration given to neuroplasticity and the neurobiology of trauma. While depth psychotherapy compassionately embraces image and how it plays out it the psyche, a state-of-the-art evidence base regarding the

neurophysiology of trauma encourages mental health care practitioners to rethink exposure therapy in terms of the promise and availability of alternative treatments.

Chapter III
Image, Neuroplasticity, and Alternative Therapies

The Role of Image in the Healing Process

In a way, as one perceives it in the mind, image is like a mirage. In order to picture something, an image is drawn to mind and a network of associations that relate to that image arise that give that image context and meaning. Then, the image will recede as the mind becomes absorbed in its associations. Like a mirage, the image is there, and then it is not. In the process of deconstructing image in the context of PTSD, image thus functions one way in the creation of trauma and in another way in the healing process.

From the perspective of image, PTSD is a disorder of memory processing. As PTSD is characterized by the traumatic effect of images and how they live out in the psyche, its resolution is well-founded in a corrective process that approaches memory in such as a way to reframe image positively. Joseph Wolpe (1958), the developer of systematic desensitization therapy, noted that images were "specific neural events" sequenced by external stimuli (p. 139). In accordance with the premise of exposure therapies, Wolpe went on to explain that imagery can stand in as the stimulus itself, bearing the same effect in the mind as the imagined object (p. 39). Unfortunately, Wolpe's generation of theoreticians had to live with a naïveté regarding neurology that has now been informed by contemporary research methods that enlighten the inquisitor to specific neural events and processes of memory formation. An ethical necessity demands incorporation of these advances into treatment and, in this context, because of technical

insights into precise neurophenomena, exposure practices are being outdistanced by contemporary research. Nonetheless, a client who is suffering from PTSD will be less interested in the amygdala then he will be in relief. Without neglecting the importance and influence of neuroscientific advances, as a clinician, paying heed to Kalsched's (1997) analysis of trauma and its demons will deeply inform any client encounter and provide a prodigious therapeutic map to lead the way out.

A Critique of Exposure Therapies

Today, because of its extensive evidence base, exposure therapy is empirically considered the treatment of choice for PTSD, especially prolonged exposure therapy (PE) (van Minnen, Harned, et al., 2012; Wells et al., 2014) From an image-processing perspective, exposure therapies approach healing by revisiting and articulating the image series compounded within traumatic memories. Through repeated reengagement with specific details of the trauma that recall image sequences, the individual is enjoined by the therapist to reprocess these memories emotionally and cognitively. Technically, PE reengages neural flight, flight, or freeze systems in repeated exposures to the traumatic event. Desensitization strategies inherent to PE optimally create familiarity with trauma-related triggers, also known as *hot spots*, that eventually promulgate nonreactive responses to the images associated with the memory (Grey, Holmes, & Brewin, 2001, p. 367). Hot spots are temporal events or triggers characterized by a heightened sensitivity to specific images inherent to parts of the trauma sequence (p. 367). The presence and treatment of hot spots comply with the technical diagnosis of PTSD and require emotional reactions related to the traumatic event that are comprised of fear, helplessness, and horror (APA, 2013, p. 274). Hot spots are associated with flashbacks,

nightmares, and other posttraumatic sequelae and typically cause “high levels of emotional distress, may be difficult to recall deliberately to mind, and are associated with intense reliving of the trauma” (Grey et al., 2001, p. 367). In essence and in practice, PE aggressively shuts down the neural network associated with these traumatic memories and ameliorates related behaviors through a dramatic process that promotes cognitive and emotional integration of traumatic residue.

In my estimation, the weakness in this method is that PE reengages survival mechanisms related to the original trauma and therefore does not promote novel healing paradigms that replace traumatic imprints with healthy neural networks. Proponents of PE will argue that this is exactly what happens during prolonged exposure treatments. As the individual relives the trauma and repeatedly revisits the traumatic memory, reprocessing does occur and nonreactive neural networks subsequently do develop. Going against this reasoning is evidence that, despite the fact that the traumatic network goes dormant after the exposure therapy, the individual still remains vulnerable to a future constellation of events that potentially can retrigger their susceptibility to the former traumatic imprints (van der Kolk, 2000, p. 11). PE confuses rigor with change. Healing can only be achieved by amelioration and is evidenced by complete remission.

This thesis supports the position that exposure therapies can only be a partially effective treatment for PTSD because of the inherent limitations inferred by reengagement and processing of preestablished trauma networks. Full and complete recovery necessitates targeting the multisystemic effects of trauma with the goal to create novel networks framed by a future resiliency to stress and a vigorous sense of self. Based on the fact that many evidence-based studies on PE report questionable percentages of

success rates, clinicians who heed this warning are correct in their cautious reticence to engage a client in a process that, as protocol, repeatedly reenacts profoundly negative life experiences that have already caused enormous amounts of stress, pain, and suffering. Furthermore, the clients themselves resist PE because of a disinclination to replay their trauma scripts (Foa & Kozak, 1986). The habit of clinical detachment avoids addressing the reality behind exposure therapy's retraumatization practices and promulgates the attitude of results at any price. An intelligent investigator, however, *can* see the wood for the trees. Sometimes it is quite obvious: for example, after discussing the effectiveness of PE, Professor of Counseling and clinical psychologist Bita Ghafoori (2012) warned psychotherapy trainees away from taking their engagement with this treatment protocol too lightly:

> Given the high levels of distress the client will likely face during the first few exposure exercises, or even as early on as the trauma interview for some, it is absolutely crucial to discuss in great length the nature and rationale for PE. Clients must be warned about not only the high levels of distress they may experience during a session but also the distress they are likely to feel after the sessions. It must be explained that this is a normal, and even necessary part of therapy, and that they should not be alarmed or discouraged, as the high levels of distress are likely to reduce over time as they continue the program. (p. 77)

As a clinician, I believe that purposefully engaging a client in a treatment protocol that contextually applies extreme distress is unconscionable and as pathological as the condition itself. Controlled studies of exposure therapy show dropout rates between 20.5 and 32% (Hembree et al., 2003; van Minnen, Arntz, & Keijsers, 2002) with rates of success measured at only 60% for people who respond well in post-treatment outcomes related to PTSD and depressive symptoms (Foa et al., 1999; Hagenaars, van Minnen, & Hoogduin, 2010). In contrast, a 2005 study measured nonresponse rates for PTSD treatments as high as 67% for PE interventions (Bradley et al., as cited in Rapgay et al.,

2014, p. 743). Mental health professionals are ostensibly committed to reducing emotional distress; for example, other exposure interventions point to acceptance and tolerance of distress as possibly more efficient for desensitization than repeated exposure episodes to feared stimuli (Craske et al., 2008; Kircanski et al., 2012). A treatment modality that applies extreme trauma processing to cure extreme trauma disorders does not make sense, when there are humane options that can achieve the same results with lasting effects. Some alternatives are suggested by recent neuroscientific discoveries.

Neuroscientific Contributions to the Pathophysiology of PTSD

Neuroscience contributes specific knowledge to the etiology of PTSD as well as creates vast potential for developing new treatment modalities. Novel psychological treatments for PTSD can now rest on a foundation of neurophysiological evidence that explains the deleterious effects of trauma on psychosocial functioning and the related inability to thrive. Explicit therapeutic delivery systems based in explanatory evidence and the concepts of neuroplasticity can precisely address neural deficits caused by PTSD and potentially fast-forward lasting recovery.

The pathophysiology of PTSD manifests in measurable alterations to many different parts of the brain including the following:

> (1) the parietal lobes, which are thought to integrate information between different cortical association areas (Damasio, 1989); (2) the amygdala, which evaluates incoming information for emotional significance and which has been shown to be activated when people are exposed to reminders of their trauma (Rauch et al., 1996); (3) the hippocampus, which is thought to create a cognitive map that allows the categorization of experience, and which has been shown to be decreased in size in a variety of traumatized populations (Bremner et al., 1995); (4) the corpus callosum, which allows for the transfer of information by both hemispheres (Joseph, 1988), integrating emotional and cognitive aspects of the experience and which has been shown to be decreased in size in adults who were abused as children (Teicher, 1997); (5) the cingulate gyrus, which is thought to play a role of both an amplifier and a filter, that helps integrate the emotional and

> cognitive components of the mind (Devinsky et al., 1995); and which is activated following effective treatment for PTSD (van der Kolk, 1997) and (6) the prefrontal cortex, which is involved in problem solving, learning, and complex stimulus discriminations, and which has been shown to be less activated when people with PTSD are exposed to reminders of their trauma, and to have increased activation, relative to pretreatment, after people are effectively treated for PTSD. (van der Kolk, 2001, p. 49)

Effective treatments for trauma optimally target psychophysiological behavioral responses through specific interventions that stimulate neuroanatomical structures to integrate the multisystemic cognitive and emotional aspects of memories implicated by the PTSD-related event. Specifically, PTSD treatment needs to address the neural network related to emotional dysregulation, with emphasis on overactivation and enlargement of the right amygdala in conjunction with memory processing issues associated with decreased volume in the hippocampus. This in turn will have a ripple effect on the other hormonal and neural networks implicated in trauma formation.

Neuroplasticity and Behavior Change in PTSD

Neuropsychologists Richard Davidson and Bruce McEwen (2012) noted that the earliest stance on neuroplasticity was that once neural networks are established, they endure for the individual's lifetime (p. 689). More recent findings confirm, however, that by appealing to certain neural networks, plastic change may be induced and reversals are possible, depending on the network involved (p. 691). Applied to PTSD, interventions can be formulated in relation to specific patterns of brain activity that are effective in targeted efforts toward emotional and behavioral modification (Davidson & Begley, 2012a; Davidson & Begley, 2012b).

Research indicates that malformations between associated neural systems initiated by trauma have adverse neurophysiological effects that manifest in behavior. Reduced

hippocampal volume, for example, is associated with low self-esteem (Davidson & McEwen, 2012, p. 690; McEwen, 2007; McEwen & Gianaros, 2011) and may be related to failure to process contextual information (Dickerson & Eichenbaum, 2010; Goosens, 2011; Moustafa et al., 2013; Rudy, Huff, & Matus-Amat, 2004). Research also indicates that neurogenesis in the hippocampus is probably stimulated by regular physical exercise which can address and possibly ameliorate this deficit (Davidson & McEwen, 2012, p. 690).

Issues relating to emotional processing and well-being are positively associated with the amygdala and its interconnection with the prefrontal cortex (PFC), whereas abnormalities in this network are implicated in psychopathology (Davidson & McEwen, 2012, p. 692). The amygdala assigns meaning to sensory information by linking internal meanings with external objects and associates emotional experiences with these memories (van der Kolk, 2001, p. 55). Specifically in PTSD, an enlarged right amygdala is responsible for emotional dysregulation (Davidson & McEwen, 2012, p. 692). Amygdala activation in response to fear-eliciting stimuli is linked to dispositional pessimism (Desbordes et al., 2012; Fischer Fischer, Tillfors, Furmark, & Fredrikson, 2001). Davidson and McEwen (2012) associated an overactive amygdala with aggressive behavior alongside deficits in the PFC correlated with impulsivity and poor executive functions (p. 690). Noninvasive interventions can be applied to address these problems: for example, loving kindness meditation can ameliorate aggressive behavior (Kearney et al., 2013) as well as reduce phobic fear responses to reminders of the traumatic event (pp. 426-427). Moreover, metacognitive awareness can monitor impulsivity and poor

executive functions (Wells et al., 2014) as well as help insinuate guidelines for healthy behavioral alternatives.

Metacognitive Therapy: An Alternative to Prolonged Exposure

Broadly speaking, memories are image sequences processed emotionally in the limbic areas of the right hemisphere and then cognitively processed through the reason and language parts of the left hemisphere. Many PTSD treatments approach the disorder with the premise that in order for hemispheric integration to occur, trauma must be accessed and then reprocessed both emotionally and cognitively for integration and resolution. An example is the operating principle of EMDR that utilizes cross-hemispheric integration through aural or visual stimulation.

Metacognitive therapy (MT) (Wells et al., 2014) is an alternative approach to PE that embraces the same cognitive mechanisms of change that are operative in PE modalities (Wells et al., 2014, p. 142). As a different approach, metacognition ends the victim cycle in trauma through the valuable tool of introspection and self-monitoring in the healing process. In a process based in the client-therapist relationship, MT entrains the ability to notice trauma-related images through introspection-related awareness skills and to turn away from them in a nonreactive way using different behaviors.

Metacognition is the ability to think about thinking, that is, to monitor the thinking process (Wells, 2000). As a metacognitive process, *monitoring* refers to the subjective ability to appraise cognition and knowledge (Koriat & Shitzer-Reichert, 2002). Metacognition and its emphasis on subjective appraisal supports introspection and the ability to identify maladaptive responses to the environment that evolve out of trauma and thus creates the possibility of its opposite: the cultivation and creation of healthy

alternatives. Trauma survivors can learn to cultivate the subjective skill of introspection through a self-monitoring process that supports identification and conversion of maladaptive thoughts and behaviors that often function as habitual responses to stress. Once identified, the individual can replace negative behaviors with copacetic patterns that resonate with the individual's conception of a positive self-image.

According to Adrian Wells, Deborah Walton, Karina Lovell, and Dawn Proctor (2014), clinical psychologists specializing in applications of MT, MT conceptualizes PTSD not as an aberrant behavior but as a rational coping mechanism in a reflexive adaptation process (RAP) that uses biases in cognition and attention as coping strategies during environmental threats (p. 133). Once someone exits the posttrauma anxiety cycle, however, RAP no longer serves its adaptive purposes, cognition returns to threat-free processing, and the individual is again asymptomatic (p. 134). Wells et al. (2014) theorized that PTSD develops because of a posttrauma tendency toward a disruptive mode of thinking called *cognitive attentional syndrome* (CAS) that "consists of cognitive perseveration in the form of worry/rumination and repeatedly going-over memories in order to find meaning, prevent harm in the future or fill-in gaps" (p. 134). CAS also includes ongoing threat monitoring, that is, vigilant attention to possible future threats as well as suppression of negative thoughts or feelings (p. 134). CAS rumination and worry continually block the individual's capacity to reestablish homeostasis and lead to the ongoing incapacities associated with PTSD (p. 134). The change mechanism is thus accorded in a parallel process that addresses maladaptive cognitions that, in turn, is reflected in the reduction of maladaptive symptoms (p. 134). Wells et al. commented,

> The metacognitive model suggests that treatment should target the CAS (worry, rumination, threat monitoring) and metacognitive beliefs rather than focusing on

> the contents of trauma memory or using PE and reliving. This treatment guides the client to bring the CAS under flexible control so that threat-modes of processing subside. (p. 134)

Because research outcomes that use cognitive restructuring with and without PE have equivalent effects, replacing PE with MT serves the goal of cognitively reframing healing from trauma. Furthermore, post-treatment results comparing PE with MT show a higher effect for the MT group over PE (p. 142).

Hemispheric Integration, Emotion-Focused Therapy, and Mindfulness Practices

Because hemispheric integration through affective processing is critical to recovery from the neurophysiological and neuroanatomical imprints of trauma, principles of mindfulness-based emotion-focused therapy (EFT) derived from Buddhist theories of mind can help achieve this resolution by promoting the simultaneous processing of cognitive and emotional mechanisms implicated in PTSD. In his comments on the Buddhist Abhidharma texts, Chogyam Trungpa Rinpoche (1975), a prominent Tibetan Buddhist scholar, noted that image is a primary and spontaneous activity of the mind and not a secondary byproduct of imagination (p. 31). He related that perception arises after image formation, then concepts, then behavior—including emotions (pp. 31-35). From perception arises our conception of the world that forms the basis of our experiences. In turn, these perceptions inform our behavior when we interact with the world. Deconstructing image in this manner and understanding the trajectory that leads to emotional responses can deeply inform therapeutic interventions in specific PTSD treatments.

Padmasiri de Silva (2014), a psychologist and proponent of mindfulness-based EFT, moved this analysis of image one step further and analyzed perception in terms of the components of emotional processing from a Buddhist perspective:

> Within the context of Buddhist psychology, an emotion is more complex than thoughts: an emotion involves a blend of the cognitive (*sanna, cita*), the affective (*vedana*) and volitional (*sankhara*) facets, while a broader term *motivational* would include volitional/intentions and desires (*chanda, raga*). To this we also add the physiological dimension of the body. (p. 136)

De Silva extrapolated that emotion is "an interactive complex or construction" (p. 136) that blends "cognitive, motivational, affective and physiological arousal factors" (p.136) that enable the therapist to operationalize four frames of reference: somatic, affective, imprints, and phenomena (p. 136). According to EFT theorist and practitioner Sandra Paivio (2013), EFT assumes that emotions include "a multimodal network of information (thoughts, feelings, beliefs, desires, bodily experience), and accessing emotion accesses this network of emotion" (p. 341). She explained that trauma dysregulates integrated processing of information in these networks. Later, experiences reminiscent of the original trauma trigger the network, and the once-adaptive response to trauma is compromised.

Drawing on a Buddhist-based paradigm, De Silva (2014) explained that mindfulness practice combined with EFT focuses on antidotal methods that restrain negative emotions, abandon negative emotions when they are present, develop positive emotions in their place, and enable stabilization of such positive states of mind once they have developed and, thereby, in accordance with traditional Buddhist practice, transform negative emotions instead of reject them (pp. 138-139). Mindfulness-based EFT and emotional processing by inference comprise a therapeutic protocol that synthesizes

pansystemic processing modalities in the brain and catalyzes an effect across hemispheres critical to resolving integration issues that are diagnostically endemic to PTSD. These practices can target avoidance behaviors, cultivate emotional restraint and awareness, reduce anxiety and hyperarousal, and ameliorate ADHD difficulties with increased concentration and attention.

Because healing, well-being, and positive self-states can be achieved through mind training, neural networks implicated in PTSD can also be targeted through meditation practices. “Meditation can be conceptualized as a set of regulatory and self inquiry mental training regimes cultivated for various ends, including the training of well-being and psychological health” (Chambers, Gullone, & Allen, 2009). Furthermore, functional and neuronal alterations are evidenced in mind states induced through meditation training (Chambers et al., 2009; Hölzel et al., 2011; Lutz, Slagter, Dunne, et al., 2008), whereas neuroplastic changes are connected to behavior change during cognitive and affective tasks (Hölzel et al., 2011; Lutz, Slagter, Rawlings, et al., 2009). Meditation as a therapeutic tool is supported by a 2012 longitudinal study that found a reduction in right amygdala activation in response to emotional stimuli in healthy adults with no prior meditation experience after an 8-week mindful-attention meditation training (Desbordes et al., 2012).

Breath training is another approach to emotional dysregulation rooted in Buddhist mindfulness practices. Samatha meditation is a practice-based breath training modality that, when taught to clients, supports development of self-observation as well as cognitive and emotional monitoring skills. Samatha is a powerful regulator of multiple systems in the body and cultivates mindfulness and introspection through simple observation of the

in-and-out breath (Wallace, 2010, p. 47). Mindfulness is achieved through continued focus on the breath while introspection monitors the ongoing experience toward the desired effect of achieving stability (Wallace, 2010, p. 47; Desbordes et al., 2012, p. 4).

> Mindfulness meditation cultivates . . . faster recovery from setbacks by weakening the chain of associations that keep us obsessing about and even wallowing in a setback. It strengthens connections between the prefrontal cortex and the amygdala, promoting an equanimity that will help keep you from spiraling down. (Davidson & Begley, 2012a, p. 5)

Samatha meditation has been correlated with classical mindfulness (CM), a practice that parallels attentional load theory (ATL) in cognitive psychology and neuroscience (Rapgay et al., 2014). ATL promulgates mastery of a central task or object that becomes so well known that it becomes second nature to the individual and frees attentional resources to other peripheral contextual information (Lavie et al., as cited in Rapgay et al., 2014, p. 744). Rather than create distress and emotional pain, as is typical of exposure therapies, meditation can address PTSD-related symptomology through a therapeutic setpoint of control and serenity aimed toward symptom conversion. In an atmosphere of mindfulness and attention, meditation practice can be applied to relieve stressful states, decrease hyperarousal, reduce avoidance behaviors and numbing, mitigate dissociative states, and increase attention.

To address further the emotional and behavioral issues related to emotional dysregulation, retrospective emotional awareness skills based in introspective awareness can help identification of trauma-related patterns of behavior due to past maladaptive emotional processing. In this context, trauma survivors can be encouraged to grieve collateral losses incurred by faulty defense systems and to forgive themselves in the present, regardless of misconstrued efforts of the past. A randomized, controlled trial

(Shear, Frank, Houck, & Reynolds, 2005) found that PTSD resembles complicated grief and often co-occurs with major depressive disorder. Engaging grief processes to reframe trauma can thus functionally replace retraumatization strategies and allow a natural healing process relating to loss to take place over time. Reframing of past experience related to trauma in terms of grief processing subverts responsibility based in a victim mentality; turns the process toward building present-centered awareness and self-esteem; and structures a revised self-concept based on a positive self-image and empowerment. Effective reprocessing therefore must include a refocusing that logically calls for engagement of the whole person and holistic recovery paradigms in the recovery process.

The Scientific Logic of Somatic Therapies

Van der Kolk (2002), a contemporary expert on the neurological and psychological profiles of PTSD, acknowledged the necessity of applying the lessons of neuroscience to PTSD and proposed a rationale for incorporating somatic manifestations of trauma into inclusive treatment paradigms. He stated that in order "to overcome traumatic experiences, people require physical experiences that directly contradict the helplessness and the inevitability of defeat associated with the trauma" (p. 383).

Van der Kolk (2002) noted that if the problem for the trauma sufferer is *disassociation*, then the process of *association* should be the goal of treatment (p. 383). In the sense of linking and evolving images, association thus infers a harmonious healing process occurring within the individual, a state wherein image associations commensurate with past experience no longer traumatize but instead are converted in a healing context toward the goal of an evolved self-image and empowerment. This process connotes the importance of promoting awareness rather than avoidance of one's internal

states in ongoing treatment for PTSD. Traditional therapies generally disregard the sensate qualities associated with the sensory dimension of life despite their obvious presence and negative influence in many cases. “This neglect ignores the fact that the origin of one’s emotional state is 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, as cited in van der Kolk, 2002, p. 389). As neuroscience research indicates and because the nature of trauma, on its face, is received by the body as a somatic shock, it is essential for PTSD treatment-focused paradigms to expand into somatic therapeutics in combination with other forms of therapy.

In tracing the biochemical substrate of emotions, Candace B. Pert (1986), former Chief of Brain Chemistry in the clinical neuroscience branch of the National Institute of Mental Health and a pioneer in mind-body medicine, completed studies that identify the chemical substrates that putatively explain the interdependence in mind-body communications. Her research located two major elements in the body’s “information system” (p. 8): neuropeptides and the receptors into which they fit. Neuropeptides are strings of the 16 amino acids that are released directly by DNA, and their sequences comprise part of the body’s peptide system (p. 13). Pert was able to define a subtle yet indelible conversation between the mind and body through the interaction of neuropeptides and their corresponding receptor sites in both the mind and body—so much so that she coined the term *bodymind*, acknowledging their complex interactions by integrating the term in discussions of her research. For Pert, the bodies in these experiments were manifestations of the mind, not the other way around (p. 13). She noted,

> The striking pattern of neuropeptide receptor distribution in mood-regulating areas of the brain, as well as their role in mediating communication throughout the whole organism, makes neuropeptides the obvious candidates for the biochemical mediation of emotion. It may be too that each neuropeptide biases information processing uniquely when occupying receptors at nodal points with the brain and body. If so, then each neuropeptide may evoke a unique "tone" that is equivalent to a mood state. (p. 12)

Pert's research evidences a highly relevant and evolved communication between the mind and body that needs to be considered and incorporated into PTSD treatments.

In a therapeutic analysis of somatic treatment Christine Caldwell (1997), somatic therapist and founder of the of Somatic Psychology department at Naropa University, noted that thoughts are not just mental events but reflect in the body as well (p. 7). Caldwell explained that the *body/mind* is an inseparable feedback loop or continuum and that any dysfunction within the incorporated organismic continuum will affect the entire system (p. 7). The communication between the body and mind is thus a critical correspondence that must be acknowledged in *any therapeutic encounter*. An original therapeutic approach that incorporates both contemporary neuroscientific discoveries discussed in this thesis as well as interpolates the importance of the somatic element in the healing of trauma is outlined below.

Deep Saltwater Immersion Therapy (DSIT)

Whether the vessel is a sink, a bucket, or a tub, the glee and wonder of water will always be the same for the small child. Turn on the sprinklers and watch them dance in the spray! Leave a child in the sand at the shore with a shovel and a bucket, and hours pass, unfettered by boredom or complaint. Standing at the water's edge, one is drawn in, mesmerized, becalmed, and assuaged by its particular mystery and depth. All who have experienced the ocean know this and need no research to believe in its settling effect.

Nonetheless, there is evidence that confirms the beneficial effect on the human mind and spirit provided by natural environments, especially those that include water elements.

> We are beginning to learn that our brains are hardwired to react positively to water and that being near it can calm and connect us, increase innovation and insight, and even heal what's broken. Healthy water is crucial to our physiological and psychological well-being, as well as our ecology and economy. We have a 'blue mind'—and it's perfectly tailored to make us happy in all sorts of ways that go far beyond relaxing in the surf, or floating quietly in a pool" (Cousteau, 2014, p. x)

Throughout our lifetimes, experiential factors will always shape our brains, behavior, and choices. The therapy I propose, DSIT, incorporates an understanding that positive structural changes in the brain and modifications in behavior can be achieved through compassionate approaches to therapy and specific training modalities that foster recovery from trauma and enhance well-being. Furthermore, DSIT turns the corner from other therapeutic treatments by including somatic healing in natural environments based in saltwater immersion. As modern innovations related to technology increasingly distance humankind from the environment and the beneficial effect of natural environments, it has become essential not to disregard the effect of this loss on the human psyche. It is therefore common sense to incorporate naturalistic therapeutic encounters into somatic healing paradigms. As social psychologists Leaf Van Boven and Thomas Gilovich (2003) observed, "we live in a world of unprecedented abundance" (p. 1193). DSIT's multifaceted approach to trauma treatment is a modern cornucopia that acknowledges this abundance in the context of the necessity of a holistic approach to trauma treatment.

DSIT is an incorporative approach to trauma based on research in affective neuroscience and psychological analysis of trauma formation. A true allegiance to recovery from posttraumatic stress disorder (PTSD) necessitates consideration of

cognitive, affective, and somatic treatments that avoid the retraumatization philosophies and cathartic approaches to trauma typical of the older desensitization practices. DSIT, by comparison, engages a naturalistic approach that supports therapeutic and nontraumatic grieving cycles to process negative memories and other losses incurred while suffering from this disorder.

Based in a seven-premise multimodal recovery paradigm that incorporates an innovative somatic recovery component, DSIT applies the latest research in neuroscience in a holistic positive-psychology format to treat PTSD. These seven premises are the following:

1. Neuroscientific research on the pathophysiology of PTSD
2. Application of current evidence-based findings in neuroplasticity to remodel neural networks
3. Metacognitive principles of information processing that foster self-reflection and positive change
4. Mindfulness-based emotion-focused therapy that promotes hemispheric integration critical to neurophysiological healing
5. Journaling with DSIT counselors to target hot spots and other persistent traumatic residue
6. Saltwater immersion therapy
7. Recognition and development of affective style to replace negative processing and reactivity to trauma triggers.

DSIT is especially unique in its approach to trauma treatment because it incorporates the element of somatic recovery through immersion in saltwater. The rationale for DSIT

holds that this immersion aspect of treatment is both critically therapeutic to a comprehensive approach to trauma as well as essential to consolidating DSIT's multifaceted approach to recovery.

Chapter IV
Summary and Conclusions

Summary

Due to technical advances in neuroscientific research relating to PTSD, deficits implicit in this condition can be targeted with appropriate therapeutic modalities aimed toward ameliorating specific symptoms and neural networks. Exposure therapies have traditionally been the treatment of choice. These modalities engage cognitive reprocessing of memories associated with traumatic image sequences in a desensitization procedure that shuts down emotional symptomology and reactivity through repeated recountings of the traumatic event. Although desensitization may provide some remission, it does not provide immunity to the multisystemic imprints of PTSD that could ultimately induce a holistic and inclusive recovery. Furthermore, clients and clinicians alike are wary of the retraumatization issues related to this procedure. Deep recovery must include an incorporative approach to a condition originally precipitated by a global shock to the mind–body continuum; therefore, effective treatment logically must embrace a global paradigm of mind–body healing. Because exposure therapies target only emotional residue and potentially retraumatize clients, they cannot accomplish this inclusive effect.

Given the challenge of treating the multisystemic manifestation of PTSD, this thesis proposes that clinicians should first choose to greet all trauma-based client narratives with a compassionate stance that is advocated by depth approaches to

traumatic sequelae. The work of all PTSD modalities should be to meet and welcome all of the images that comprise trauma, and then turn the traumatic event upside down into a healing and growth opportunity that creates self-empowerment through successful survival.

With the advent of new technology and the availability of knowledge relating to the neurological imprinting of trauma, clinicians now have the option to choose from a variety of therapeutic modalities that, in each instance, will treat particular aspects of a client's symptomology. Mindfulness-based therapies such as the metacognitive model, emotion-focused therapies, and breath training such as samatha meditation techniques as well as the incorporation of somatic and ecopsychological approaches such as saltwater immersion are all effective, long-term solutions that can create lasting recovery from trauma and its adverse consequences in the life and well-being of the trauma victim.

Conclusions

Treatments for PTSD intuitively engage image in efforts to ameliorate the effects of trauma. It is worth noting that it is the continued presence of older images that perpetuates the imprints of trauma in the psyche and, furthermore, it is a process of revisioning images into the future that promises to lead the way out. Although exposure therapies attempt to affect this solution and, perhaps, for a while were the best option to do so, in light of contemporary neuroscientific research, this is no longer true. Contemporary neuroimaging technology and findings that pinpoint the neurobiology of trauma comprise a metaphoric lighthouse that brings the vessel of curative paradigms to safe harbor with the promise of innovative cures. Cognitive and emotional processing can occur without reinforcing the neural and physiological networks embattled by imprints of

trauma that instilled the disorder in the first place. Alternative therapies that teach metacognition, encourage insightful affective processing, and promote introspective skills combined with mindfulness practices support remission and cure in the future without the retraumatizing paradigms that we have inherited from the treatment of soldiers affected in the wars of the 20th century.

Implications of the research for psychotherapy. Contemporary research in neuroscience has outpaced the usefulness of exposure therapies in the treatment of PTSD. On the one hand, an explanatory depth psychological approach to the manifestations of traumatic memory in the psyche parallels the formation of neurophysiological imprints of trauma and remains an enduring and compassionate stance to address suffering in the therapeutic container, as exemplified by Kalsched's (1996, 1998) work in the field. On the other hand, mainstream clinical approaches to trauma that rely on exposure modalities are clearly outdated. It is clear from a review of the extant research that exposure treatments for PTSD are due for an overhaul. In an atmosphere that maintains a compassionate stance to disease and the methods used to alleviate suffering, therapists do not need to tiptoe into trauma narratives and then, once in the garden, trample the daisies. By revisioning the role of image out of trauma and into recovery paradigms, we can incorporate healing images into a context that positively supports an individual's survival, recovery, and future self-empowerment. As therapists, we can choose to sustain a compassionate dialogue that directly confronts the sagas of trauma at the same time as we provide humane options whereby the client may choose to deal with the trauma.

Recommendations for further research. More research is necessary to investigate the conversation in the mind–body relationship, particularly in the area of

somatic therapies for treatment of PTSD. Although, currently, no research has been conducted regarding the beneficial effects of saltwater immersion therapy, conceptually, the proposed DSIT parallels other treatment approaches that embrace ecopsychological and somatic healing paradigms. Nonetheless, research relating to saltwater immersion in the future could be informative, especially in relation to its effect on heart rates during recounting of trauma narratives.

References

American Psychiatric Association. (1980). *Diagnostic and statistical manual of mental disorders* (3rd ed.). Washington, DC: Author.

American Psychiatric Association (2013) *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington D.C.: Author.

Amir, S., Brown, Z., & Amit, Z. (1980). The role of endorphins in stress: Evidence and speculations. *Neuroscience and Biobehavioral Reviews*, *4*(1), 77-86. http://dx.doi.org/10.1016/0149-7634(80)90027-5

Arikan, G., & Karanci, N. (2012). Attachment and coping as facilitators of posttraumatic growth in Turkish university students experiencing traumatic events. *Journal of Trauma and Dissociation*, *13*(2), 209-225. http://dx.doi.org/10.1080/15299732.2012.642746

Beck, A. T., Emery, G., & Greenberg, R. L. (2005). *Anxiety disorders and phobias: A cognitive perspective*. New York, NY: Basic Books.

Biederman, J. J., Petty, C. R., Spencer, T. J., Woodworth, K. Y., Bhide, P. P., Zhu, J. J., & Faraone, S. V. (2013). Examining the nature of the comorbidity between pediatric attention deficit/hyperactivity disorder and post- traumatic stress disorder. *Acta Psychiatrica Scandinavica*, *128*(1), 78-87. http://dx.doi.org/10.1111/acps.12011

Caldwell, C. (1997). *Getting in touch: The guide to new body-centered therapies.* Wheaton, IL: Quest Books.

Chambers, R., Gullone, E., & Allen, N. B. (2009). Mindful emotion regulation: An integrative review. *Clinical Psychology Review*, *29*(6), 560-572. http://dx.doi.org/10.1016/j.cpr.2009.06.005

Chemtob, C. M., Roitblat, H. L., Hamada, R. S., Carlson, J. G., & Twentyman, C. T. (1988). A cognitive action theory of posttraumatic stress disorder. *Journal of Anxiety Disorders*, *2*, 253-275. http://dx.doi.org/10.1016/0887-6185(88)90006-0

Chen, Y. R., Hung, K. W., Tsai, J. C., Chu, H., & Chung, M. H. (2014). Efficacy of eye-movement desensitization and reprocessing for patients with posttraumatic-stress disorder: A meta-analysis of randomized controlled trials. *PLOS ONE*, *9*(8). http://dx.doi.org/10.1371/journal.pone.0103676

Cousteau, C. (2014). Foreword. In W. J. Nichols, *Blue mind* (pp. ix-xii). New York, NY: Little.

Craske, M. G., Kircanski, K., Zelikowsky, M., Mystkowski, J., Chowdhury, N., & Baker, A. (2008). Optimizing inhibitory learning during exposure therapy. *Behaviour Research and Therapy*, *46*(1), 5-27. http://dx.doi.org/10.1016/j.brat.2007.10.003

Dalgleish, T., & Power, M. J. (2004). Emotion-specific and emotion-non-specific components of posttraumatic stress disorder (PTSD): Implications for a taxonomy of related psychopathology. *Behaviour Research and Therapy*, *42*(9), 1069-1088. http://dx.doi.org/10.1016/j.brat.2004.05.001

Damasio, A. R. (1989). Time-locked multiregional retroactivation: A systems-level proposal for the neural substrates of recall and recognition. *Cognition*, *33*(1-2), 25-62. http://dx.doi.org/10.1016/0010-0277(89)90005-X

Davidson, R. J., & Begley, S. (2012a). *The emotional life of your brain*. New York, NY: Hudson Street Press.

Davidson, R. J., & Begley, S. (2012b). The new science of feelings. *Newsweek*, *159*(9/10), pp. 46-51.

Davidson, R. J., Jackson, D. C., & Kalin, N. H. (2000). Emotion, plasticity, context, and regulation: Perspectives from affective neuroscience. *Psychological Bulletin*, *126*(6), 890-909. http://dx.doi.org/10.1037/0033-2909.126.6.890

Davidson, R. J., & McEwen, B. S. (2012). Social influences on neuroplasticity: Stress and interventions to promote well-being. *Nature Neuroscience*, *15*(5), 689-695. http://dx.doi.org/10.1038/nn.3093

de Silva, P. (2014). *An introduction to Buddhist psychology and counseling: Pathways of mindfulness-based therapies* (5th ed.). New York, NY: Palgrave.

Desbordes, G., Negi, L. T., Pace, T. W., Wallace, B. A., Raison, C. L., & Schwartz, E. L. (2012, November 1). Effects of mindful-attention and compassion meditation training on amygdala response to emotional stimuli in an ordinary, non-meditative state. *Frontiers in Human Neuroscience*, *6*, 1-15. http://dx.doi.org/10.3389/fnhum.2012.00292

Dickerson, B. C., & Eichenbaum, H. (2010). The episodic memory system: Neurocircuitry and disorders. *Neuropsychopharmacology*, *35*(1), 86-104. http://dx.doi.org/10.1038/npp.2009.126

Finlay, L. (2012). Unfolding the phenomenological research process: Iterative stages of "seeing afresh." *Journal of Humanistic Psychology*, *53*(2), 172-201. http://dx.doi.org/10.1177/0022167812453877

Fischer, H., Tillfors, M., Furmark, T., & Fredrikson, M. (2001). Dispositional pessimism and amygdala activity: A PET study in healthy volunteers. *Neuroreport: For Rapid Communication of Neuroscience Research*, *12*(8), 1635-1638. doi:10.1097/00001756-200106130-00024

Foa, E. B., Dancu, C. V., Hembree, E. A., Jaycox, L. H., Meadows, E. A., & Street, G. P. (1999). A comparison of exposure therapy, stress inoculation training, and their combination for reducing posttraumatic stress disorder in female assault victims. *Journal of Consulting and Clinical Psychology*, *67*(2), 194-200. http://dx.doi.org/10.1037/0022-006X.67.2.194

Foa, E. B., & Kozak, M. J. (1986). Emotional processing of fear: Exposure to corrective information. *Psychological Bulletin*, *99*, 20-35.

Galovski, T. E., Blain, L. M., Mott, J. M., Elwood, L., & Houle, T. (2012). Manualized therapy for PTSD: Flexing the structure of cognitive processing therapy. *Journal of Consulting and Clinical Psychology*, *80*(6), 968-981. http://dx.doi.org/10.1037/a0030600

Germain, A., Krakow, B., Faucher, B., Zadra, A., Nielsen, T., Hollifield, M., . . . Koss, M. (2004). Increased mastery elements associated with imagery rehearsal treatment for nightmares in sexual assault survivors with PTSD. *Dreaming*, *14*(4), 195-206. http://dx.doi.org/10.1037/1053-0797.14.4.195

Ghafoori, B., & Davaie, S. (2012). Training student therapists in prolonged exposure therapy: A case study demonstrating teaching, supervising, and learning a trauma focused treatment. *Traumatology*, *18*(4), 72-78. doi:10.1177/1534765612438946

Goosens, K. A. (2011). Hippocampal regulation of aversive memories. *Current Opinion in Neurobiology*, *21*(3), 460-466. http://dx.doi.org/10.1016/j.conb.2011.04.003

Grey, N., Holmes, E., & Brewin, C. R. (2001). Peritraumatic emotional "hot spots" in memory. *Behavioural and Cognitive Psychotherapy*, *29*(3), 367-372. http://dx.doi.org/10.1017/S1352465801003095

Hagenaars, M. A., van Minnen, A., & Hoogduin, K. A. (2010). The impact of dissociation and depression on the efficacy of prolonged exposure treatment for PTSD. *Behaviour Research and Therapy*, *48*(1), 19-27. http://dx.doi.org/10.1016/j.brat.2009.09.001

Hembree, E. A., Foa, E. B., Dorfan, N. M., Street, G. P., Kowalski, J., & Tu, X. (2003). Do patients drop out prematurely from exposure therapy for PTSD? *Journal of Traumatic Stress*, *16*(6), 555-562. doi:10.1023/B:JOTS.0000004078.93012.7d

Herkt, D., Tumani, V., Grön, G., Kammer, T., Hofmann, A., & Abler, B. (2014). Facilitating access to emotions: Neural signature of EMDR stimulation. *PLOS ONE*, *9*(8), 1-8. http://dx.doi.org/10.1371/journal.pone.0106350

Herman, J. (1992). Complex PTSD: A syndrome in survivors of prolonged and repeated trauma. In M. J. Horowitz (Ed.), *Essential papers on posttraumatic stress disorder* (pp. 82-98). New York, NY: New York University Press.

Herman, J. (1997). *Trauma and recovery: The aftermath of violence—From domestic abuse to political terror*. New York, NY: Basic Books.

Hillman, J. (1981). *Archetypal psychology: A brief account*. Dallas, TX: Spring.

Hoffart, A., Øktedalen, T., Langkaas, T., & Wampold, B. E. (2013). Alliance and outcome in varying imagery procedures for PTSD: A study of within-person processes. *Journal of Counseling Psychology*, *60*(4), 471-482. http://dx.doi.org/10.1037/a0033604

Hölzel, B. K., Carmody, J., Vangel, M., Congleton, C., Yerramsetti, S. M., Gard, T., & Lazar, S. W. (2011). Mindfulness practice leads to increases in regional brain gray matter density. *Psychiatry Research: Neuroimaging*, *191*(1), 36-43. http://dx.doi.org/10.1016/j.pscychresns.2010.08.006

Jung, C. G. (1980). Religion and psychology: A reply to Martin Buber (R .F. C. Hull, Trans.). In H. Read et al. (Series Eds.), *The collected works of C. G. Jung* (Vol. 18, pp. 663-670). Princeton, NJ: Princeton University Press. (Original work published 1952)

Kalsched, D. (1996). *The inner world of trauma: Archetypal defenses of the personal spirit*. New York, NY: Routledge.

Kalsched, D. (1998). Archetypal defenses in the clinical situation: A vignette. *Journal of Analytical Psychology*, *43*(1), 3-17. http://dx.doi.org/10.1111/1465-5922.00003

Kearney, D. J., Malte, C. A., McManus, C., Martinez, M. E., Felleman, B., & Simpson, T. L. (2013). Loving-kindness meditation for posttraumatic stress disorder: A pilot study. *Journal of Traumatic Stress*, *26*(4), 426-434. http://dx.doi.org/10.1002/jts.21832

Kircanski, K., Mortazavi, A., Castriotta, N., Baker, A. S., Mystkowski, J. L., Yi, R., & Craske, M. G. (2012). Challenges to the traditional exposure paradigm: Variability in exposure therapy for contamination fears. *Journal of Behavior Therapy and Experimental Psychiatry*, *43*(2), 745-751. http://dx.doi.org/10.1016/j.jbtep.2011.10.010

Koriat, A., & Shitzer-Reichert, R. (2002). Metacognitive judgments and their accuracy. In P. Chambres, M. Izaute, & P. Marescaux (Eds.), *Metacognition: Process,*

function and use (pp. 1-17). Dordrecht, Netherlands: Kluwer. http://dx.doi.org/10.1007/978-1-4615-1099-4_1

Krakow, B. (2004). Imagery rehearsal therapy for chronic posttraumatic nightmares: A mind's eye view. In R. I. Rosner, W. J. Lyddon, & A. Freeman (Eds.), *Cognitive therapy and dreams* (pp. 89-109). New York, NY: Springer.

Lang, P. J. (1977). Imagery in therapy: An information processing analysis of fear. In M. J. Horowitz (Ed.), *Essential papers on posttraumatic stress disorder* (pp. 387-412). New York, NY: New York University Press.

Lenz, S., Bruijn, B., Serman, N. S., & Bailey, L. (2014). Effectiveness of cognitive processing therapy for treating posttraumatic stress disorder. *Journal of Mental Health Counseling*, *36*(4), 360-376.

Levy-Gigi, E., Szabo, C., Richter-Levin, G., & Kéri, S. (2014). Reduced hippocampal volume is associated with overgeneralization of negative context in individuals with PTSD. *Neuropsychology*, *29*(1), 151-161. http://dx.doi.org/10.1037/neu0000131

Long, M. E., & Quevillon, R. (2009). Imagery rescripting in the treatment of posttraumatic stress disorder. *Journal of Cognitive Psychotherapy*, *23*(1), 67-76. http://dx.doi.org/10.1891/0889-8391.23.1.67

Lutz, A., Slagter, H. A., Dunne, J. D., & Davidson, R. J. (2008). Attention regulation and monitoring in meditation. *Trends in Cognitive Sciences*, *12*(4), 163-169. http://dx.doi.org/10.1016/j.tics.2008.01.005

Lutz, A., Slagter, H. A., Rawlings, N. B., Francis, A. D., Greischar, L. L., & Davidson, R. J. (2009). Mental training enhances attentional stability: Neural and behavioral evidence. *The Journal of Neuroscience*, *29*(42), 13418-13427. http://dx.doi.org/10.1523/JNEUROSCI.1614-09.2009

Mazoyer, B., Tzourio-Mazoyer, N., Mazard, A., Denis, M., & Mellet, E. (2002). Neural bases of image and language interactions. *International Journal of Psychology*, *37*(4), 204-208. http://dx.doi.org/10.1080/00207590244000007

McEwen, B. S. (2007). Physiology and neurobiology of stress and adaptation: Central role of the brain. *Physiological Reviews*, *87*(3), 873-904. http://dx.doi.org/10.1152/physrev.00041.2006

McEwen, B. S., & Gianaros, P. J. (2011). Stress- and allostasis-induced brain plasticity. *Annual Review of Medicine*, *62*(1), 431-445. http://dx.doi.org/10.1146/annurev-med-052209- 100430

Merleau-Ponty, M. (1968). *The visible and the invisible* (A. Lingis, Trans.). Evanston, IL: Northwestern University Press. (Original work published 1964)

Moustafa, A. A., Gilbertson, M. W., Orr, S. P., Herzallah, M. M., Servatius, R. J., & Myers, C. E. (2013). A model of amygdala-hippocampal-prefrontal interaction in fear conditioning and extinction in animals. *Brain and Cognition*, *81*(1), 29-43. http://dx.doi.org/10.1016/j.bandc.2012.10.005

Nelson, R. J. (2013). Is virtual reality exposure therapy effective for service members and veterans experiencing combat-related PTSD? *Traumatology*, *19*(3), 171-178. http://dx.doi.org/10.1177/1534765612459891

Paivio, S. C. (2013). Essential processes in emotion-focused therapy. *Psychotherapy*, *50*(3), 341-345. http://dx.doi.org/10.1037/a0032810

Perrin, M., Vandeleur, C., Castelao, E., Rothen, S., Glaus, J., Vollenweider, P., & Preisig, M. (2014). Determinants of the development of post-traumatic stress disorder, in the general population. *Social Psychiatry and Psychiatric Epidemiology*, *49*(3), 447-457. http://dx.doi.org/10.1007/s00127-013-0762-3

Pert, C. B. (1986). The wisdom of the receptors: Neuropeptides, the emotions and bodymind. *Advances in Mind-Body Medicine, 3*(3), 8-16.

Rapgay, L., Ross, J. L., Petersen, O., Izquierdo, C., Harms, M., Hawa, S., . . . Couper, G. (2014). A proposed protocol integrating classical mindfulness with prolonged exposure therapy to treat posttraumatic stress disorder. *Mindfulness*, *5*(6), 742-755. http://dx.doi.org/10.1007/s12671-013-0231-9

Roth, S., Newman, E., Pelcovitz, D., van der Kolk, B., & Mandel, F. S. (1997). Complex PTSD in Victims Exposed to Sexual and Physical Abuse: Results from the DSM-IV Field Trial for Posttraumatic Stress Disorder. *Journal Of Traumatic Stress*, *10*(4), 539-555.

Rudy, J. W., Huff, N. C., & Matus-Amat, P. (2004). Understanding contextual fear conditioning: Insights from a two-process model. *Neuroscience and Biobehavioral Reviews*, *28*(7), 675-685. http://dx.doi.org/10.1016/j.neubiorev .2004.09.004

Sannibale, C., Teesson, M., Creamer, M., Sitharthan, T., Bryant, R. A., Sutherland, K., & Peek-O'Leary, M. (2013). Randomized controlled trial of cognitive behaviour therapy for comorbid post-traumatic stress disorder and alcohol use disorders. *Addiction*, *108*(8), 1397-1410. http://dx.doi.org/10.1111/add.12167

Shalit, E. (2010). Destruction of the image and the worship of transiency. *Jung Journal: Culture and Psyche*, *4*(1), 85-98. http://dx.doi.org/10.1525/jung.2010.4.1.85

Shear, K., Frank, E., Houck, P. R., & Reynolds, C. I. (2005). Treatment of complicated grief: A randomized controlled trial. *Journal of the American Medical Association*, *293*(21), 2601-2608. http://dx.doi.org/10.1001/jama.293.21.2601

Silverstein, S. M. (2014). Jung's views on causes and treatments of schizophrenia in light of current trends in cognitive neuroscience and psychotherapy research: I. Aetiology and phenomenology. *Journal of Analytical Psychology*, *59*(1), 98-129. http://dx.doi.org/10.1111/1468-5922.12057

Spinazzola, J., Blaustein, M., & van der Kolk, B. A. (2005). Posttraumatic stress disorder treatment outcome research: The study of unrepresentative samples? *Journal of Traumatic Stress*, *18*(5), 425-436. http://dx.doi.org/10.1002/jts.20050

Spitzer, C., Chevalier, C., Gillner, M., Freyberger, H. J., & Barnow, S. (2006). Complex posttraumatic stress disorder and child maltreatment in forensic inpatients. *Journal of Forensic Psychiatry and Psychology*, *17*(2), 204-216. http://dx.doi.org/10.1080/14789940500497743

Stein, M. (2008). 'Divinity expresses the self . . .' An investigation. *Journal of Analytical Psychology*, *53*(3), 305-327. http://dx.doi.org/10.1111/j.1468-5922.2008.00729.x

Taylor, S., Asmundson, G. G., & Carleton, R. (2006). Simple versus complex PTSD: A cluster analytic investigation. *Journal of Anxiety Disorders*, *20*(4), 459-472. http://dx.doi.org/10.1016/j.janxdis.2005.04.003

Thompson, B. L., Luoma, J. B., & LeJeune, J. T. (2013). Using acceptance and commitment therapy to guide exposure-based interventions for posttraumatic stress disorder. *Journal of Contemporary Psychotherapy*, *43*(3), 133-140. http://dx.doi.org/10.1007/s10879-013-9233-0

Trungpa, C. (1975). *Glimpses of Abhidharma*. Boston, MA: Shambhala.

Van Boven, L., & Gilovich, T. (2003). To do or to have? That is the question. *Journal of Personality and Social Psychology*, *85*(6), 1193-1202. http://dx.doi.org/10.1037/0022-3514.85.6.1193

van der Kolk, B. A. (2000). Posttraumatic stress disorder and the nature of trauma. *Dialogues in Clinical Neuroscience, 2*(1), 7-22.

van der Kolk, B. A. (2001). The psychobiology and psychopharmacology of PTSD. *Human Psychopharmacology: Clinical and Experimental*, *16*(Suppl1), 49-64. http://dx.doi.org/10.1002/hup.270

van der Kolk, B. A. (2002). Posttraumatic therapy in the age of neuroscience. *Psychoanalytic Dialogues*, *12*(3), 381-392. http://dx.doi.org/10.1080/10481881209348674

van der Kolk, B. A., & Ducey, C. P. (1989). The psychological processing of traumatic experience: Rorschach patterns in PTSD. *Journal of Traumatic Stress*, *2*(3), 259-274. http://dx.doi.org/10.1002/jts.2490020303

van der Kolk, B. A., Roth, S., Pelcovitz, D., Sunday, S., & Spinazzola, J. (2005). Disorders of extreme stress: The empirical foundation of a complex adaptation to trauma. *Journal of Traumatic Stress*, *18*(5), 389-399. http://dx.doi.org/10.1002/jts.20047

van Minnen, A., Arntz, A., & Keijsers, G. J. (2002). Prolonged exposure in patients with chronic PTSD: Predictors of treatment outcome and dropout. *Behaviour Research and Therapy*, *40*(4), 439-457. http://dx.doi.org/10.1016/S0005-7967(01)00024-9

van Minnen, A., Harned, M. S., Zoellner, L., & Mills, K. (2012). Examining potential contraindications for prolonged exposure therapy for PTSD. *European Journal of Psychotraumatology*, *3*, 1-14. http://dx.doi.org/10.3402/ejpt.v3i0.18805

Vosmer, S. (2012). The usefulness of group analysis in the conceptualization and treatment of 'personality disorders' and 'complex/post-traumatic stress disorder.' *Group Analysis*, *45*(4), 498-514. http://dx.doi.org/10.1177/0533316412462526

Wallace, A. (2010). *The four immeasurables: Practices to open the heart*. Ithaca, NY: Snow Lion.

Wells, A. (2000). *Emotional disorders and metacognition: Innovative cognitive therapy*. New York, NY: Wiley.

Wells, A., Walton, D., Lovell, K., & Proctor, D. (2014, August 10). Metacognitive therapy versus prolonged exposure in adults with chronic post-traumatic stress disorder: A parallel randomized controlled trial. *Cognitive Therapy and Research*. http://dx.doi.org/10.1007/s10608-014-9636-6

Whitmont, E. (1991) *The symbolic quest*. Princeton, NJ: Princeton University Press.

Witvliet, C. (1997). Traumatic intrusive imagery as an emotional memory phenomenon: A review of research and explanatory information processing theories. *Clinical Psychology Review*, *17*(5), 509-536. http://dx.doi.org/10.1016/S0272-7358(97)00025-1

Wolpe, J. (1958). *Psychotherapy for reciprocal inhibition*. Stanford, CA: Stanford University Press.

Zalta, A. K., Gillihan, S. J., Fisher, A. J., Mintz, J., McLean, C. P., Yehuda, R., & Foa, E. B. (2014). Change in negative cognitions associated with PTSD predicts symptom reduction in prolonged exposure. *Journal of Consulting and Clinical Psychology*, *82*(1), 171-175. http://dx.doi.org/10.1037/a0034735

Zurbriggen, E. L., Gobin, R. L., & Kaehler, L. A. (2012). Trauma, attachment, and intimate relationships. *Journal of Trauma and Dissociation*, *13*(2), 127-133. http://dx.doi.org/10.1080/15299732.2012.642762