RESEARCH PROJECT:

Treating Trauma Using Yoga *and* Somatic-oriented Therapies

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ABSTRACT

The primary hypothesis driving this research is that the combination of Trauma Therapy *and* Yoga Therapy, as treatment modalities, will lead to some stabilization or reduction in trauma symptoms.

A single case study research methodology was applied to comprehensively study the efficacy of combining Trauma Therapy with Yoga Therapy, not in a group or class setting, but in the context of an individual's 'one on one' psychotherapy sessions. The research also employed and explored the usefulness of 2 instruments: Body Maps and a specifically designed Questionnaire to measure and monitor the experience of symptoms of trauma.

The research findings supported the hypothesis with quantified evidence showing a significant reduction in the intensity and frequency of trauma symptoms within a relatively short timeframe within the psychotherapeutic process.

Therapy for the assessment and treatment of trauma, specifically 'somatic-oriented' Trauma Therapy *and* Yoga Therapy, offer an effective combination of discrete modalities that not only are mutually supportive but also enhance the potency of treatment.

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INTRODUCTION:

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Treating Trauma Using Yoga *and* Somatic-oriented Therapies

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This chapter briefly introduces the aims and objectives of this research, the case study methodology, one case of a traumatized individual and the influences, reasons and rationale driving the research.

RESEARCH PROJECT OBJECTIVES

The aim and objective of this research project was twofold:

1: To evaluate the complementarity of and efficacy in combining Yoga Therapy and Trauma Therapy (particularly somatic-oriented trauma therapies) in the context of individual psychotherapy and psychotherapeutic process.

2: To design and develop, pilot the use and test the application of two instruments or tools to monitor the experience of symptoms of trauma and assess treatment results and outcomes. These tools consisted of a Questionnaire and Body Map template.[1]

HYPOTHESES

1: There will be evidence of some amelioration– pacification, stabilization or reduction of the symptoms of trauma if the combination, of Yoga *and* Trauma therapies as treatment modalities, is complementary and efficacious.

2: There will be evidence of concurrence and some congruence between the Questionnaire and Body Maps if they have utility and validity as 'tools' or indicators of the experience of symptoms of trauma.

PROJECT CONCEPTUAL FRAMEWORKS

The research project has been directly informed by trauma theory based in current neuroscience and the framework called the Autonomic Nervous System (ANS) Arousal or Modulation Model and as they have determined and set the parameters of this research they are outlined in some detail at the outset.[2]

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[1] The design and structure of the **Questionnaire** and the way the **Body Maps** are used are outlined in **Chapter 4: Objective and Methodology.**

[2] See **Chapter 3: Trauma Theory.**

Other frameworks have significantly contributed to and shaped this research and are embedded throughout the content. However, as they were not the primary focus, any reference or explanations of aspects of these frameworks are offered as footnotes. These frameworks include the somatic-oriented or body-focused psychotherapies that deal with trauma such as Sensorimotor Processing (SMP) and Sensory Experiencing (SE), and Yoga Therapy theory including the Panca Maya Model[3] of the dimensions or levels of human experience or consciousness.

PROJECT METHODOLOGY

Single case study research methodology

Somatic Psychotherapy and Yoga Therapy both are 'personalized', conducted on an individual basis and tailored to each person's current state and longer-term goals. Both regard treatment as an on-going unfolding process that seeks and incorporates feedback from the care seeker which in turn informs the need for any modifications, adjustments and refinements that may be required in the therapeutic process. For these reasons a single case study research methodology was selected as the most appropriate methodology, as it is in accord with 'one on one' individual psychotherapy.

Single case study research entails the intensive description and analysis of a single individual and can offer comprehensive detail, delineate clearly any changes or adjustments made, as well as outline the 'step by step' progression - the 'vinyasakrama'- of treatment. A further benefit of this methodology is that it can form the basis for future research methodologies.

The therapeutic process formed a continuous feedback 'cycle': the identification, assessment or diagnosis of the person's 'condition', the application of the particular treatment intervention(s), the

[3]The Panca Maya Model is found in the source text of the Taittiriya Upanishad – Brahmananda Valli. The doctrine of the five (5) layers or levels of human existence: Briefly, the Annamaya layer or level is composed of food; that is, physical elements or – 'bhutas' : the gross physical body. The next more subtle layer is the Pranamaya level, composed of 'prana' or life-force or spirit: the etheric body in Western occult literature. The 3rd layer is the Manomaya, composed of the functional lower mind or - 'manas'. The next is the Vijnanamaya level composed of understanding: whereas 'manas', or the mind, simply coordinates sensory input, the understanding or wisdom of the Vijnanamaya level constitutes a higher cognitive function. The 5th layer or level is Anandamaya, composed of bliss: it is in this dimension of human existence and experience that we partake in the Higher Self, the Divine, in the Absolute. Consciousness pervades all five levels of existence.

monitoring and seeking feedback in relation to the impact of the treatment, and finally, any modifications or adjustments that may be required based on this feedback.

Three (3) tools - or 'upayam'[4]- have been employed; they are a specifically designed and developed Questionnaire, a Body Map 'template' and the Yoga Therapy Interventions. The prime functions of the Questionnaire and Body Maps were the identification and assessment of the Subject of this Case Study experience of trauma symptoms and the tracking or monitoring of these symptoms over time.

The Questionnaire design was based upon the characteristic constellations, clusters or categories of trauma symptoms expressed as hyper-arousal or hypo-arousal of the Autonomic Nervous System (ANS).

The Body Map template outlines body segments for the client/subject to illustrate or draw their subjective experience of somatic symptoms at frequent intervals. The Body Maps provided progressive feedback that informed the on-going treatment and highlighted key areas of focus and any areas that required adjustment or refinement.

The Yoga Therapy Interventions both formed and informed the treatment, with progressive feedback used as input into the on-going therapeutic treatment process.[5]

Rationale and Reasons for this Research

The rationale behind and reasons for the undertaking of this research are manifold and have emerged and evolved over 25 years of practicing as a Psychologist and Somatic Psychotherapist.
As a Somatic Psychotherapist my bias and orientation is the inclusion of the body, the soma into therapy: with trauma therapy it is paramount and will determine the efficacy of the treatment.

[4] Upayam is the Sanskrit term found in Patanjali's Yoga Sutra 2:26 and refers to "the means, method or way."

[5] The Questionnaire and Body Map instruments the – 'upayam' are outlined in detail in **Chapter 4: Objective and Methodology**, the Yoga Therapy Interventions are covered in **Chapter 6: Yoga Therapy Interventions**

(A) Empirical Evidence and Observations from Psychotherapeutic Practice

During these years of practice, observations have been made of:

- clients who feel 'at the effect of' or a 'victim' to overwhelming, intense and incomprehensible emotions, sensations and energies within their bodies to the extent that life-threatening addictions or compulsions offer some recourse or that suicide becomes a frequent consideration;
- clients who suffer pain or other debilitating, inexplicable physical symptoms and conditions;
- clients who can feel out of control like on a 'roller coaster' in their life;
- clients who are mute or unable to find the words to articulate what is going on for them, hence are particularly vulnerable to misjudgments, misinterpretations, misperceptions and misdiagnosis: and that at this stage traditional 'talk therapy' is near impossible and inappropriate.

Traumatic experience propels us as human beings, as organisms, into our physicality; healing from trauma demands that we include our body, attend to our true nature that is embodiment, attend to our 'soma' and our psyche. In order to deal with trauma we need to come to our senses. In the West, left with the legacy of the 'mind-body split' with its inherent 'adulation' and 'exultation' of the mind over the body or at its worst, the denial or suppression of the body, the incorporation of our physical being can be abhorrent, confronting and challenging yet essential in any healing process and even more so in relation to trauma. Hence the necessity of an approach that includes somatic awareness when working with traumatized individuals

Misdiagnosis and Misunderstanding of Trauma

These years of my practice have also made apparent that the impact of trauma has been and still is often misdiagnosed. Understanding the impact of traumatic experience requires a broader, more holistic perspective since trauma manifests as unique clusters or constellations of symptoms, invariably with a pattern of oscillation between these constellations. For the traumatized individual, clinical depression or blind murderous rage can only represent part of the picture of the impact or imprint of trauma.

Since I have worked with many clients who, in effect, have been 're-traumatized' by well- intentioned yet ignorant therapists, it is also apparent that the impact of trauma has been and still is often misunderstood. The impact of traumatic experience is chaotic and incomprehensible, it is not 'known'

or remembered in the same way as 'usual' or 'normal' conscious experience and memory, for many of those traumatized it feels 'abnormal', even insane. It is paramount to understand and accept the discrete and significantly different memory systems and the role of implicit 'body memory', in order to understand and be able to ease the impact of trauma.

To my dismay, there exists individual and societal amnesia and denial when dealing with trauma, particularly trauma that is in the context of familial relationships, that still remains largely forbidden or taboo territory; yet this reflects a large proportion of my clients. As Herman (1992:1) states in her introductory sentence "(T)he ordinary response to atrocities is to banish them from consciousness." Both atrocities and their banishment from consciousness occur at the individual, family, community, institutional and societal levels. The intention of this research was to highlight the experience of trauma inflicted in a family context, in this case by a violent father upon his young son.

An understanding and awareness of the current developments in trauma theory, research and application are essential and critical components in the treatment of trauma. The present body of knowledge in trauma offers a broader 'holding' context that can bring some understanding and relief to those traumatized[6] and to those who treat the traumatized; it is hoped this research may contribute in some way to this field.

(B) Personal and Professional Development Path

In my practice as a Psychologist and Somatic Psychotherapist I have had the fortune and privilege of being taught by exceptional teachers in the fields of trauma, yoga and yoga therapy.

As part of my training as a Somatic Psychotherapist, I discovered Reich (the 'father' of somatic therapy), Ron Kurtz, Alexander Lowen, and Peter Levine. As part of on-going professional development and research interest area I have had the privilege of receiving teaching or professional training from Judith Herman and Bessel van der Kolk pioneers in the trauma field; other significant teachers include John Briere, Pat Ogden, Janina Fisher, Diane Pool-Heller and Steven Porges.

[6] Termed 'psych-education' in Western psychiatry and clinical psychology; informing clients of the current knowledge regarding trauma is a critical component of treatment.

I have also had the fortune to receive rich and comprehensive teachings from the Krishnamacharya Yoga linage, soundly steeped in and sourced from the Yoga Sutras of Patanjali, and feel the basic tenents of somatic psychotherapy are aligned with this ancient wisdom.

Yoga used therapeutically for trauma has been a passionate interest of mine for 20 years. Exploring the compatibility or 'marriage' of somatic-oriented trauma therapies and yoga therapy was my focus and intention behind studying Yoga Therapy formally for the last six years. In neither the literature reviews nor additional readings did I locate any exploration of such 'marriage' of trauma and yoga therapies in the context of individual one-on-one psychotherapeutic process. This research which presents this different perspective and the comprehensive detail afforded by focusing on a single 'case', and offers a contribution towards de-terrifying and de-mystifying individual psychotherapy for the treatment of trauma.

Further refinement of yoga therapy can offer an accessible and acceptable route for those traumatized to find affordable healing practices or treatment as yoga is increasingly accepted socially and medically in the West; however specific skills, knowledge and competencies are required of the therapist. Yoga and Yoga Therapy, essentially foster the connection or reconnection with our body hence are potent and potential avenues for those traumatized to start to feel safe and supported, as well as to appreciate and trust the inherent wisdom that is within our human body within our organism. Again, it is my intention that this research contributes to bridging yoga, yoga therapy and somatic-oriented trauma therapies for the assessment and treatment of trauma.

General Introduction – Trauma

Traumatic experience is complex. Trauma involves perceived or actual threats to life; conversely the threat of death of annihilation. Trauma is an 'insult' to the form that is our human physicality, our physical being. Trauma can fragment, splinter, threaten to have fall apart or blow to bits, disconnect in a myriad of ways, the body-brain-mind constellation that constitutes our human organism. The study of trauma enters the realm of the primitive brain, the instincts and survival mechanisms designed to preserve, defend and protect the integrity of our physical being or dampen and ameliorate pain and suffering – 'dukham'; it enters the realm of altered states of consciousness that confronts as well as distorts our sense of me, mine, I, self, ego – 'asmita'.

The impact or rather imprint of trauma, like a seal made from molten wax, creates deeply felt and nearly indelible impressions, structures and patterns our perceptions, our experience of ourselves, others and the world. The imprint of trauma, first and foremost is laid down at the physical and physiological – 'Annamaya' and 'Pranamaya' levels[7] in the Panca Maya Model, yet resonates and reverberates throughout all levels of our human existence.

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[7]As mentioned, the Annamaya and Pranamaya levels are the first two levels in the Panca Maya Model. The Annamaya level is 'food' or the gross level of the body; as organisms as mammals we are food or matter. The Pranamaya level is more subtle than the Annamaya level; it is the energetic or physical and physiological level; its primary expression is through the breath.

Chapter 2:

LITERATURE REVIEW:

Chapter 2:

LITERATURE REVIEW

A literature search or review was conducted as **Phase 1** of the research project in June 2008. At that time the topic **'Yoga therapy for the psycho-somatic assessment and treatment of traumatized individuals: Framework and guidelines development'** was still taking shape and 'forming'. This was reflected in the ambitiously broad nature of the literature reviewed that covered the disparate fields of: Yoga Therapy with particular emphasis and intended use of the Panca Maya Model of the dimensions of human existence or consciousness; Trauma Theory and PTSD; Somatic Psychotherapy for trauma that is informed by the understanding of ANS arousal; as well as yoga for various psychosomatic conditions such as anxiety, hypertension and panic attacks and yoga for trauma.

In 2008 it was also envisaged that **Phase 2** of the Project entail the assessment of any correlation or complementarity with these disparate fields, for the following reasons. The Yoga Therapy Panca Maya model as a model of the levels of consciousness is befitting the complex constellation of symptoms that trauma creates. The hypothesis was that if some correlation exists between the dispersion, (across hyper-arousal and hypo-arousal Autonomic Nervous System), of posttraumatic symptoms and the 5 levels in the Panca Maya model, such a correlation could contribute to the development of a comprehensive conceptual framework and procedural guidelines for the application of Yoga Therapy interventions for the treatment of trauma.

It was also hypothesized the Panca Maya model could enable: the assessment and differentiation of the nature of and the level(s)at which a individual's trauma symptoms manifested; that the model could elucidate and clarify the rationale and decision-making underlying the selection of certain Yoga Therapy interventions and tools applied; and finally, the model could offer a framework for refinement and attunement of the range of Yoga Therapy interventions and tools for tailoring to individual cases.

Phase 3 of the Project proposed to use a single case research methodology, (Uni. of Orebro,2004; Uni. of Aberdeen, 2006), congruent with the basic tenent of Yoga Therapy, that therapy is to be adapted to/tailored for the individual and that the focus is the individual not the condition. Atkins and Sampson (2002) argue that single case studies offer a method for evaluating not only outcome of treatment, but also addresses the methodological strengths and weaknesses of the research design.

The following pages contain the 2008 Literature Search and findings under the headings of these disparate fields of knowledge.

LITERATURE SEARCH - Findings

Trauma/PTSD

The literature search found a plethora of articles and studies on trauma and Post Traumatic Stress Disorder (PTSD).PSTD started to be formally recognized as a serious psychological condition with WW1 veterans' "shell shock" and WW2 veterans' "combat neurosis", after Vietnam the name PTSD was used. Trauma can mean literally wound, insult, injury, or shock.
Psychologically speaking, a traumatic event is one that is viewed as harmful to the psychological integrity of the individual (Van der Kolk and Saporta.1991)

Many articles focused on delineating or arguing from either a 'categorical' or 'dimensional' nature of trauma; acute and chronic stress disorders, posttraumatic stress and complex posttraumatic stress. The main diagnostic criteria for PTSD is the DSM-IV-TR, both acute stress disorder (ASD) and PTSD are the two disorders defined by DSM – IV as being directly related to a traumatic event.

Differentiating ASD from PTSD was the focus of a number of articles. Onset and duration of symptoms distinguishes ASD from PTSD, ASD begins two days to four weeks after a traumatic event, PTSD occurs when the symptoms persist beyond four weeks. Yehuda, 2002 and Thompson UCLA, claim around 10 -25% of adults exposed to an extreme stressor may develop simple acute stress disorder and PTSD. Some studies re-assess the validity of the DSM-IV-TR (Mezey and Robbins, 2001; Randall, Spitzer, and Liebowits, 1999; Yehuda, McFarlane, 1995).

A number of studies investigated acute stress disorder and found it to be a strong indicator of later PTSD. (Brewin, Andrews, Rose and Kirk, 1999.) Even though ASD is listed as an anxiety disorder its diagnosis is partly made on the basis of having three or more so-called dissociative symptoms, and like PTSD, many consider it to be a dissociative disorder.

Additional criteria include: persistent re-experiences of trauma; marked avoidance of trauma-related stimuli; and, marked hyper-arousal or anxiety. (Brewin, et al, (1999), Classen, Koopman, Hales, and Spiegal 1998.) These authors emphasized that, in addition to exposure to a potentially traumatizing event, PTSD requires *persistent* re-experiences (Criterion B), *persistent* avoidance (Criterion C), *persistent* hyper-arousal (Criterion D), and duration of symptoms for more than one month (Criterion E - DSM-IV-TR).

Dissociation is found common in individuals with PTSD. (Amdur and Liberzon 1996; Briere 2006; International Society for Study of Dissociation 2005; Kluft 1997;Penfold 1998;van der Hart, Nijenhuis, and Steele. 2005;van der Kolk, Pelcovitz, Roth, Mandel, McFarlane, Herman 1996; Zucker, Spinazzola, Blaustein, van der Kolk, 2006).

With most PTSD sufferers, there are co-occuring or 'co-morbid' symptoms in addition to re-experiencing, avoidance and hyper-arousal. (Van der Kolk, Roth, Pelocovitz, Sunday, and Spinazzola. 2005.)

Terr, (1999); Andreasen, (2004), outline the types of traumatic events: Type I trauma which includes single, one-time events such as rape, accidents; Type II trauma involves multiple, prolonged, or chronic events such as child abuse, captivity. There are types of events that can be traumatic: natural disasters e.g., tsunamis, fires; events stressful to some people (and not to others) e.g., childbirth, death of a loved one; unintentional accidents caused by human error e.g., car accidents; acts of gross negligence e.g., collapse of buildings due to poor construction; and, intentional interpersonal violence, e.g., assault, torture, child abuse.

Some studies, Brewin, Andrews and Valentine (2000); Bryant and Panasetis (2001), attempt to determine what creates greater vulnerability in some individuals to the damaging effects of trauma.

Other studies, looked at the pre, peri and post trauma risk factors. Both the nature and the context of the traumatic event and individual characteristics influence the person's risk for developing psychological problems subsequent to the trauma. Events that are intense, sudden, unpredictable, extremely negative and induce significant helplessness and loss of control are more difficult to integrate. Prolonged exposure to repetitive events or the severity of them like child sexual abuse is likely to cause the most severe and lasting affects. Children are more vulnerable since their brains are not developed enough to integrate the experience (van der Hart and Brown,1990). Individual characteristics of prior traumatization; perceived life threat during the event; and peri-traumatic emotional reactions particularly "vehement" emotions, i.e., panic or terror, rage, emotional chaos, and particularly dissociation is a strong predictor of PTSD in adults. (Bryant and Panasetis, 2001; van der Hart and Brown, 1990). The severity of the trauma and lack of social support following the event are found to have stronger PTSD predictive value than pre-trauma factors. (Brewin, Andrews and Valentine, 2000).

Carlson and Dalenberg (2000) in their study add, what they term "secondary" and "associated" responses to trauma including depression, aggression, substance abuse, eating disorders, physical illness, low self-esteem, identity confusion, difficulties in interpersonal relationships and guilt and shame. These secondary

and associated responses also termed, as previously mentioned, 'co-morbid' symptoms highlight the complexity and overlap of PTSD symptoms with other psychiatric disorders, making diagnosis challenging. This has led to some of the trauma field experts proposing for a new diagnosis, Complex PTSD, be incorporated in the DSM-IV to address this inadequacy and confusion. (Van der Kolk, 1996.)

In a later study van der Kolk, with Roth, Pelcovitz, (2005) found that victims of prolonged interpersonal trauma, especially early in the life cycle, had a high incidence of problems with (a) regulation of affect and impulses,(b) memory and attention, (c) self-perception, (d) interpersonal relations, (e) somatization and (f) systems of meaning. This study again raised issues about the categorical verses the dimensional nature of posttraumatic stress, as well as the issue of co-morbidity in PTSD.

The nature of trauma and the impact of trauma remains an evolving field of knowledge.

Psychiatry, Psychotherapy and Trauma

The spectrum of post-traumatic psychopathology or symptoms can be more clearly understood from studies that have focused on the characteristic of poor tolerance for autonomic nervous system arousal in traumatized individuals (van der Kolk, 1987). This field of knowledge has had in the last two decades practical application in Somatic Psychotherapy (Levine 1997). Referred to as the ANS 'Modulation Model', it shows an "optimal arousal zone" (Wilbarger and Wilbarger 1997 in Ogden and Minton 2000) or "window of tolerance" (Siegel 1999) that is breached by the activation of the 'mobilizing' fight or flight responses or the activation of the 'immobilizing' freeze and numbing responses that occur in traumatic events. These breaches in the "optimal arousal zone" continue to be enacted as part of trauma's aftermath, the imprint on mind, body and spirit. (Van der Kolk, van der Hart and Marmar, 1996; Nijenhuis, Vanderlinden, and Spinhoven, 1998) (Levine 1997).

Stephen Porges' (1995,1997,2001, 2004) 'Polyvagal Theory' focused on the vagal nerve and neuro-physiological substrates and elucidates Autonomic Nervous System (ANS) arousal and dysregulation in terms of sympathetic hyper-arousal and parasympathetic hypo-arousal. The Polyvagal Theory provides a plausible neuro-biologically-based model that assists understanding the symptoms of trauma particularly social, emotional and communication disorders.

Yoga Therapy and Trauma/PSTD Studies

The literature search found numerous articles on trauma and PTSD. However a dearth of research was found regarding yoga therapy that specifically targets the complex constellation or spectrum of conditions or symptoms reflective of trauma/PTSD (Brown and Gerbarg, 2005). Carter and Byrne (2002) are of the view that yoga is an effective adjunct to psychiatric treatment for depression and PTSD and associated benefits included better sleep, better anger management, less medication and better quality of life.

Panca Maya Model

A number of articles were found outlining different viewpoints and discussions regarding the Panca Maya Koshas. (Geocities, accessed May 2008; Seraph, assessed May 2008; Krishnananda. Cosmology. (Accessed May 2008). Only one article discussed the use of the Panca Maya model as a framework and guide for the selection of yoga therapy tools for trauma. (Perkins, Alvarez, Coombe and Uriel.2004.)

Yoga for Psycho-somatic Conditions

Copious research was found addressing discrete conditions such as yoga for anxiety disorders/stress/hypertension (Barnes, Schneider, Alexander, et al. 1997; Keegan, 2003; Serber accessed June 2008); yoga for depression (Jorm, et. al., 2002; Shaprio, Cook, Davydov, Ottaviani, Leutcher, and Abrams 2007); mood disorders (Shapiro and Cline K. 2002; Shaprio, Cook, Davydov, Ottaviani, Leutcher and Abrams.2007); insomnia (Woodward, Murburg, and Bliwise, 2000), headaches (Bryck, 2006; Serber, 1999; Serber accessed June 2008; Raghuram, accessed May 2008; van Houten and McCord 2003); addictions and obsessive compulsive disorders. If viewed collectively from a holistic framework, each of these separate conditions could be part of the constellation of symptoms and manifestations of trauma or PTSD.

As an outcome of the Literature Review findings the project topic was subsequently streamlined to ***'Treating Trauma Using Yoga and Somatic-oriented Therapies'*** utilizing a single case study research methodology and based on the existing conceptual framework of the ANS Arousal or Modulation Model.

Chapter 3:

TRAUMA THEORY

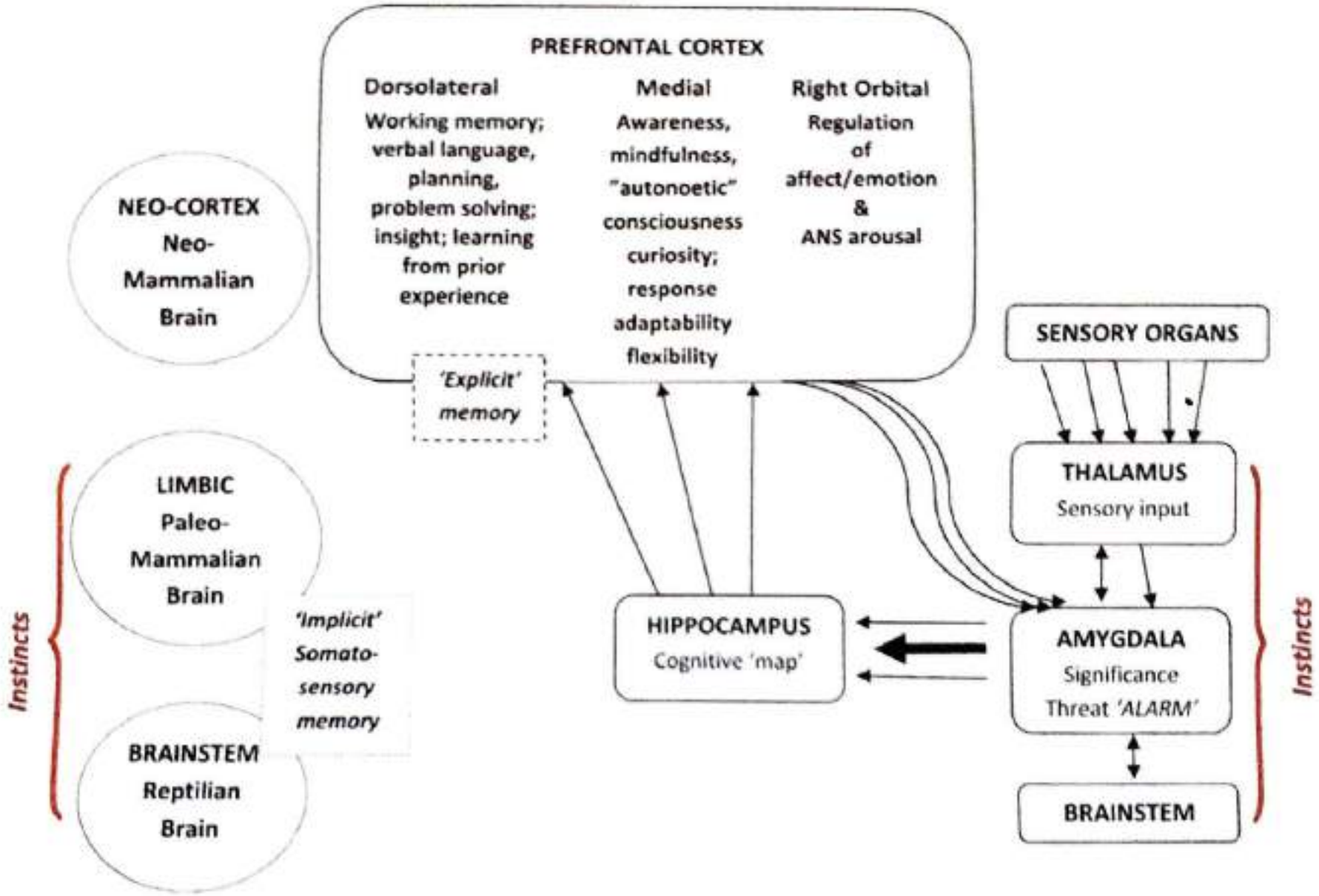

Diagram 1.

TRIUNE BRAIN: Hierarchical Organization

Chapter 3:

TRAUMA THEORY

This chapter outlines the architecture or anatomical structures of the Central Nervous System, from the higher cortical levels of our brain down to the lower cortical levels of the limbic and brainstem and peripheral Autonomic Nervous System (ANS) - the realm of the automatic unconscious hard-wired instincts. A conceptual framework or 'map' of the possible instinctual somatic survival responses to trauma: flight, fight, freeze or fold is presented; also a framework or 'map' of ANS arousal or modulation - regulation or dysregulation - expressed as combinations of sympathetic (hyper-arousal) or parasympathetic (hypo-arousal).

In understanding trauma and traumatic experience some knowledge of the architecture or the anatomical structure, organization and functioning of parts of the human brain is required.
The conceptual frameworks, models or maps that assist the understanding of trauma and that defined the parameters of this research include the 'Triune Brain' and the Autonomic Nervous System (ANS) 'Arousal or Modulation Model'.

The 'Triune Brain' framework views the brain as consisting of three hierarchical levels or rather 'a brain within a brain within a brain', each with different discrete modus operandi in terms of information processing, perception, the organizing of experience, memory storage and retrieval. The 'Triune Brain' provides a 'map' of the brain: At the top of this hierarchical structure is the 'neo-mammalian brain' and corresponds with the neocortex which includes the prefrontal cortex; underneath is the 'paleo-mammalian brain' that corresponds with the limbic brain; and further below is the 'reptilian brain' associated with the brainstem. See **Diagram 1: Triune Brain: Hierarchical Organization.**

The 'neo-mammalian brain' or **neocortex** constitutes the last part of the human brain to develop in evolutionary terms. It enables cognitive information processing such as self-reflection, self-awareness and conscious thought; the capacity for conceptualization, reasoning, problem solving and decision making; the functions of meaning-making, socialization and acculturation that form language; and, the regulation the lower brain areas. The neocortex includes large portions of the corpus callosum that

bridges the right and left hemispheres of the brain (MacLean, 1985) hence functions to integrate and consolidate information (Siegel 1999).

Information processing includes memory, how experience is 'laid down', that is, stored as well as retrieved. The memory processes in the higher cortical structures of the neocortex are termed 'explicit.'[8] 'Explicit' memory is cognitive, dealing with facts, verbal or semantic expression and descriptions of operations; its 'language' is the construction of a personal narrative or story. 'Explicit' memory is conscious and not developed until around three years old.

There have been recent contributions to the understanding of the prefrontal cortex relevant to trauma, in particular the dorsolateral division's function in the 'working' or 'explicit' memory, and the right and left divisions of the orbital prefrontal cortex (since it is behind the orbit of the eyes) function of integration.

Solomon and Siegel (2003:22) highlight the integral entwinement of the creation of 'explicit' memory and self-awareness. Tulving (1972) uses the term "autonoetic consciousness" in which personal experiences are integrated with an awareness of self or with a sense of self as part of the experience. Tulving and associates (1994, 1997) demonstrated the prefrontal cortex involvement in autobiographical narrative and the unique features "autonoetic consciousness" being the ability of the mind to 'know' the self, "a sense of self and time" and the creation of what they call "mental time travel"- the capacity to see the self in the past, present or anticipated future contexts.

The orbitofrontal division is significant by virtue of its location being 'one synapse' away from all three major regions of the brain and enables the integration of the cortex, limbic and brain stem structures into a functional whole, it can be viewed as the "ultimate neural integrative region"(Solomon and Siegel 2003:21). Shore (1994) has related the role of the orbitofrontal cortex to affect regulation; Solomon and Siegel (2003) list other critical functions of the orbitofrontal to include the regulation of

[8]'Explicit' memory is also called declarative, episodic, semantic, autobiographical or narrative memory by various trauma researchers.

the ANS - that is, the regulation of the body and emotions (affects); morality; emotionally attuned interpersonal communications (often involving eye contact); creation of a sense of others' subjective experience, that is, 'social cognition' and emotional intelligence; and response flexibility/adaptability, that is, the ability to take in data, think about, consider various response options and alternatives and then produce an adaptive, flexible response as part of 'executive' functions.

Janet (1898 in Nijenhuis et.al 2004:2-3) characterized mental health in terms of the capacity for integration and differentiation; he held that integration involved the continuing execution of a series of mental /cognitive actions. The creation of meaningful combinations of sensations, affects, motor behaviours, and perceptions of the environment within a given moment and across time is crucial to be able to engage in adaptive behaviour. Janet regarded an essential component of integration to be "personification": the mental actions that range from relating synthesized material to one's general sense of self, to becoming aware of the implications of a personal experience for one's whole life, giving one's history and sense of self some continuity. "Personification" that allows for a vision of one's self as a future personal and social existence, is certainly related to Tulving's "autonoetic consciousness" in which personal experiences are integrated with an awareness of self or with a sense of self as part of the experience.

Below the structure of the neocortex is the **warm-blooded mammalian or limbic brain.** It includes the **hypothalamus** which is responsible for maintaining body temperature, essential nutrition and hydration, rest and balance. It also includes the structures of the **hippocampus** and **amygdala** that are particularly pertinent in traumatic experience 'storage' or memory, as well as access or retrieval, and integral to processing information transmitted from the body on the way to the cerebral cortex.

The **hippocampus** processes the data in order to make sense of those events within the context and time-line of personal history (Has this happened before in my life? What happened next?). Proper functioning of the hippocampus is necessary for 'explicit' memory processes to occur. (Squire and Zola-Morgan 1991:2380-6). The hippocampus is fully matured by the third or fourth year of life and is said to be explanatory for 'amnesia' for the early infant years.

The functions of the hippocampus are the categorization of experience; creation of spatial maps, summary sketches and mental representations and the storage of simple memory particularly the spatial and temporal dimensions of experience. (Van der Volk 1994: 260)

The **amygdala** functions include the evaluation of the emotional meaning or significance of incoming stimuli: the evaluation of threat or not a threat, metaphorically it is the body's 'smoke alarm'. The amygdala also facilitates the storage of emotional and sensory content and reactions to emotionally charged events: these are 'implicit' memory processes. 'Implicit' memory is the learning automatic of skills and procedures (hence, is also called procedural memory.) 'Implicit' memory is unconscious; related to conditioning or conditioned responses; its expression is somatic, body and sensation based (hence, also termed somatic or sensorimotor memory) and is present at birth. Other functions of the amygdala are the conditioning of fear responses; attachment of affect to neutral stimuli; establishment of associations between sensory modalities (Van der Volk 1994: 260).

The **warm-blooded mammalian or limbic brain** is the seat of survival instincts and more complex reflexes and fixed action-patterns. The limbic guides the emotions and behaviours necessary for self-preservation and survival of the species. Feelings are laid down in our warm-blooded mammalian brain, along with the history of caretaker(s) - their caring and contact - the foundation of interpersonal, relationship, social engagement or 'attachment' patterns.

The limbic system **regulates the autonomic nervous system (ANS)**. It mediates smooth muscle and visceral responses, (heart and circulatory system, kidneys, lungs, intestines, bladder, bowels, pupils) in preparation for rest and relaxation, or preparation for stress and effort and the traumatic survival reactions of fight, flight, freeze and fold (or immobilization). The two branches of the ANS are the Sympathetic Nervous System, primarily aroused in times of effort and stress and the Parasympathetic Nervous System, primarily aroused in times of relaxation and rest. These Sympathetic and Parasympathetic systems usually function in balance with each other: when one is activated usually the other is suppressed.

The **information processing of the limbic brain** or paleo-mammalian brain is **emotional** and relates to the capacity to experience, describe, express and integrate affective (emotional) states (Brewin,

Dalgleish, and Joseph 1996). The information processing of the limbic is also sensorimotor, like the structure below.

Underneath the limbic brain is the **cold-blooded reptilian brain or brainstem,** the first part of the human brain to develop from an evolutionary perspective. It governs arousal, homeostasis of the organism and reproductive drives. It regulates basic bodily functions such as heart rate, temperature and respiration; mediates the raw (uncivilized) core primary emotions of rage, terror in service of the protection, preservation and survival of life; and 'lizard-like' initiates more primitive instinctual reflex, fixed-actions and fixed-patterns.

The **sensorimotor level information processing** of both the limbic and the brainstem or reptilian brain relate to the capacity to experience inner body sensation, five-sense perception and movement. It involves the capacity to experience, articulate and integrate physical or sensory perception, body sensation, physiological arousal, and motor functioning (Ogden, Minton and Pain 2006:13). The memory processes in these more primitive sub-cortical structures of the limbic and the brainstem as mentioned are 'implicit'.[1]

As there has been contention around traumatic memories (e.g., 'false memory' accusations) that has been steeped in misunderstanding, ignorance and deliberate misrepresentation, the different memory processes of **'explicit'** and **'implicit'** memory as well as **'state-dependent'** memory[2] are crucial in understanding trauma and traumatic memory.

In cognitive theory there is a dominance of cognitive functioning at the neocortex neo-mammalian level, termed 'top-down' processing (Le Doux 1996:272) that can normally 'oversee' [3] or interrupt the functioning of the lower sub-cortical levels. Not so with trauma.

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[1] 'Implicit' memory as mentioned is also termed body-memory, somatic, sensorimotor, sensory-motor, somato-sensory, or procedural memory in trauma literature.

[2] 'State-dependent' memory refers to the way in which events encoded in particular states will be far more likely to be recalled if a person is in a similar state in the future.

[3] Higher cortical levels especially the pre-frontal cortex can normally steer/guide, manage, contain, regulate or override and interrupt the functioning of the lower sub-cortical levels.

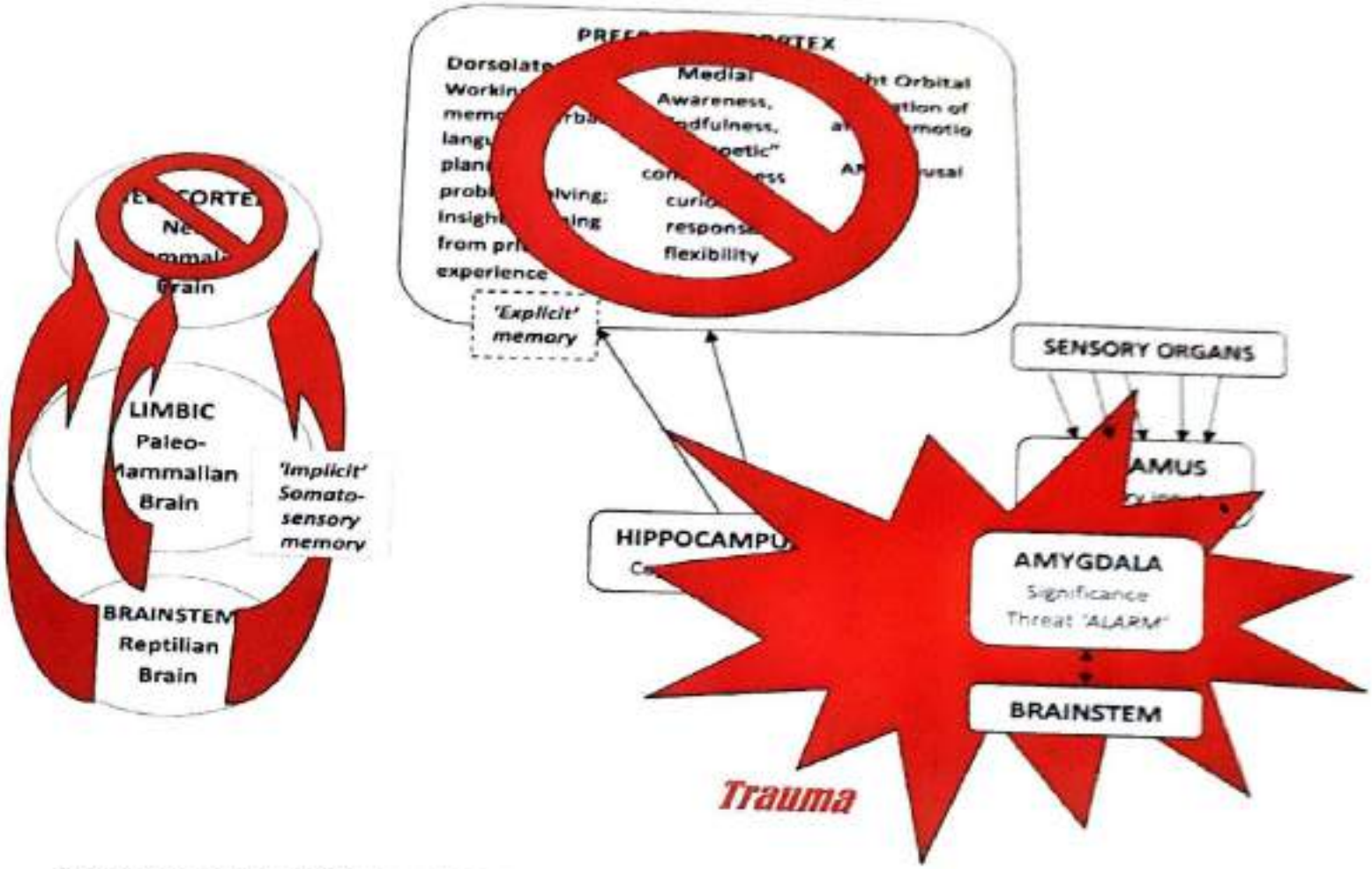

Diagram 2: TRIUNE BRAIN and TRAUMA

- 'Decommissioning' higher cortical areas of brain – awareness, 'self' consciousness, insight, language, response flexibility/adaptability , regulation of affect and ANS arousal
- Disconnect between higher cortical areas with lower sub-cortical primitive-instinctual brain areas
- 'Hijacking' of the 'top down' processes of the Neocortex particularly the Prefrontal Cortex, by 'bottom-up' processing of the Reptilian Mammalian Brains

Trauma and traumatic experiencing constitutes a disruption in functioning and in information processing. At the anatomical and neurological level, the core of traumatic experience and lack of resolution of trauma can be seen as "an impairment in the innate capacity of the brain to balance the **differentiation** and **integration** of energy and information flow (Solomon and Siegel 2003:43). This incorporates the disruption in the processes of consolidation of memory and neural integration in the prefrontal cortex and lower level limbic hippocampal functioning.

The Thalamus, amygdala, and hippocampus in the limbic brain, as mentioned, are all involved in the integration and interpretation of incoming sensory information. In trauma, the limbic system's amygdala 'sounds the emergency and threat alarm loudly and persistently; it 'conditions' the fear response; and it mediates the activation of the ANS flight, fight, freeze or fold, the instinctual somatic survival responses. (LeDoux 2002). When the amygdala, the 'smoke detector', is excessively stimulated with alarm/threat/emergency responses, hippocampal functioning of evaluation of the experience, semantic representation, categorization or mapping and placing the experience into some unified whole or context, are all compromised. (See **Diagram 2: Triune Brain and Trauma**).

Hippocampal functioning is vulnerable to disruption from stressful stimuli from external as well as internal sources. High-level amygdala stimulation interferes with and decreases hippocampal functioning that cause behavioural disinhibition, predisposing the incoming stimuli to be interpreted as an 'emergency/alarm' response. Such activation interferes with 'explicit' memory storage in that the ability for symbolic processing and location in time and space is lost.

Overwhelming events interfere with the integrative cognitive functions of "personification"; when "personification" fails, an event may seem as though it is unrelated to self, or, according to Tulving (1972) material will be noetic (personal experiences are *not* integrated with awareness of self and as part of the experience), as opposed to autonoetic (whereby personal experiences are integrated with an awareness of self and as part of the experience). As a consequence the corresponding memory will be 'implicit' not 'explicit'. When "personification" fails, the development of a coherent sense of personal existence in a framework of the past, present and future is compromised and in order to be able to act adaptively and flexibly in the present, it is necessary for personification of current experience to be based on the integration of one's entire past history.

'Implicit' memory it is activated during traumatic event(s) and traumatic re-experiencing; with high level stimulation of the amygdala and interference with hippocampal functioning, traumatic experience is stored in memory as sensory imprints, as 'implicit' memory. Traumatic experience is laid down and accessed or retrieved, as isolated images without a context of time and place, as bodily sensations, impulses, intense emotions, smells and sounds that feel alien and separated from other life experience (van der Kolk, 1994).

"When implicit memories are activated, they do not have an internal sensation that something is being recalled yet influence our emotions, behaviours, or perceptions directly, in the here and now, without our awareness of their connection to some experience in the past." (Siegel 2001 :74) and , "the effects of the recall are indeed within conscious awareness but are only experienced in the "here and now" and not with the subjective sense that something is being recalled." (Siegel 2001:25).

We remember trauma sensorially, emotionally and behaviourally. When trauma is "remembered" implicitly, it is not experienced as memory, these non-verbal physical and emotional states do not feel like recall but rather present-moment reality, traumatic memory may be "revived, not in the distorted fashion of ordinary recall,[1] but as affective states, somatic sensations, or visual images (as nightmares or flashbacks) that are timeless and unmodified by further experience." (Van der Kolk, McFarlane and Weisaeth1996:232.) Flashbacks as Rothschild (2000) explains entail the experience of "intrusive isolated, disconnected (dissociated) fragments of implicitly stored traumatic information that become triggered under state-dependent conditions and expressed through hyper-arousal of the ANS". During a flashback the traumatized person temporarily 'leaves' the present reality and re-experiences the original traumatic situation in all of its original full intensity. According to Rothschild (2000) the amygdala is implied in flashbacks and that the contextual features typical of hippocampal processing are absent is "consistent with the theories indicating hippocampal suppression during trauma and trauma recall." (Rothschild 2000:71)

Given the somatic nature of traumatic memory and the virtual 'decommissioning' of the pre-frontal cortex, in particular decreased dorsolateral activation in traumatic experience, a neurobiological explanation is provided of "why individuals with PTSD plunge into re-experiencing their trauma with

[1]As with 'working' or 'explicit' memory that is embellished and constantly modified.

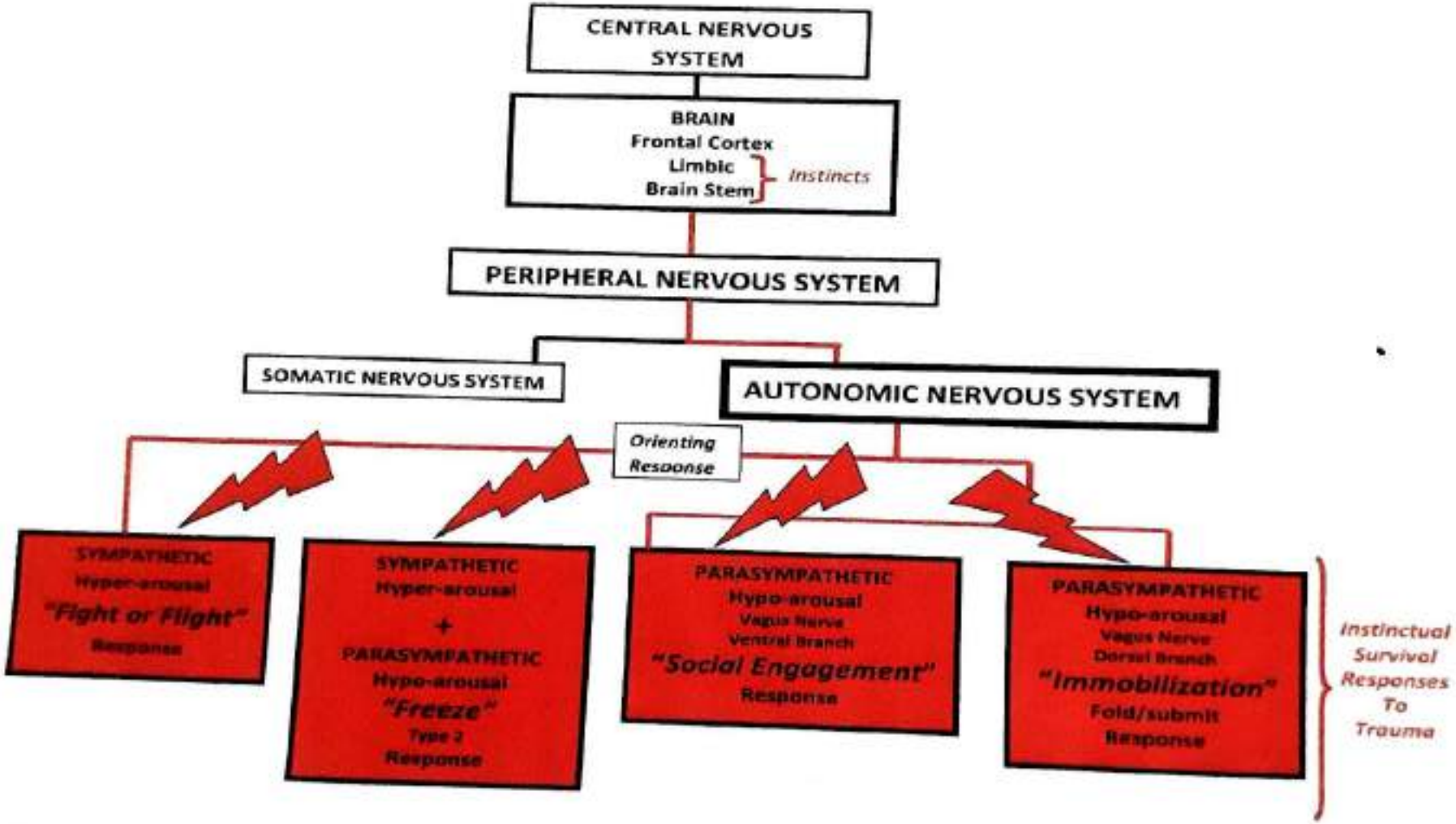

Diagram 3: **ANS** – Instinctual Survival Responses

limited consciousness" (van der Kolk in Solomon and Siegel. 2003:186): they are somatically 'remembering' elements of experience belonging to the past. For the traumatized individual the intensity of trauma-related emotions and sensorimotor reactions hinder the ability of 'top-down' processing to dominate sub-cortical lower brain activity (Ogden, Minton and Pain 2006:9).

With trauma, 'bottom-up' processing occurs, a 'hijacking' or a taking over of the higher cortical levels by sub-cortical primitive instinctual parts of the brain. Trauma is a *felt* life-death experience. These 'hard-wired' emergency responses are mobilized without conscious consideration or reflection and emanate first and foremost, from these primitive brain structures with the expeditious engagement of the survival instincts: the realm of intense emotions, sensations, sensory-motor impulses, fixed action-patterns and reflexes sequences to defend, protect and preserve life. These responses mobilize a life-force or energy the impact of which cannot be underestimated.

The Somatic Nature of the ANS Instinctual Survival Responses

Understanding the instinctual survival responses and their somatic or sensory motor substrate is critical in understanding trauma. These are outlined below, firstly, in order to place in context the particular somatic survival responses relevant to the Subject of this research and, secondly, since these particular survival patterns or responses determined the selection of yoga therapy interventions applied in the therapeutic treatment.

The sensory-motor substrate of flight, fight, freeze and fold (immobilization), the human organism's relatively fixed action patterns of response to threat are illustrated in **Diagram 3: ANS - Instinctual Survival Responses**. This Diagram shows four (4) ANS responses: the sympathetically-mediated fight or flight response; the sympathetically and parasympathetically-mediated freeze response; the parasympathetically-mediated 'social engagement' response; and, the parasympathetically-mediated fold or immobilization response.

Orienting Response

At the outset, there is the orienting response, when threat is a *possibility*, i.e., threat has not yet been perceived and the significant mobilization of ANS has not yet occurred.

When initially alerted to ***potential*** threat, **orienting** responses called 'arrest' or alert, a series of relatively fixed sequential sensorimotor reactions are instigated. The instinctual response is to orient, investigate, straighten up and become more erect. There is increased vigilance, alertness, awareness and attention heightened, scanning with muscular and sensorimotor adjustments in neck movements (turning the head) and gaze, flexion and extension in the spine, attuning/adjusting to the environment, senses become hypersensitive to better smell, hear, see, and taste danger (Levine, 1997; Van Olst 1972; Hobson,1994; Ogden Minton and Pain 2006) in preparation for further assessment and response.

If the stimulus is compelling or startling, activity may be arrested or cease completely (Ogden Minton and Pain 2006:76-104). When a person is startled by an event, muscular flexion occurs initially, often accompanied by pulling up of the viscera in response to a tightening of the diaphragm, abdominal wall, and pelvic floor, breathing may become shallow or cease momentarily, a lengthening of the spine and neck to obtain a better view. Misslin (2003:58) calls the **activity-arrest stage of orienting** "alert immobility" awaiting more data. In this state there is a temporary arrest or cessation of movement or activity, except for respiration and movement of the eyes, this motionless behaviour may serve to prevent detection.

There can be mild to extreme startle: Keleman (1983) describes a state of "extreme startle", a response or reflex that is not part of any 'continuum' or sequence, but an instantaneous result in cases of *extreme* shock when the threat is sudden, unexpected, unprepared for and/or overwhelming. There is an "instant shrinking and fragmentation, a splitting as if the organism were flying apart", a narrowing of the body, spasticity in the limbs, breathing is held, motility (ability to move) is gone, and "withdrawal takes place by a retreat into (unconsciousness) coma." (Keleman 1983:73)
Extreme startle may initially involve sympathetic arousal then, virtually instantaneously, propels the traumatized individual to dorsal vagal immobilization and potential loss of consciousness.

Type 1 and Type 2 Freezing

After a stimulus has been assessed by the amygdala as a life-threat and the 'alarm' switched 'ON' with significant activation of ANS, there can be a type of *temporary* 'freeze', Ogden Minton and Pain (2006:94) describe as a "**type 1 freeze**". This reflects a more sympathetically mediated response with a

high level activation and hypervigilance. At this point the critical factor is the individual still has the capacity and capability, is ready and able to erupt into 'explosive behaviour' that is, into the active action patterns of fighting or fleeing.

The **activity-arrest stage of orienting** may turn into what Ogden Minton and Pain (2006:82) call **"type 2 freeze"** wherein the individual feels paralyzed; experiences a loss of capacity and capability for movement or action; or the senses may remain on alert and the posture remain hyperflexed or hyperextended; as well as, demonstrate either hyper-orienting tendencies - continually scanning the environment for threat cues, or hypo-orienting tendencies - with the eyes fixed and neck immobile, failing to scan the environment. With a "type 2 freeze" response there is a high level of activation (hypervigilance) with paralysis.

'Active' Instinctual Survival Responses: Flight and Fight

Like the orienting response, the instinctual survival 'active' defensive responses of flight or fight consist of a series of relatively fixed sequential sensorimotor reactions.

Flight: Entails the attempt to escape when successful escape is probable (**N**ijenhuis 1999). Flight, may be running away from danger, but also running towards a person a safe/protective 'other' or place that could provide safety (Bowlby, 1988). The large muscles are primed and ready to mobilize for flight and awareness of any pain or injury is diminished. Twisting, turning, or backing away from a perceived source of danger are versions of the flight response.

Fight is engaged when flight/escape is not possible or prevented, when there is the feeling of being trapped or under attack or when aggression is perceived as incapable of securing safety. Impulses for fight behaviour are experienced somatically as tension, muscular contraction in the hands, arms, shoulders; hands tighten into a fist; lifting of the hands or arms; narrowing of the eyes; clenching of the jaw; with impulses to kick or struggle. (Ogden Minton and Pain 2006: 92)

Of critical importance is when the active mobilizing defenses of fight or flight have failed or been only partly effective in preventing trauma, the person becomes traumatized. Over time, such interrupted or ineffective physical defense movement sequences contribute to trauma symptoms. As Herman (1992:

34) observes "Traumatic reactions occur when action is of no avail. When neither resistance nor escape is possible, the human system of self-defense becomes overwhelmed and disorganized. Each component of the ordinary response to danger, having lost its utility, tends to persist in an altered and exaggerated state long after the actual danger is over."

'Passive' Instinctual Survival Responses: Freeze

The lesser known so called 'passive' defenses of **freeze** and **fold** (or **immobilization**) are not as clearly articulated and differentiated in the research as are the well known mobilizing 'active' defenses of fight or fight responses. As Levine (1978, 1991, 1996.) contends, less appreciated are "the profound implications of the human immobility response in the formation and treatment of trauma." Identified by some researchers as 'dissociation' the immobilization and freeze states are highly correlated with the likelihood of the development of PTSD (van der Kolk 1996). During traumatic events, the victim may separate or disconnect varying elements of the traumatic experience. **Dissociation** can be defined as "a defensive disruption in the normally occurring connections among feelings, thoughts, behaviour, and memories, consciously or unconsciously invoked in order to reduce psychological distress" (Briere 1992:36.)[13]

The instinctual survival defense of **freeze** is engaged when active mobilizing defenses, fight or flight, are ineffective. Siegel (1999) postulates a type of freezing that appears to reflect **sympathetically and parasympathetically** mediated defense responses combined, and produces muscular constriction with the inability to move.

This freezing relates to Ogden, Minton and Pain (2006:94) **"type 2 freezing"**, and includes a high level engagement and hypervigilance coupled with feelings of being paralyzed, scared-stiff, terrifyingly incapable of moving and unable to breath, with "a sense of utter entrapment with no possibility of action successfully averting the threat."

[13] Dissociation will be discussed in detail in later **Chapters 4: Objective and Methodology** and **Chapter 7: Questionnaire Results and Body Maps**, as it is relevant to the Subject.

When sympathetic-driven arousal and parasympathetically driven arousal occur simultaneously, metaphorically it is like the ANS 'accelerator' and 'brake' are on at same time.

'Passive' Instinctual Survival Responses: Fold

Fold/Immobilization:

The 'passive' immobilizing survival defense[1] ensues when all other defenses have failed (Nijenhuis et al 1998, 1999; Porges, 2004, 2005) and occurs in dire conditions of extreme overwhelm, powerlessness, helplessness and hopelessness, when 'active' mobilizing defenses fight or flight are ineffective and, involves states of total submission or surrender.

The fold or immobilization response is a **parasympathetically** mediated response characterized by profound inhibition of motor activity coupled with little or no sympathetic arousal (Musslin 2003). Scaer (2001:17) describes this state: "the racing heart rate slows to a crawl; blood pressure drops precipitously, tense muscles collapse and still as a result of the assumption of an apparent enforced vegetative state. The focused and alert mind becomes numb and dissociated, at least in part to the high levels of endorphins. Memory access and storage are impaired, and amnesia may be expected."

The individual experiences extreme hypo-arousal, a dramatic increase in dorsal vagal tone, and a profound state of hopelessness. The somatic postures that can be seen are crouching, pulling in of the neck, avoiding eye contact, bowing the back before the perpetrator, and attempting to appear physically smaller and less noticeable and threatening. Krystal (1978) describes a variant of this as "robotization" where behaviour appears mechanical and automatic. Extreme dorsal vagal arousal may result in nausea, vomiting, loss of control of the rectal sphincter and fainting, lead to bradycardia, apnea, and cardiac arrhythmias (Frijda 1986) and can be lethal for some mammals if maintained for protracted periods of time.

At this final stage of surrender, analgesia prevents nociception (perception) of injury, this may account why many individuals report that they felt no pain during abuse (van der Kolk et al., 1996) and as

[1]The immobilization response is also defined as tonic immobility, limp passivity, feigning death, "playing possum", shutdown, collapse or fainting.

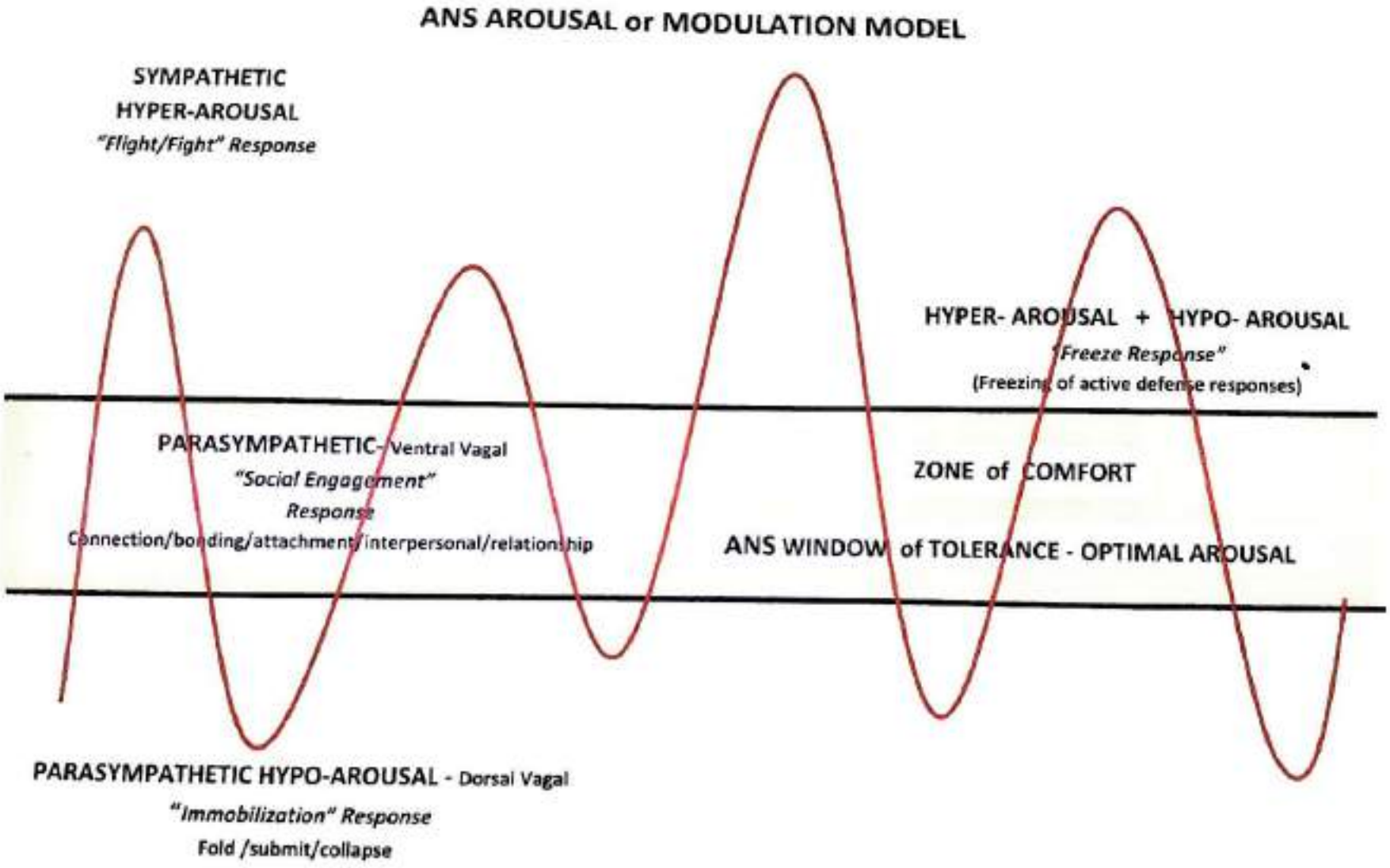

Diagram 4: ANS Arousal or Modulation Model

Krystal (1988:116) adds that surrender, necessary and prevalent in the animal kingdom, carries "its own means of merciful, painful death."

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There have been further refinements in the understanding of the lesser known parasympathetic system through the work of Porges's Polyvagal Hierarchy theory (1995, 1997) and the neurological structure of the vagus nerve. The vagus nerve has two divisions: one division into the parasympathetic ventral vagal responsible for what Porges calls the "social engagement" response; the other division into the dorsal vagal responsible for the "immobilization" or fold response. Porges postulates ANS hypo-arousal is due to a specific branch of the parasympathetic system, the "dorsal vagal complex" which causes the organism to conserve energy by drastically slowing heart and breath rates. The other branch of the parasympathetic system, the "ventral vagal complex" Porges calls the "Social Engagement System" or the "smart" vagal because it has flexibility and can regulate the primitive the dorsal vagal and sympathetic systems. Under the stress of trauma, an individual may seek refuge in a 'safe other' and soothing contact, may connect in relationships which can modulate arousal, however if ineffective, the Social Engagement System will tend to shut down. In effect, Porges's "Social Engagement" or ventral vagal response represents a sophisticated 'braking' mechanism that can facilitate the regulation or soothing of overall arousal.[15]

The 'Triune Brain' and **'ANS Arousal or Modulation Model'** as mentioned, are the conceptual frameworks that defined the parameters of this research. The ANS Arousal or Modulation Model can be used to illustrate both the level of activation of the sympathetic system (hyper-arousal) and parasympathetic system (hypo-arousal) as shown in **Diagram 4: ANS Arousal or Modulation Model**, as well as the various expressions or manifestations of a wide spectrum of trauma 'symptoms' representative of hyper-arousal or hypo-arousal of the ANS as shown in **Diagram 6: ANS Arousal or Modulation: Spectrum of Trauma Symptoms**[16].

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[15]Porges's "Social Engagement" is analogous to what Schore terms "interactive psychobiological regulation."

[16]Refer to **Diagram 4: ANS Arousal or Modulation Model** in this chapter, and see in **Chapter 5: Diagram 6: ANS Arousal or Modulation: Spectrum of Trauma Symptoms.**

The ANS Modulation Model can illustrate the characteristic symptoms of trauma that epitomize and encapsulate chronic arousal or dysregulation of the ANS. Herman (1992) summarizes these as hyper-arousal, repetitive intrusions and constriction, "hyper-arousal that reflects the persistent expectation of danger; intrusion that reflects the indelible imprint of the traumatic moment; and constriction that reflects the numbing response of surrender." (Herman 1992:35).[17]

Wilbarger and Wilbarger (1997) refer to the area between the top and bottom lines in Diagram 4 as the **"optimal arousal zone."** When ANS activation falls above or below these lines there is 'dysregulation'. While arousal remains within this zone, the individual can contain and experience, that is, not dissociate from the affects (emotions), sensations, sense perceptions and thoughts that occur and can process information effectively. In this zone, as Ogden and Minton (2000: 22) point out, modulation can occur spontaneously and naturally. Siegel (1999:253) calls this zone "window of tolerance", "within which various intensities of emotional arousal can be processed without disrupting the functioning of the system." Within this zone, (higher level) cortical functioning is maintained – a prerequisite for integrating information on cognitive, emotional and sensorimotor levels. Experience is not overwhelming and dissociated (disconnected) in some way, but metabolized and integrated into the person's sense of self and whole life experience, that is, autonoetic consciousness is maintained.

Within this comfort zone, there is resilience and the capacity to preserve social connection and active coping strategies. There is close correlation with Porges "Social Engagement" response and the 'optimal arousal' zone. Called the "Social Engagement" response since it provides humans with a great degree of flexibility in communication and regulates areas of the body that are utilized in social and environmental interaction. Includes: eyelids (looking), facial muscles (emotional expression), the ears (hearing human voice from background noise), and head turning and tilting muscles (social gesture and orientation). (Porges 2003(b):35)

The "Social Engagement" Response and the 'attachment' system is linked to the defense system because of its critical role in ensuring survival: it entails three basic and evolutionary needs- proximity,

[17] Interestingly, the recurrent and overlapping phases of traumatic re-experiencing and numbing are close phenomenologically to the processes of mourning and bereavement.

a safe haven and a secure base. (Ogden et al 2006:112). However, in the case of 'relational trauma', when the person to whom one would ordinarily turn to for safety and protection is precisely the source of danger or perpetrator , the "Social Engagement" response for refuge and recovery is not a reliable option and can be rendered ineffective.

Dysregulation, from the perspective of the ANS Arousal or Modulation Model, means the level of ANS arousal is outside the person's 'zone of comfort' beyond the 'optimal arousal zone'. The experience is not integrated; not able to be taken in, there is not the capacity to adapt or flexibly respond, the experience is not digested, metabolized, assimilated or synthesized into the individual's sense of self and broader life experience or context. People who suffer from PTSD are prone to affect dysregulation, these include difficulty modulating anger, chronic self destructive and suicidal behaviours, difficulty modulating sexual involvement, and impulsive and risk-taking behaviours. (Herman1992 (a))

Hyper-arousal, the 'peaks' of the Modulation Model, involve "excessive sympathetic branch activity (which) can lead to increased energy-consuming processes (energy that requires expenditure in some action) manifested as increases in heart rate and respiration and "pounding" sensation in the head (Siegel 1999:254).

Excessive sympathetic hyper-arousal fuels and feeds itself in a manner in which trauma experiences are repeatedly elicited or 'triggered'. **'State-dependent' memory** as mentioned, refers to the way in which events encoded in particular states will be far more likely to be recalled if a person is in a similar state in the future: state dependent memory/learning is a critical phenomenon in traumatic memory. When a current internal state resembles or replicates the internal state produced during a past traumatic event, other details associated with this trauma may spontaneously be recalled or set in motion. As Rothschild, R (2000: 36) points out "it is not uncommon for a trauma to be recalled into awareness by an internal condition (such as increased heart rate, sensations of heat, pressure, pain, body posture/position) that is reminiscent of the of the original response to the trauma." Rothschild adds, recall may also be instigated by external triggers such as "a colour, sight, taste, touch, smell...and also incited by exercise, excitement and sexual arousal."

State-dependent memories increase the tendency to "interpret current stimuli as reminders of the trauma" perpetuating and compounding the hyper-arousal. "This hyper-arousal creates a vicious cycle: state-dependent memory retrieval causes increased access to traumatic memories and involuntary intrusions of the trauma, which lead in turn to even more arousal." (van der Kolk, van der Hart, et al., 1996:305) . The cycle of re-experiencing the trauma, followed by attempts to bury, suppress or shut off from these symptoms and feelings associated with the trauma, is a fundamental dynamic underlying PTSD.

Van der Kolk et al., (1996 :421) points out that high arousal is easily triggered in traumatized individuals, causing them to "...be unable to trust their bodily sensations to warn them against impending threat and cease to alert them to take appropriate action" thereby disrupting effective defense responses. The body becomes a 'battleground', sensations, feelings and emotions become the 'enemy' in this vicious cycle sometimes called the 'black hole' or 'vortex of trauma' that ultimately at some point depletes and exhausts the person then oscillates or swings to hypo-arousal. This swing from one polarity to the other is called 'enantiodromia', when energy has been pushed too far in one direction and switches.

Opposite to the 'peaks' of hyper-arousal modulation are the **'troughs'** of **hypo-arousal,** as Siegel (1999: 254) states "excessive parasympathetic branch activity leads to increased energy conserving processes, manifested as decreases in heart rate and respiration and as a sense of 'numbness' and 'shutting down' within the mind, and a separation from the sense of self." Such hypo-arousal can manifest as numbing, a dulling of inner sensation, slowing of the muscular-skeletal response and diminished muscular tone, especially in the face (Porges, 1995). Here cognitive and emotional processing are disrupted, not by hyper-arousal but by hypo-arousal.

The ANS Arousal or Modulation Model can also show the pattern of dysregulation and oscillation, the swinging between polarities or opposing states that Herman (1992:47) calls this oscillation the "dialectic of trauma". The traumatized individual may reside primarily either above or below the boundaries of the 'optimal arousal zone', or swing uncontrollably between these two states. Poor tolerance for ANS activation or arousal is characteristic of traumatized individuals. (van der Kolk 1987).Van der Kolk (1987(b):20 regards this **'bi-phasic'** or **'bi-nodal'** alteration between hyper-arousal

and numbing or freezing may become the 'norm', the legacy of trauma. Herman (1992:47) echoes this belief, "In the aftermath of an experience of overwhelming danger, the two contradictory responses of intrusion and constriction establish an oscillating rhythm ...this dialectic of opposing psychological states is perhaps the most characteristic feature of the post-traumatic syndromes" and "the instability produced by these periodic alternations further exacerbates the traumatized person's sense of unpredictability and helplessness...the dialectic of trauma is therefore potentially self-perpetuating." (Herman 1992:47). This pattern of oscillation is like a self-sustaining neurological feedback circuit that 'fuels' or exacerbates and further entrenches trauma symptoms and, with its similarities to spontaneous combustion, is termed 'kindling'.

As from the perspective of the anatomical structure of the 'triune brain', so to from the perspective of the ANS Arousal/Modulation Model the theoretical understanding is the same: when ANS arousal levels are outside the optimum comfort zone, upper cortical levels of processing are disabled and more holistic processing will be replaced by bottom-up reflexive sensorimotor action. As Siegel (1999:255) notes, "the pre-frontally mediated capacity (cognitive processing) for response flexibility is shut down. The 'higher mode' of integrative (cognitive) processing has been replaced by a 'lower mode' of reflexive (sensorimotor) responding."

Keleman (1983:63) summarizes the imprint or impact of trauma succinctly, "alertness and the immediate responses of either fight or flight give way to trauma and somatic distress. We remain in an on-going state of preparedness for combat, of getting away from what threatens us, or we become weakened or collapse. We may be in a constant mild brace or a deep spastic rigidity that reflects terror or rage. As these states become permanent, flexibility and responsiveness are lost. This affects all tissues, muscles, organs, and cells as well as thoughts and feelings."

Chapter 4:

OBJECTIVE and METHODOLOGY:

RESEARCH PROJECT:
Treating Trauma using Yoga *and* Somatic-oriented Therapies

Chapter 4:

RESEARCH PROJECT: Treating Trauma using Yoga *and* Somatic-oriented Therapies

OBJECTIVE and METHODOLOGY:

This chapter outlines in detail the single case research methodology and the tools employed in this research. In particular the Questionnaire that was developed and applied as a means of identifying and quantifying the Subject's subjective experience of symptoms of trauma, as well as identify patterns of modulation: the 'peaks' of hyper-arousal and the 'troughs' of hypo-arousal - dysregulation in the ANS caused by trauma.

OBJECTIVE:

The aim of this research, as mentioned in **Chapter 1: Introduction** is twofold: first, to evaluate the efficacy of combining Yoga Therapy *and* Trauma Therapy treatments in the context of individual psychotherapy.

The second component is to design and develop, and test or pilot the use of two 'tools': a Questionnaire (titled the Hyper/Hypo-arousal Questionnaire) and Body Maps, to monitor the experience of the 'symptoms' of trauma and assess psychotherapeutic treatment outcomes/results.

HYPOTHESES:

The hypotheses, as outlined in the **Introduction**, also are twofold: firstly, that there will be evidence of some amelioration or stabilization of the 'symptoms' of trauma if yoga *and* trauma therapy treatment modalities are complementary and efficacious, and secondly, that there will be evidence of concurrence or some correlation between the Questionnaire and Body Maps if they have utility and validity as 'tools' or indicators of the experience of symptoms of trauma.

SINGLE CASE STUDY RESEARCH METHODOLOGY:

Single case study research methodology was selected as it entails an intensive description and analysis of a single individual, hence is in accord with the structure of individual one-on-one psychotherapy and is a methodology often used in clinical psychology and neuropsychology settings.

This methodology is descriptive and exploratory, rather than investigative or explanatory, and so can offer benefits and advantages of a rich source of ideas for developing hypothesis, the opportunity for clinical innovation and tentative support for a psychological theory or conceptual framework.

In single case study research data is collected from multiple sources of evidence, termed 'triangulation', which is used as a means of reducing bias by providing multiple instances of evidence from different sources. The three sources of data include: first, observations, clinical reports, records and note-taking from the psychotherapy sessions; second, 'self-reports' or subjective ratings by the psychotherapy client (and research subject) by completing the specifically designed Hyper/Hypo-arousal Questionnaire[18]; and third, the Body Maps.

The purported problems with single case research are lack of 'scientific' control, difficulty drawing cause and effect conclusions, that is, there is limited internal validity and that there is also limited external validity: a problem of generalizing findings from a single individual. These propositions are discussed in the final **Chapter 8: Summary Conclusions**.

Multiple-baseline Design:

A multiple-baseline design is used: the Hyper/Hypo-arousal (H/H) Questionnaire was completed by the research subject on four occasions - August 2010, April 2011, August 2011 and April 2012. This enabled a comparison of the level and degree of trauma symptoms the subject experienced over time or treatment periods.

Data Analysis -Theoretical and Descriptive:

The analysis of the data is theoretical, based on the propositions of the ANS Arousal or Modulation Model that informed and guided the analysis, focused attention on certain data specifically areas of dysregulation of the ANS, defined the scope and highlighted any links between phenomena found within the current body of knowledge in trauma theory.

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[18] See **Appendix 1: Questionnaire** for the Instruction Sheet that establishes protocol and guidance and the H/H Questionnaire; and refer to **Appendix 2: Body Maps** for the **Body Map** template.

The analysis of data is also descriptive, organized on the basis of descriptions of the six (6) characteristic categories of trauma symptoms and within each category, a number of 'descriptive statements' of how the symptoms of trauma may be experienced or manifest in an individual. These six categories and their 'descriptive statements' formed the structure of the H/H Questionnaire.

HYPER/HYPO-AROUSAL QUESTIONNAIRE:

Measurement Aims:

The H/H Questionnaire aimed to measure and quantify the Subject's own experience of the trauma symptoms described in the Questionnaire, as well as measure and quantify the level of the regulation or dysregulation and any patterns or trends in the modulation of ANS arousal. These quantitative measures obtained from the Questionnaire were plotted on graphs.[19]

Design Structure:

The Questionnaire was developed, designed around and based upon six characteristic clusters or categories of trauma symptoms expressed as hyper-arousal or hypo-arousal of the Autonomic Nervous System (ANS.)

These six categories of trauma symptoms, the 'descriptive statements' that outlined what the experience of these trauma symptoms can entail and the rating scales were designed after reviewing a number of existing instruments. These instruments include: the Trauma Symptom Inventory; Dissociative Experiences Scale; SUDS: The Fear Thermometer; Cognitive Distortion Scales; Dissociation Questionnaire (DIS-Q); the Dissociative Disorders Interview Schedule (DDIS, **DSM-IV** version)and DESNOS (Disorders of Extreme Stress Not Otherwise Specified). DESNOS, sometimes called Complex PTSD, was an instrument developed to outline the complex of symptoms associated with early childhood interpersonal[20] or relational trauma.

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[19] The **Body Maps** provide the 'qualitative' measures or indicators in this research methodology. Discussion of these Graphs is located in **Chapter 7:Questionnaire Results.**

[20] While trauma and traumatic experience is complex, childhood trauma adds an extra complexity in terms of its impact on the 'developmental trajectory' - on the child's maturation process, particularly their sense of self.

Rating Scales: Frequency and Severity of the experience of symptoms of trauma

A number of instruments and questionnaires reviewed typically employed only one scale, for example, if the listed trauma symptom or experience was applicable to the client a typical scale was: 1=yes, 2=no, 3=unsure if applicable. Another example of a typical scale entailed the subject rating if they have experienced the listed symptom: 1= never, 2 = sometimes, 3 = moderately, 4 = quite a bit, 5=all the time.

This research aimed to achieve a clearer delineation of the subjective experience of trauma symptoms based on the frequency of experience and the degree of suffering the symptom(s) caused.

A refinement was the development of two (2) scales each with a rating choice of 5 options:

Scale A Frequency, rates ***How often has this specific symptom been experienced by you***?

0= never, 1= rarely, 2= sometimes, 3= frequently or 4= constantly, and

Scale B Severity, rates ***How distressed or anxious is/was this experience for you***?

0= none no anxiety or distress, 1= minimal, 2= moderate, 3= high or 4 = severe

Scale A and B's rating scores for each description of trauma symptoms were multiplied to give a more comprehensive picture of the total impact on the person for each specific symptom of trauma. [21] A maximum score of +16 or -16 indicates a high level of ANS dysregulation, of hyper-arousal and hypo-arousal respectively. An Instruction Sheet was provided as a guide to using the rating scales and assist completing the H/H Questionnaire.[22]

Categories of Symptoms of Trauma

The H/H Questionnaire covers six clusters or categories of trauma symptoms. The six categories were adapted from those used in the DESNOS as they were viewed to thoroughly cover the critical key areas impacted by trauma.

[21] See **Appendix 1: Questionnaire** for Questionnaire Results Table.

[22] See **Appendix 1:Questionnaire** for the Instruction Sheet and Rating Scales

The six categories of symptoms of trauma are:

Category 1: Sleep difficulties / disturbances

Category 2: Somatic / physical / physiological experiences

Category 3: Alterations in regulation of affect and impulses

Category 4: Alteration in attention or consciousness

Category 5: Alterations in relationships with others

Category 6: Alterations in self-perception

The intention was to design and develop a questionnaire that was not clinical or pathology-based but rather one that would be attuned to and reflect more the personal subjective experience of trauma. Each of these categories comprise of a list of 'descriptive statements' of how trauma symptoms may be experienced or manifest in an individual, such as in **Category 2: Somatic/physical/physiological experiences** - descriptive statement **2.2** lists 'shortness of breath', descriptive statement **2.5** lists the symptoms of 'dizziness' and 'wooziness'. Some of these descriptions have been modified from the abovementioned instruments and questionnaires, the majority however, are 'lay-person' descriptions recounted repeatedly over 25 years of working with traumatized clients.

Some Categories have been clearly subdivided into hyper-arousal or hypo-arousal symptoms, in other categories the 'descriptive statements' of symptoms indicative of hyper and hypo-arousal have been deliberately interspersed or intermingled, some have been repeated in more than one category to 'assess' the consistency and reliability of the subject's ratings.

Below are some comments and discussion in relation to these 6 Categories that are pertinent to the Subject's particular trauma symptoms. Further detail is presented in **Chapter 7** in the discussion of the Questionnaire results.

Category 1: Sleep difficulties / disturbances

Long after danger has past, the traumatized relive the traumatic event(s) as though they were continually recurring in the present moment, the trauma repeatedly intrudes either spontaneously or

is triggered by a range of stimuli, these intrusions occur as flashbacks during waking states and traumatic nightmares and intrusive sensations during sleep (Herman 1992:37).

Insomnia is characteristic of PTSD due to hyper-arousal, sleep difficulties often are forms of re-experiencing the trauma. Traumatized people take longer to fall asleep with difficulty quietening themselves sufficiently or remain deliberately awake to avoid the nightmares, night terrors, are more sensitive to noise, and awaken more frequently during the night. It appears that traumatic events 'recondition' the nervous system.

Some dreams or nightmares are virtual replays of the traumatic event or very similar, while others contain the feelings and sensations experienced during the trauma. Alcohol and drug use, associated with trauma and PTSD, affect sleep patterns. (Matsakis 1994:33)

Category 2: Somatic / physical / physiological experiences

The degree to which trauma is expressed in psychosomatic conditions has long been recognized. Termed psychosomatic or 'somatization' entails feeling symptoms on a somatic level that have no apparent or identified medical condition and an inability to identify the emotional 'value' of physiological states. Over the last 15 years studies have repeatedly shown a close association between somatization and dissociation and PTSD. (Walker et.al. 1992; Saxe et.al. 1994; McFarlane et.al. 1994) Somatization appears intimately related to emotional and physical numbing and dissociation; the body communicates when other means are disconnected. 'Alexithymia', the inability to translate somatic sensations into basic feelings, such as anger or fear, causes the traumatized individual to experience emotions simply as somatic problems (van der Kolk 1996).

Category 3: Alterations in regulation of affect (emotions) and impulses

DESNOS definition: "Alteration in the regulation of affective impulses, including difficulty with modulation of anger, terror/fear and being self destructive."

3.1. Addictive behaviours/substance abuse

Descriptive statements **3.1.1** to **3.1.3** relate to attempts to alter internal states and affects (emotions) with external 'addicting' or compulsive behaviours. Traumatized individuals "run a high risk of

developing dependence on alcohol, drugs, food and other substances in their attempt to regulate or obliterate overwhelming feelings. Initially, attempts at self-medication through alcohol, drugs or food can bring relief and alleviate noxious symptoms...but sooner or later ...compound the difficulties, exacerbating discomfort, increasing alienation and promoting greater dysfunction...This seductive promise of anesthesia that successfully obviates pain keeps the downward cycle going."(Naparstek 2004:137)

Descriptive statements **3.1.2** and **3.1.3** can have either a hyper or hypo-arousal effect depending on the nature of the substance and amount of the substance taken or used. In the case of the subject of this research, Liam's substance was alcohol that ultimately exacerbated the level of hyper-arousal in his ANS. PTSD sufferers will use their substance for the purpose of self 'medicating' the symptoms of trauma.

3.2 Dysregulation: Hyper-arousal

Intense and intrusive emotions of anger/rage and terror/fear are trauma symptoms characteristic of ANS hyper-arousal.

Descriptive statements **3.2.1** and **3.2.2** measure the experience of **anxiety/fear/terror**

Fear is the emotion that alerts one to danger or potential harm. Both fear and anxiety are characteristic for individuals with PTSD. Le Doux (1996) distinguishes fear as being stimulated by external environmental factors whereas anxiety is stimulated within the self. "When a trauma is over, terror usually reduces to fear, even for those suffering its aftermath (except during a flashback when terror can return in all of its original intensity) (Rothschild 2000:61).The fear once felt to an external threat becomes anxiety generated from within, the result is debilitating and disabling. "Fear so broadly generalized its protective function becomes handicapped...when everything is perceived as dangerous, there is no discrimination of what truly is dangerous (it is like) an alarm ringing all the time."(Rothschild 2000:62). This constitutes chronic arousal or dysregulation of the ANS due to traumatic experience.

Descriptive statements **3.2.10, 3.2.11, 3.2.12** and **3.2.13** reflect the experience of **anger/rage**. Anger in its essence, is an emotion of self-protection and response to being threatened, hurt, scared and fearful.

Anger mobilizes the energy to stand one's ground and defend or take action for self-preservation, to assert oneself, to set boundaries and limits and communicate "no", "stop" "enough". Anger can be directed towards self (**3.2.12**).

Descriptive statement **3.2.7** 'Feeling "on guard", "on alert", "anticipatory anxiety": hype-vigilant, anticipating danger/concerned for safety/protection.' Relates to the preoccupation with and predisposition to danger and the tendency to regard the world and others as unsafe. PTSD sufferers have, according to Herman (1992:36), "an elevated base-line of arousal: their bodies are always on alert for danger" and that while hyperarousal reflects the persistent expectation of danger, intrusions reflect the indelible imprint of the traumatic moment. In relation to these recurrent intrusions of fragments of unresolved traumatic experience Herman states "the prominent unresolved feelings might be of terror, helpless rage, or simply be the undifferentiated 'adrenaline rush' of mortal danger" (Herman 1992:42). One phenomenon of PTSD, that of repetitive intrusions or the re-experiencing the trauma, has been described as "repetition compulsion".

3.3 Dysregulation: Hypo-arousal

These experiences are representative of 'constriction' - "the numbing response of surrender." (Herman: 35): the narrowing and diminishment of life that is the impact of trauma.

Descriptive statements **3.3.1, 3.3.2** and **3.3.4** relate to the experience of dissociation or some 'disconnect' in sensing, sensation and feeling. Other examples of constriction typical of hypo-arousal include a narrowing or restriction in the range of affect (e.g., unable to feel joy or love) and detachment. (Dissociation is discussed in detail in Category 4: **Alteration in attention or consciousness**)

Descriptive statements **3.38** and **3.39** aim to measure the experience of hopelessness, the perception of no or low expectations, a sense of a foreshortened future (e.g., does not expect or consider being able to have a sound relationship or family), a sense of doom, the future bleak destined to suffer/fail.

High levels in these areas are associated with depression or dysthymia (inability to feel pleasure) and correlated with suicidality particularly with the presumption that their current predicament pain/distress is unlikely to change and stopping or escaping, surrendering at any cost, is found attractive.

Descriptive statements **3.3.8** to **3.3.10** reflect despair. The depth of this despair cannot be underestimated. Trauma, particularly childhood trauma, has been called "soul murder" (Shengold 1989:315). There is an existential despair: not only about mourning / grieving the lost innocence of childhood, but also the loss of the foundation of basic trust, belief in oneself and the belief in a 'benevolent other' human being, world and universe.

Descriptive statements **3.3.9** and **3.3.10** deal with alterations in systems of meaning and existential questions regarding being alive or dead, existence and annihilation.

3.4 Hyper and Hypo-arousal swings

The oscillations, bi-polarity or "bi-nodal" alterations between hyper-arousal and numbing can become the 'norm', the legacy of trauma (Van der Kolk (1987(b):20) and are echoed in Herman's (1992:47) comment "in the aftermath of an experience of overwhelming danger, the two contradictory responses of intrusion and constriction establish an oscillating rhythm ...this dialectic of opposing psychological states is perhaps the most characteristic feature of the post-traumatic syndromes" (Herman 1992:47).

Krystal (1988:114-115) also describes the state 'switch' from sympathetic hyper-aroused- terror into parasympathetic hypo-arousal conservation-withdrawal hopeless and helpless: "The switch from anxiety to the catatonoid response is the subjective evaluation of the impending danger as one that cannot be avoided or modified. With the perception of fatal helplessness in the face of destructive danger, one surrenders to it." The subject of this research, Liam experienced significant levels of chronic pain that could not and cannot be sustained indefinitely: as Darwin pointed out so many years ago, that "pain, if severe, soon induces extreme depression or prostration but it is first a stimulant and excites action.....Fear again is the most depressing of all emotions, and soon it induces utter helpless prostration."(Darwin. 1872:31)

Category 4: Alteration in attention or consciousness

The DESNOS category and full definition comprises "alterations in attention and consciousness, leading to amnesias and dissociative and depersonalization episodes."

Dissociation has been within the psychological lexicon for over 150 years. Janet (1893, 1901) the 'father' of **dissociation** hypothesised that consciousness was comprised of varying levels, some of which could be held outside awareness. While there still is ambiguity and speculation around dissociation that requires ongoing research, dissociation certainly represents a neurobiological phenomenon that occurs under extreme stress.

Dissociation constitutes an altered state that disrupts, or 'splits' conscious awareness. During traumatic events, the victim may separate elements of the experience, hence dissociation can appear in many forms, as varying combinations of elements are dissociated or disconnected from each other. Dissociation can be defined as "a defensive disruption in the normally occurring connections among feelings, thoughts, behaviour, and memories, consciously or unconsciously invoked in order to reduce psychological distress" (Briere 1992:36, 37) According to Briere, there is a "trade-off" the sacrifice of "fully integrated functioning in order to lessen the sometimes overwhelming anxiety and pain associated with complete awareness of traumatic events."

Dissociation can involve a sense of unreality, a feeling of distance from what is happening, a numbing of physical pain and other somatic sensations, inability to feel emotion or emotional detachment, distortions of time (slowed or lost) and place, post-traumatic amnesia and blacking-out, can all be indicative of dissociative experiences. Dissociation is both a key predictor and key feature in PTSD (Naparstek (2004: 89)

A number of researchers (Waller et al 2000, Nijenhuis et al 1998) distinguish between **psychological dissociation** and **somatic dissociation.**

Psychological dissociation has a range of cognitive, affective and behavioural manifestations including amnesia, depersonalization, derealization, loss of control over behaviour and identity confusion or alteration. The extreme of dissociative phenomena, such as dissociative identity disorder, involves some disconnect in the sense of a coherent self or whole personality and has "frequently been

associated with a history of trauma, and by implication with fear." (Putnam, 1985 in Siegel and Solomon (2003:90).

The psychological variants of dissociation, depersonalization and derealisation, are usually found together. Ballis et al (1978 :309,310) appropriately uses the term "estrangement" for both **depersonalization** and **derealization** designating an experience as being changed, as lacking its familiar reality-feeling, and perhaps most typically, as having a characteristic "as-if" quality. In depersonalization the feeling of 'strangeness' affects oneself, in derealisation the experience of 'strangeness' is of the outer world.

With **depersonalization** in terms of the somatic/physical self, the person will complain that their body or rather, certain parts of their body, do not feel like their own, as belonging to them. This experience may be accompanied by subjective sensations of **numbness**, and alterations in the size or volume of the estranged parts. With **depersonalization** of the self there is a feeling of unreality of the self of being "outside of the self", while the person will think, react, act, it will be like that of a detached spectator who is observing another person's performance. The person's own actions and thought processes will appear unfamiliar and strange (Jacobson 1971: 137-138)

In **derealization** the outer world seems not quite real. Sounds may be perceived as if from a distance away; what is seen looks blurred, distorted or removed. There can be feelings of being surrounded by transparent substances that create a sense of being separate from the world....dreamlike, as if behind a glass wall, cotton or veil. (Ballis and associates (1978:310).

Given that psychological dissociative phenomena are strongly associated with somatization, it is important to understand the somatic manifestations of dissociation. Somatic (or 'somatoform') dissociation can be defined as the failure to fully integrate the somatic components of experience. There can be the 'absence' of experience such as analgesia (e.g., **numbing**) and anesthesia, and/or heightened somatic experiences such as **pain** or motor activity. As Waller (2000) reminds us, where there is an inability to escape physical injury through fight or flight, there is a functional utility in dissociation as an "internalized escape mechanism."(Waller et. al. 2000:84).

Rothschild (2000:64) contends "traumatic dissociation and traumatic flashbacks are the two most salient features of PTSD." These two aspects often occur in tandem; it is not possible to have traumatic flashbacks without some form of traumatic dissociation also being operable, though dissociation can occur without flashbacks.

The DSM IV defines **flashbacks** as "sensory experiences that remain unadulterated and stable over time, return triggered by reminders of the original trauma, with a vividness as if the subject is having the experience all over again." (DSM IV in Siegel and Solomon 2003:179). "**Flashbacks** are comprised of dissociated, implicitly stored information that becomes elicited under state-dependent conditions and expressed through hyper-arousal of the ANS." (Rothschild: 72-73). A **flashback** is a sudden, vivid re-experiencing of the traumatic event accompanied by intense sensations and/or emotions that intrude or "pounce into the present unbidden." (Rothschild 2000:66). During a flashback the person does not black out or lose consciousness however does temporarily leave the present reality and re-experiences the original traumatic event, in its original full intensity.

Descriptive statements **4.2** and **4.3** relate to **cognitive dissociation**
4.4 to **4.7** deal with **flashbacks** that entail psychological or cognitive **dissociative states.**
4.9 and **4.10** relate to **cognitive dissociation** or **derealization**
Descriptive statements **4.11** to **4.14** relate to **flashbacks** that entail **somatic dissociative states.**

Category 5: Alterations in relationships with others
DESNOS definition: "Alterations in relationships with others, such as not being able to **trust** and feel intimate with others" creates alienation and isolation.
Basic trust is acquired in earliest life in the relationship with the first caretaker and creates the foundation of all systems of relationship and faith: it engenders the sense of safety, of benevolence, that others "are OK".
Trauma has primary effects not only on the psychological structures of the self but also on the systems of attachment, that is, social relationship, connection, engagement and participation, as well as meaning that link the individual, community and culture.

Trauma that is inflicted by caretakers has a profound effect on the capacity to trust. Descriptive statement **5.3** reflects impact of trauma on the ability to trust others.
5.1, **5.2** and **5.5** reflect the persistent avoidance of stimuli associated with the trauma that can lead to diminished engagement and participation in social activities, isolation and alienation that are examples of 'constriction' typical of hypo-arousal. They also indicate the use or lack of use of the "Social Engagement" response.

Category 6: Alterations in self-perception

DESNOS definition: "Alterations in self-perception, such as a chronic sense of guilt and responsibility, and chronically feeling ashamed".

ANS dysregulation due to traumatic experience distorts or disrupts a person's sense of self: I, me, mine ('asmita'). Cole and Putnam (1992) have proposed that people's core concepts to themselves are defined to a substantial degree by their capacity to regulate their internal states and by their behavioural responses to external stress. The disruption in the development or loss of self-regulatory processes leads to problems with self-definition: disturbances in the sense of self such as a sense of separateness, loss of explicit or autobiographical memories and autonoetic consciousness; disturbances in body image; poorly modulated affect (emotions) and impulse control, including aggression towards others and self; and insecurity in relationships, distrust, suspicion, lack of intimacy and isolation (Van der Kolk1996:187).

Briere offers that a contributing factor to an "impaired self reference" is that of early dissociation. Both adults and children frequently deal with painful experiences, memories and feelings by altering conscious awareness (1992:46). Briere goes on to state "any phenomenon that alters ongoing conscious awareness" during the critical period of childhood "is likely to have an impact on the child's sense of coherent "me"-ness. The presence of depersonalization, derealization, compartmentalization...may produce splits or shifting boundaries in the child's sense of self- a fragmentation that, given the role of self as an organizing entity, is likely to persist and elaborate into adolescence and adulthood... a child whose sense of self includes discontinuous memories of childhood, whose affective experience fluctuates as a result of intrusive or avoidant symptomatology is unlikely to develop a stable point of reference or home base from which to address the world."

Descriptive statement **6.2 'Feeling** unable to manage/control/influence important aspects of life, powerless' measures the loss of an internal 'locus of control'; helplessness; the perception of being unsuccessful in the ability to change any unwanted or problematic situation; passivity or avoidance in the face of challenge or danger. A loss of an internal 'locus of control' is characteristic for those traumatized who relied upon the freezing or immobilizing defences, leaving them without a sense they can trust themselves or their bodies: shame, blame and self-derision solidify even more these habitual patterns.

Descriptive statements **6.4 'Feeling** "wrong, embarrassment, deep humiliation, shame/ashamed' and **6.5** 'Feeling guilt and responsibility, at fault, to blame' evaluate the extent to which the Subject over-attributes blame and personal responsibility for negative outcomes, such as blaming oneself for violence or assaults experienced as a child. Rothschild (2000:60-61) regards **shame** as a "disappointment with the self." The questions that plague individuals are "why couldn't I be or do something different"," why couldn't I avert or stop what happened". Because the traumatic event could not be averted the subsequent feelings are of let-down or disappointment to the self or others and/or that there is something integrally and inherently wrong with them that they were the subject or victim of trauma.

BODY MAPS

The Body Map template[23] provides an outline of the front and back of the overall body and body segments[24] for the subject to complete, at frequent intervals, to illustrate or draw their subjective experience of somatic - physical/physiological symptoms.

The rationale for incorporating Body Maps as a tool or 'upayam' was based on current trauma theory knowledge: that with trauma and traumatic recall, there is a loss of language and ability to verbalize or articulate. Neurological imaging techniques such as MRIs, show the decrease in oxygen utilization or 'dimming' in Broca's area, in the frontal cortex, the area responsible for generating words to attach to internal experience. Hence "trauma may lead to 'speechless terror' that interferes with the ability to

[23] **See Appendix 2: Body Maps** for Template, Body Maps and Excerpts of Body Maps.

[24] This segmentation, aimed to facilitate attention and refine the focus on different regions of the body.

put feelings into words (alexithymia), leaving emotions to be mutely expressed by dysfunction of the body." (Van der Kolk& associates 1996: 193).

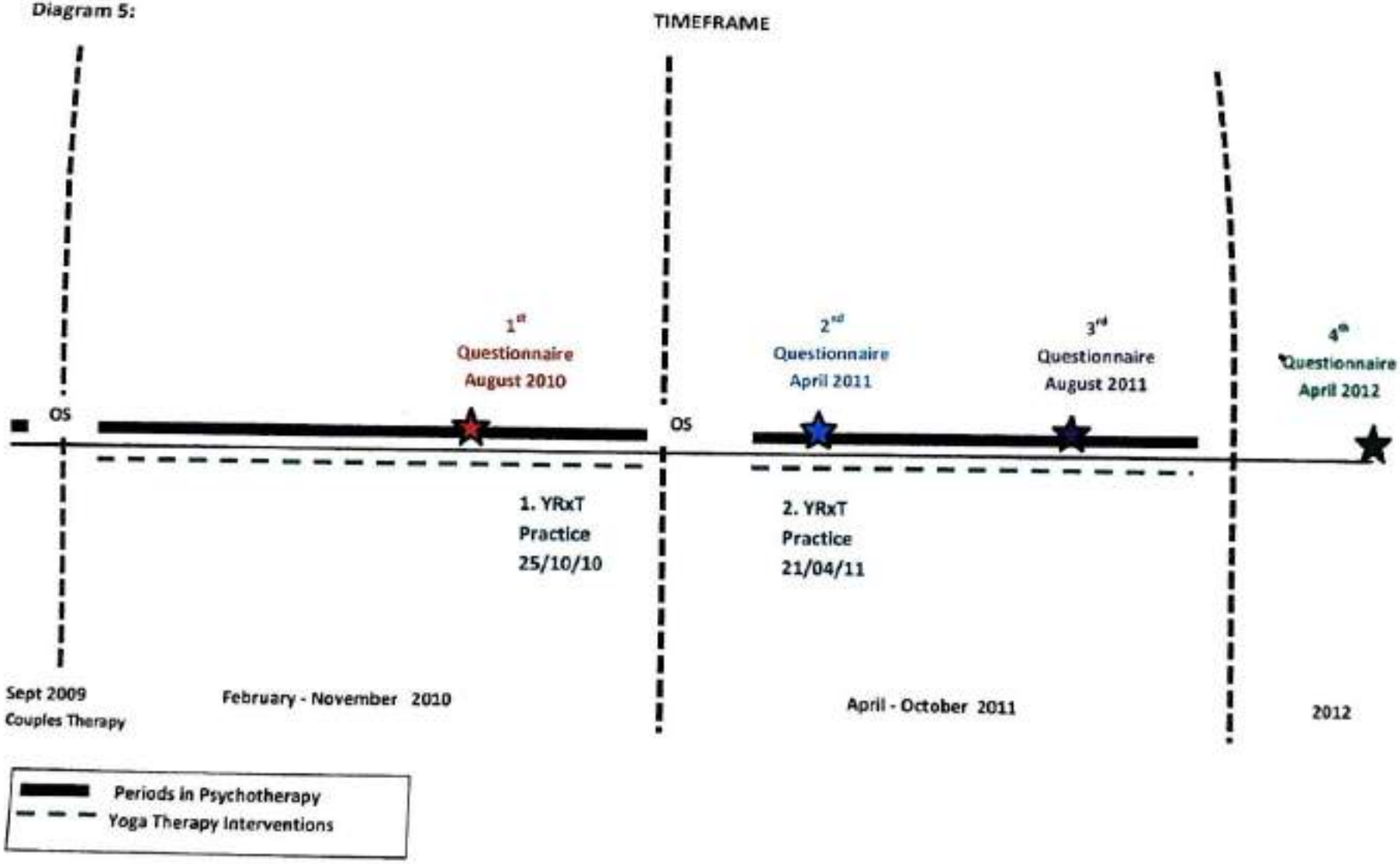
The traumatized can often express their internal states more articulately in physical movements or in images and pictures rather than words: utilizing drawing, can assist find the language for effective communication to others. (Van der Kolk 1996: 195). Hence, the Body Maps provide a vehicle for communication and expression when the higher level cortical functioning of the pre-frontal cortex has been compromised by traumatic experience. Body Maps became an integral part of the therapeutic process and informed the determination of priorities and focus in the treatment process.

Chapter 5:

SUBJECT/CLIENT'S SYMPTOMS of TRAUMA:

- ANS Hyper-arousal and Hypo-arousal

Diagram 5:


TIMEFRAME
1st Questionnaire August 2010
2nd Questionnaire April 2011
3rd Questionnaire August 2011
4th Questionnaire April 2012
OS
OS
1. YRxT Practice 25/10/10
2. YRxT Practice 21/04/11
Sept 2009 Couples Therapy
February - November 2010
April - October 2011
2012
Periods in Psychotherapy
Yoga Therapy Interventions

CHAPTER 5:

SUBJECT/CLIENT'S SYMPTOMS of TRAUMA: ANS Hyper-arousal and Hypo-arousal

This chapter presents a background to the Subject/Client and his symptoms of trauma as expressions of ANS hyper-arousal and hypo-arousal. The data is primarily sourced from the psychotherapy session observations and from the Body Maps. The symptoms have been organized in accordance with clusters illustrated in the ANS Arousal or Modulation Model.

The symptoms of trauma that the client/subject manifested, particularly at the physical/physiological level, significantly influenced the selection of treatment strategies and modalities including the Yoga Therapy Interventions, the 3rd 'tool' of this research project which are outlined in the following **Chapter 6.**

Background:

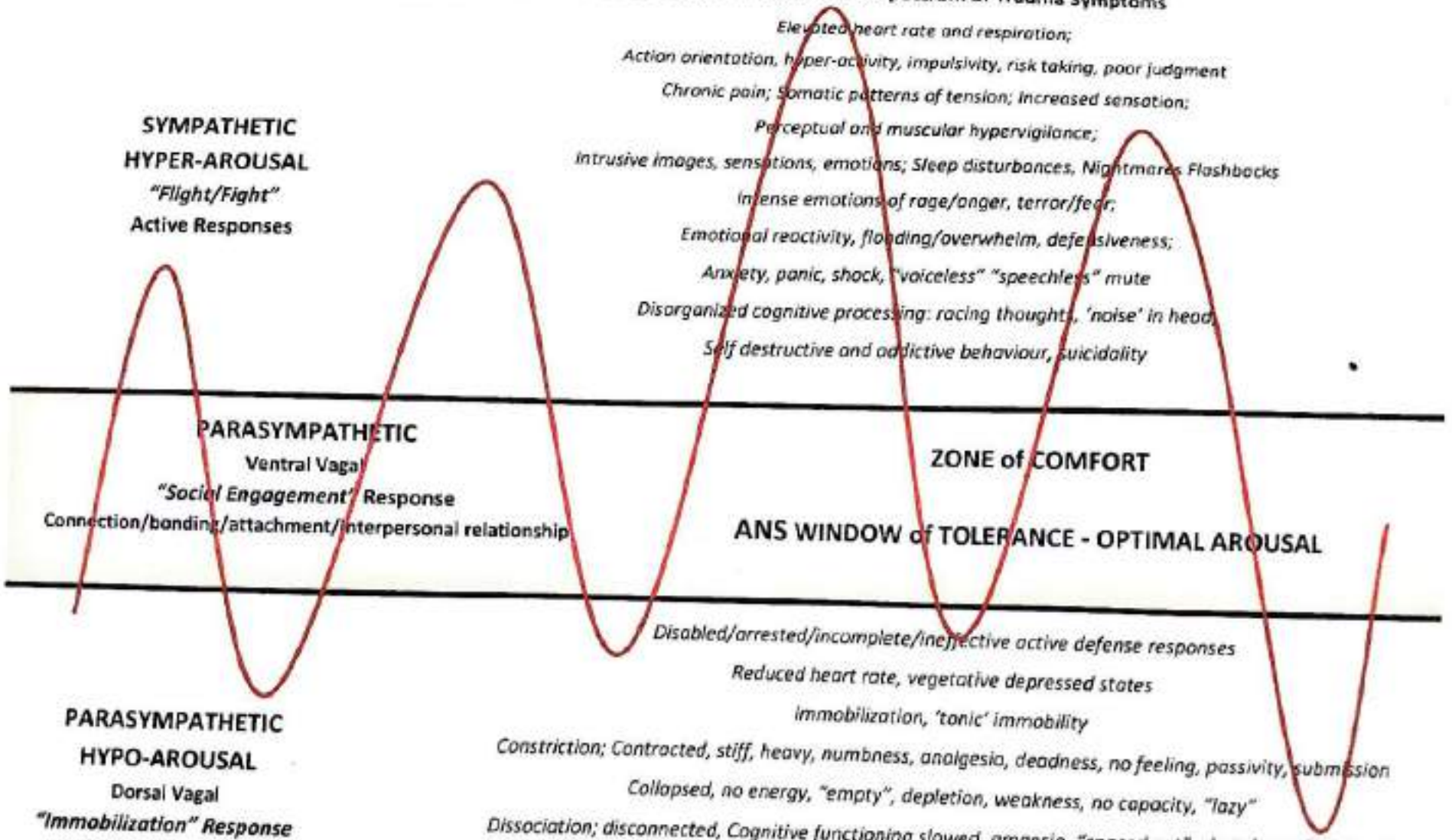
Overall the Subject spent a total of seventeen (17) months in somatic-oriented psychotherapy for trauma treatment.

The psychotherapy client and the subject of this single case study research, to be referred to hereafter as Liam (not his real name), in September 2009, undertook two sessions of couple's psychotherapy, primarily to identify ways he and his partner could manage an overseas trip planned at the end of the year to return to his country of origin and stay with his parents. (See **Diagram 5: Timeframe)** Actual quotes or statements, with the subject's permission, have been extracted from these psychotherapy sessions to illustrate key points and are *italicized*, for example, Liam commented at this time that his father *"makes his skin crawl"* and was highly agitated at the prospect of being in his father's proximity; this agitation appeared to constitute some form of re-traumatization.

In February 2010 Liam entered individual psychotherapy for a ten (10) month period up to November 2010 when he left again to travel overseas and stay with his parents. Liam recommenced individual psychotherapy for a second seven (7) month period from April to October 2011, at which time he completed and left therapy to take up employment in the country.

Diagram 6:

ANS AROUSAL or MODULATION MODEL: Spectrum of Trauma Symptoms



Elevated heart rate and respiration;

Action orientation, hyper-activity, impulsivity, risk taking, poor judgment

Chronic pain; Somatic patterns of tension; increased sensation;

Perceptual and muscular hypervigilance;

Intrusive images, sensations, emotions; Sleep disturbances, Nightmares Flashbacks

Intense emotions of rage/anger, terror/fear;

Emotional reactivity, flooding/overwhelm, defensiveness;

Anxiety, panic, shock, "voiceless" "speechless" mute

Disorganized cognitive processing: racing thoughts, 'noise' in head;

Self destructive and addictive behaviour, suicidality

SYMPATHETIC

HYPER-AROUSAL

"Flight/Fight"

Active Responses

PARASYMPATHETIC

Ventral Vagal

***"Social Engagement"* Response**

Connection/bonding/attachment/interpersonal relationship

ZONE of COMFORT

ANS WINDOW of TOLERANCE - OPTIMAL AROUSAL

Disabled/arrested/incomplete/ineffective active defense responses

Reduced heart rate, vegetative depressed states

immobilization, 'tonic' immobility

Constriction; Contracted, stiff, heavy, numbness, analgesia, deadness, no feeling, passivity, submission

Collapsed, no energy, "empty", depletion, weakness, no capacity, "lazy"

Dissociation; disconnected, Cognitive functioning slowed, amnesia, "spaced out", shut down, "not here"

Withdrawn, isolated, alienated, disoriented, "lost"

Preoccupied with shame, despair, self loathing, doubt, denial

Powerless Overwhelmed/ Victim identity helpless/hopeless

Loss of consciousness, fainting, "feigned death" "playing possum", epilepsy, coma, death

PARASYMPATHETIC

HYPO-AROUSAL

Dorsal Vagal

"Immobilization" Response

Fold / submit / collapse

Adapted from Ogden & Minton (2000), J. Fisher 2009), Siegel (1999)

Through the first 10 month therapy period and ¾ into the second 7 month period, Liam manifested predominantly symptoms of ANS sympathetic hyper-arousal. There were, however, also symptoms indicative of ANS parasympathetic hypo-arousal with some bi-polarity with 'swings' between hyper-arousal and hypo-arousal, between extreme sympathetic ANS activation then depletion and collapse. In February 2010 Liam was assessed as suffering Post Traumatic Stress Disorder (PTSD) by his doctor who was a Medical Practitioner and also an Ayurvedic Therapist. Liam was experiencing sleep disturbances, flashbacks, a high level of physiological arousal entailing anticipatory anxiety or terror, frozen immobilization and some dissociation such as numbing.

Now in his early 40's, Liam has a history of physical and emotional abuse at the hands of his violent alcoholic father, a retired boxer, who "*beat me from one end of the house to the other*" up to the age of 14 years old. The father's beatings would involve a loss of consciousness, Liam's "*fainting*" and the diagnosed condition of epilepsy.

It became evident, in our sessions, that Liam had experienced a significant amount of trauma primarily to his head. Particular constellations of trauma symptoms were identified in the head/eyes/neck, arms and thoracic regions and reflect the impact or rather imprint of trauma.

Outlined below are details of the symptoms of trauma Liam experienced that are delineated in **Diagram 6: ANS Arousal or Modulation Model: Spectrum of Trauma Symptoms.**

Symptoms of Trauma as Expressions of ANS Sympathetic Hyper-arousal:

The symptoms experienced of hyper-arousal at the physical/physiological level included the following: **Chronic pain and tension patterns, painful sensation** that were experienced in the head/ocular-eyes/neck region included: pain around Liam's head and across his forehead; uncomfortable sensations of temperature predominantly heat, "*burning*", like being "*on fire*", blisters on his scalp and around his lips; explosive pressure and "*noise*" sound, tinnitus in his head which Liam likened to the "*screaming of cicadas inside*", headaches, nose bleeds, sneezing and dizziness. [25]

[25] These are illustrated in the **Body Map Excerpts** found in **Appendix 2.**

The heat in Liam's head would vary from global to more focal, he described how the heat would *"come up... then out... a blur"*. *....trying to make sense of it...to bring it together...like a puzzle"*, and he would be trying to make sense of and understand what was happening. Liam felt disturbing heat and pain around scalp/ head, eye sockets, and *"burning "* hot, irritated blood-shot eyes, with blurred or fixed vision. [26]

Liam aptly described what he called the *"stare"*: there was at times a fixity or rigidity in vision/gaze with a blank, glazed 'trance' look that had the appearance of shutting out or shutting down.

He suffered neck pain, stiffness and spasms or twitches.[27] These spasms were observed to have a 'staccato' movement; sharp jerky abrupt robotic movements usually accompanied with *"the stare"* and the unconscious scratching of his arm. Half way through Liam's second period of individual therapy he was diagnosed with spurs (calcified deposits) on his cervical spine at C5 and C6 ; and he had some realization (less denial) of the impact and extent that he had had *"lots of bangs to the head"*, his *"head took many blows"*.

There was **perceptual and muscular hypervigilance**, Liam's sense of hearing acutely 'supersensitive', alert and *"geared up"* around bedtime to hear *"the noise of the gate"*, awaiting his father's drunken evening homecoming and *"anticipating a violent beating"*. Liam called this his *"anticipatory anxiety"*. He also described being *"turned or switched down"*, *"so quiet so not to be heard"*, with *"slow motion movements"*, *"holding the breath"* and *"just the stare"*... slow movements or remaining motionless to prevent detection. These memories, or rather the (re)experiencing of these symptoms were also contributing to Liam's disturbances in his sleep patterns.

Liam experienced chronic pain and patterns of tension in his arms (shoulders) thoracic regions. The stiffness and aches across the shoulders and in the elbows he described, again aptly, as *"like a boxing*

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[26] Liam developed a 'legend' for the colours he used in his Body Map drawings: black = pain, red = heat, burning and pain; yellow or green = nausea/vomiting; purple = fat; green or blue = cold.

See **Appendix 2: Body Maps Excerpts 1 to 9**.

[27] See **Appendix 2: Body Maps Excerpts 8, 9, 26, 27, 30, 43 to 48**.

or fight stance", 'on guard' with *"everything so ready"* prepared, mobilized to defend, protect and fight.

Liam's descriptions of the painful sensations in his arms[28] included: *"aches" "throbbing" "burning"* and *"itchy"* as if with a rash. As a boy Liam would scratch his arm until there was a bleeding wound. Self-mutilation behaviours (such as excessive/compulsive scratching and cutting) occur frequently for family abuse survivors like Liam and serve to either contain or externalize the affect (emotions) and other symptoms generated by the trauma. Such behaviours can also be an attempt at relief or a means by which rage/anger at the perpetrator is directed towards the self instead. Liam also experienced sensations of skin irritation with aversion and repulsion *"like something is under the skin"*, and, *"electric shocks"* in his arms when touched.
Later in therapy there was some realization (less denial) that, as a boy, his *"arm was not powerful enough to guard against or absorb the blows"*, and that his thoracic region and ribcage could not shield vital organs.

The pain, tightness and stiffness in neck, shoulders and thoracic areas were felt particularly upon waking. Liam experienced sleep disturbances and would *"wake up like being punched in the ribs"*, *"like fists at the back of ribcage"*, and there was pain in his intercostals muscles and especially the 2nd and 3rd rib that Liam described *"like a knife point."* These patterns of pain/tension, of waking up stiff/aching/sore in the ribs *"like been a punching bag"* are examples of re-experiencing the symptoms of trauma.[29]

He had sleep disturbances: heightened anxiety at bedtime, anxiety and heat like *"butterflies to fire"* in his stomach; waking during the night with a gasp or startle reflex. Liam described waking up in the morning rigid, stiff and aching particularly in the neck, shoulders and thoracic regions. Liam also experienced nightmares *"dreaming of spiders crawling all over body."*[30]

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[28]See **Appendix 2: Body Maps Excerpts 10 to 18.**
[29]See **Appendix 2: Body Maps Excerpts 19 -21** and **Body Map: 55 Trauma**

[30]Refer to **Appendix 2: Body Map Excerpt 9.**

Liam experienced **intense emotions of rage/anger, terror/fear.** The symptoms of hyper-arousal (experienced emotionally) included also: feeling overwhelmed, *"explosive" "burning up"* (Liam's sensations of expanding pressure and heat were distressing and he felt out of control and unsafe. He had intense anger, he was particularly angry at and fearful of *himself* - at his reactions and perceived loss of control and being no longer able to suppress (with alcohol) or *"fight"* to keep this huge energy down.

Other symptoms of hyper-arousal were **self-destructive** and **addictive behaviours**: these included drinking alcohol in order to *"wipe himself out"* or to sleep, as an attempt to contain or *"cocoon"*, to dampen down and *"not feel"* or to *"switch off the noises"* in his head. While the quantity of alcohol Liam claimed he consumed was not excessive and had been significantly reduced when he entered therapy, his perception and reaction to his drinking set up a repetitive compulsive cycle of feeling out of control or alcoholic and *"bad"* like his father. This cycle compounded, fueled and perpetuated his high level of sympathetic arousal. There was suicidality and a suicide 'plan' however fortunately this 'plan' was revealed and explored in therapy and not acted upon.

Symptoms of Trauma as Expressions of ANS Sympathetic Hyper-arousal and Parasympathetic Hypo-arousal:

The symptoms of trauma included both ANS sympathetic hyper-arousal and parasympathetic hypo-arousal at the physical/physiological level:

Liam described experiences he had as a boy of *"slowing down"*, *"stiffening"*, *"holding the breath"*, being *"mute"*, *"lying stiff like a board on the floor against the wall and skirting board"* next to his bed, and *"pulling in to make myself invisible"*. This experience relates to Ogden, Minton and Pain (2006) description where there appears to be a "high level engagement and hypervigilance coupled with feelings of being paralyzed, being scared-stiff, terrifyingly incapable of moving and unable to breath" and certainly associated with the reality of Liam's "utter entrapment with no possibility of action successfully averting the threat."(Ogden, Minton and Pain 2006:94).

Symptoms of Trauma as Expressions of ANS Parasympathetic Hypo-arousal:

Liam's experience of *"slowing down"* and stiffening appeared to have progressed at times to a *"shutting down"* that reflected a more parasympathetic response with amnesia around the violence

that ensued. Attempting to appear physically smaller Liam described, "a *pulling in to make myself invisible*. Contracting and constricting to be less noticeable and less threatening to a perpetrator reflects the parasympathetic hypo-arousal "immobilization" response.

Other trauma symptoms of ANS parasympathetic hypo-arousal that Liam experienced included his childhood experience of fainting and the condition that was diagnosed as epilepsy. Liam recalled memories of "*waking up in his mother's arms*" after the beatings, having been knocked unconscious by his father or overwhelmed "*not knowing what happened or how got there*". These symptoms reflect again the parasympathetic hypo-arousal "immobilization" or fold response.

Liam was re-experiencing other traumatic symptoms of ANS hypo-arousal: There were demonstrations in therapy sessions of a slowing of cognitive functioning; of confusion, disorientation, "*not sure of what is happening*" and being "*lost*". [31] There were the concomitant emotions of despair, doubt, denial "*I was a just a boy, too hard to believe*", self-doubt "*I must be mad*" and self-loathing. Liam's mother would, although less frequently and severely than his father, "*hit then hug*" him. There was shame or guilt believing that if she beat him he "*must have deserved or provoked it.*"

Other traumatic symptoms of hypo-arousal at the physical/physiological level included: feeling nauseated, "*livery*" and "*weak*". This weakness was related to being unable to keep a "*huge energy down*" "*so much stuff that's under the surface*" with "*everything so heavy*" and "*no energy to fight*". Liam believed he had to "*fight to keep it down inside*" [32] if not, he feared that the physical and emotional experience "*would become 100 times worse*".

The sensations of weight and heaviness were felt in Liam's whole body, he described feeling "*leadened*" like a "*lead weight*" in his arms and/or thoracic area he described was like being "*being pinned down*", his arm "*so heavy like a dumbbell*". There was numbness and also "*pins and needles*", "*shaking*" and "*trembling*" in his arms.[33] These too, are examples of the fold, collapse or "immobilization" response.

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[31] See **Body Map Excerpts 22 to 30**.
[32] See discussion in **Chapter 7** on 'alterations in self-perception or self-identity'.
[33] See **Appendix 2: Body Map Excerpts 31 to 40**.

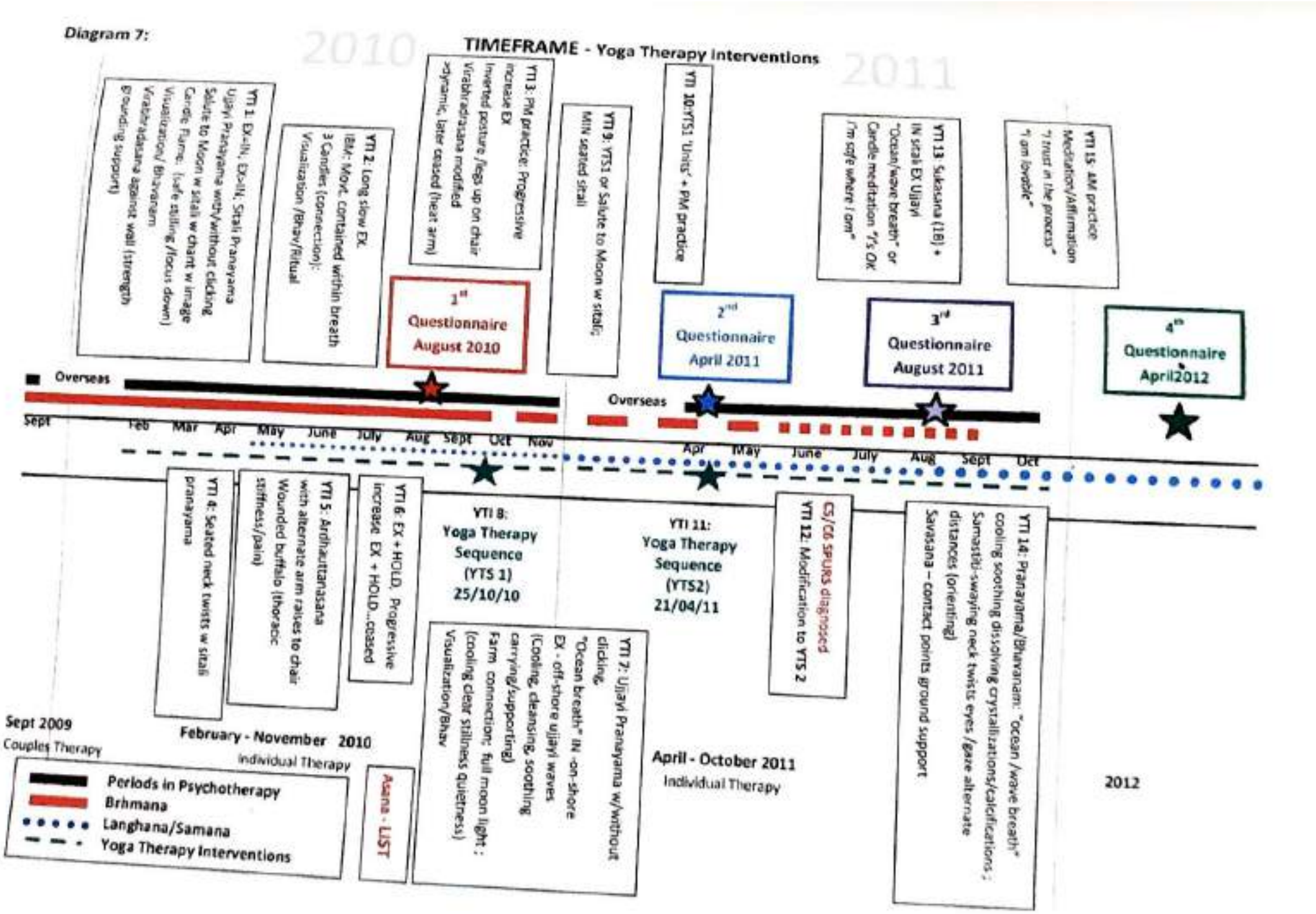
Diagram 7:
TIMEFRAME - Yoga Therapy Interventions
2010
2011
YTI 1: EX-IN, EX-IN; Sitali Pranayama
Ujjayi Pranayama with/without clicking
Salute to Moon w sitali w chant w image
Candle Flame; (safe stilling /focus down)
Visualization/ Bhavanam
Virabhadrasana against wall (strength
Grounding support)
YTI 2: Long slow EX.
IBM: Move, contained within breath
3 Candles (connection);
Visualization /Bhav/Ritual
YTI 3: PM practice: Progressive
increase EX
Inverted posture /legs up on chair
Virabhadrasana modified
>dynamic, later ceased (heart arm)
1st Questionnaire August 2010
YTI 9: YTS1 or Salute to Moon w sitali;
MIN seated sitali
YTI 10:YTS1 'Units' + PM practice
2nd Questionnaire April 2011
YTI 13: Sukasana (18) +
IN sitali EX Ujjayi
"Ocean/wave breath" or
Candle meditation "I's Ok
I'm safe where I am"
3rd Questionnaire August 2011
YTI 15: AM practice
Meditation/Affirmation
"I trust in the process"
"I am lovable"
4th Questionnaire April2012
Overseas
Overseas
Sept
Feb
Mar
Apr
May
June
July
Aug
Sept
Oct
Nov
Apr
May
June
July
Aug
Sept
Oct
YTI 4: Seated neck twists w sitali
pranayama
YTI 5: Ardhauttanasana
with alternate arm raises to chair
Wounded buffalo (thoracic
stiffness/pain)
YTI 6: EX + HOLD. Progressive
increase EX + HOLD...ceased
YTI 8:
Yoga Therapy
Sequence
(YTS 1)
25/10/10
YTI 7: Ujjayi Pranayama w/without
clicking
"Ocean breath" IN -on-shore
EX - off-shore ujjayi waves
(Cooling, cleansing, soothing
carrying/supporting)
Farm connection; full moon light ;
(cooling clear stillness quietness)
Visualization/Bhav
YTI 11:
Yoga Therapy
Sequence
(YTS2)
21/04/11
CS/C6 SPURS diagnosed
YTI 12: Modification to YTS 2
Savasana – contact points ground support
YTI 14: Pranayama/Bhavanam: "ocean /wave breath"
cooling soothing dissolving crystallizations/calcifications ;
Sumastiti-swaying neck twists eyes /gaze alternate
distances (orienting)
Asana - LIST
Sept 2009
Couples Therapy
February - November 2010
Individual Therapy
April - October 2011
Individual Therapy
2012
Periods in Psychotherapy
Brhmana
Langhana/Samana
Yoga Therapy Interventions

Chapter 6:

YOGA THERAPY INTERVENTIONS

The primary objective of the research was to evaluate the complementarity and efficacy of combining Yoga Therapy *and* somatic-oriented Trauma Therapy. Yoga Therapy Interventions are applied as the 3rd 'tool' or 'upayam' in the research. This chapter outlines the progression and evolution of the Yoga Therapy Interventions (YTI's) that were introduced as a component within the psychotherapeutic process. These interventions range from discrete additions or supplements to the existing yoga practices of the Subject to the introduction of two more formal structured 'courses' or Yoga Therapy Sequences (YTS).

Diagram 7: Timeframe Yoga Therapy Interventions outlines: the approximate timeframe and timing of the YTIs that were incorporated into the psychotherapeutic process; the 4 occasions the Subject/Client completed the Hyper/Hypo-arousal Questionnaire; and, **YTI 8** and **YTI 11** when the two more 'classic' yoga therapy personalized sequences were developed and introduced into therapy.

The Subject, Liam, was a yoga practitioner and yoga teacher, conducting a Saturday morning yoga class for the past ten years. At the outset it was suggested we look at Liam's individual yoga practice with the view to refining it to align with the psychotherapy if required. The exact nature of Liam's yoga practice however, was not revealed until September 2010 when he brought into therapy his practice that comprised of a list of asanas.[34] In the first month of therapy Liam also disclosed he sometimes practiced the Salute to the Sun sequence as well as the asana Virabhradrasana and Sitali Pranayama.

Yoga Therapy Intervention (YTI) 1 to **YTI7** were primarily aimed at stabilizing the high level of dysregulation and physiological activation, predominantly hyper-arousal of Liam's nervous system.

[34] See **Appendix 3: Yoga Therapy Practices/Sequences: Diagram 3**

That is in Yoga Therapy terms, pacifying the predominant pitta[35] aggravation evident in his symptoms of trauma in relation to the degree of heat in his system; there was also vata aggravation in relation to the degree of pain that Liam experienced.

A secondary aim was to 'target' the regions of Liam's body that manifested chronic pain or patterns of tension: the head/eyes/neck region; the arms; and, the thoracic region.

A third aim was to harness and utilize what Liam had done in his past or was currently doing that he considered was of some benefit.[36] Starting or 'meeting the client where they are at' is a fairly universal approach in a number of therapies; it is related to encouraging a sense of ownership and agency, input and influence in the nature and pace of therapy, it is related also to the client's readiness or receptivity to engage and change. This approach illustrates the 'intelligent steps' or 'vinyasakrama' of therapy.

At age 7-8 years old, Liam had a cubby house or hide-out, a space he would retreat to avoid the violence and seek safety. He described how he would sit cross-legged, rock and with each breath use *"a noise at the back of his throat a clicking"* to calm himself. This 'precocious pranayama' was utilized in the 1st YTI, incorporated into Ujjayi Pranayama with the option made available to Liam to include or not include the clicking sound: the experience of having choice and flexibility is of paramount importance to trauma survivors.

In this solitude, Liam would also light a candle; he found the flame *"slowed"* his thoughts and induced the states or qualities of *"focus"* and *"peace."* Reframed in therapy as the actions of a 'wise little yogi', this cubby house and these rituals or 'Yajna', were a saviour that offered him some solace. The actual lighting of a candle ritual/Yajna or image of a candle as a Bhavanam, that is, as a visualization with the embodied or 'felt sense' of the qualities of stillness/calm, were explored somatically and used in therapy.

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[35] Pitta, kapha and vata: the 3 humors or dhatus. Pitta is associated with heat, fire digestion; vata air/wind, movement is associated with dryness and coldness; and kapha is associated with heaviness, coldness, oily and sweetness.

[36] See **Image1: Eye Symptoms Appendix 3: Yoga Therapy Practices/Sequences.** Liam used an eye wash and wet face cloth to sooth his bloodshot and burning eyes. This was part of building and reinforcing any beneficial aids or 'somatic resources' as it is called in Trauma Therapy.

This ritual was later developed to include three candles as a ritual/Yajna or Bhavana - one candle for Liam the boy; one for his mother, a significant (albeit ambivalent/unstable) loving relationship; one candle for the adult man now, present tense, who survived the abuse and had the inherent wisdom/'Buddhi' to know how to 'still' the mind and attain some calm amidst violence.
These interventions are at the 'Manomaya', 'Vijnanmaya' and 'Anandamaya' levels[37] of the Panca Maya Model.

Adult Liam found connection and sanctuary in being with and in nature; these experiences were also utilized in therapy: the ocean waves at the beach; Liam's experiences when staying at a country farm with a male friend and his two sons; and, the full moon light at the farm were all harnessed for therapeutic purposes.
The rhythm of the ocean waves was capitalized on with Liam anchoring his breath to the visualization of the on-shore (inhale) and off-shore (exhale) wave motion, the ebb and flow introducing rhythm (one could say a benevolent 'bi-nodal' oscillation), movement and the experience of change- 'parinama' (in particular, 'dharma-parinama'[38]).
Full moon light at the farm was photographed and used as an actual or vizualized image imbued with clarity and cooling qualities. The relationship and connection Liam had with his friend's two young boys could only be described as love, play, joy and delight, where trust and safety were obviously present. That 'ahimsa' - care or no harm/violence between adult males and boys was possible, as well as evidence that he cannot be such a *"bad"* person if these children are so drawn to him, was Liam's learning.
An encounter with a bird at the farm echoed Liam's experience with children: a wild parrot came/flew to Liam and stayed within close proximity, some trust and safety were present and taken to reflect his inherent gentleness (in contrast to his hate-filled *"bad"* self-image), and the qualities of beauty and freedom were also significant and poignant for him.

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[37] Vijnanmaya level refers to higher mind understanding or special intelligence; it contains the 'wisdom' faculty –Buddhi, and is associated with Sraddha – faith, trust, conviction and a valuing of the self.

Anandamaya is the layer of feelings and emotions of a deeper, more fundamental existential nature, in contrast to the learned emotions of the Manomaya level - the 'functional' or lower mind layer.

[38] Dharma-parinama means change in the form of substance.

Outlined below are the Yoga Therapy Interventions that formed part of the treatment for trauma. (Quotes from Liam have been *italicized*.)

Yoga Therapy Intervention (YTI) 1:

YTI 1 entailed the following components: Initially working with pranayama[39] with the Inhale = Exhale, progressing towards extending exhale more than the inhale, EX>IN; Inhale -Sitali Pranayama; Exhale - Ujjayi Pranayama with or without clicking.

Modified Salute to Sun sequence to Salute to Moon sequence with Sitali Pranayama and chant 'om somaya namaha' with the optional use of moon image, in order to foster more cooling, relaxing or 'Langhana' components and balancing or 'Samana' components into his practice. Extending the exhale was introduced to foster the relaxation response. [40]

Sitali Pranayama (with head raises) was introduced at the outset due to the degree of heat/fire/excitation in his nervous system particularly manifesting in his head, as "*explosive pressure*" and "*burning heat*", as blisters around his lips and on his scalp, sore burning or blood-shot eyes, nose bleeds, ringing in ears, skin irritations/rashes etc. [41]

One Candle Flame: as a Meditation Ritual/Yajna or as a Bhavanam/Visualization with the crucial emphasis on the qualities or embodied 'felt sense' of "*peace*" and capacity to still or "*slow*" his thoughts down.[42]

Virabhradrasana: against the wall three times (3 x) dynamically then stay three breaths.

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[39] The Pranamaya or energetic level or layer in the Panca Maya Model of human consciousness is associated with the physical/physiological; more subtle than the gross physical body of the Annamaya level. Prana enlivens, the primary expression of this level is the breath and a fundamental element is space or 'akasa'.

[40] See **Appendix 3: Yoga Therapy Practices /Sequences: Diagram 1: Salute to the Moon.**

[41] See **Appendix 2: Body Map Excerpts 1 to 9.**

[42] Refer to **Appendix 3: Yoga Therapy Practices /Sequences: Image 2: Candle Flame Bhavanam.**

Virabhradrasana or 'warrior pose', was selected because of Liam's experience at times of physical instability, depletion and weakness: strength and stability were in effect the missing and opposite qualities in his actual experience. Liam's perceived "*weakness*" was not only physiological, feeling no longer able to "*control*" what he was experiencing, but also in relation to his compliance in an abusive and unstable personal relationship and with an exploitative workplace manager. Lastly, Virabhradrasana was selected since it was a familiar asana Liam was already practicing. Emphasis was on the qualities or embodied 'felt sense' of strength,stablility, support, grounding, capacity to set limits and boundaries.

Yoga Therapy Intervention (YTI) 2:

Long slow exhale; then progressive lengthening of exhale. Introduced into the Salute to the Moon sequence, IBM (Intention Breath and Movement) that is, all movement being contained within the breath.

Development of the one Candle Flame meditation/ritual: modified to using three Candles as a Ritual/Yajna or as a Bhavanam /Visualization to foster some 'connection' or link between past and present. Distinguishing a chronological time sequence of past, present and future relates also to the experience of change- 'parinama' (in particular 'laksana-parinama'[43]) and may (re)establish some ability to know or have a sense of self in time i.e., 'autonoetic consciousness' and ideally encourage some integration.

Yoga Therapy Intervention (YTI) 3:

The 3rd YTI involved the introduced an evening (PM) practice to address Liam's disturbed sleep. Progressive increase in exhale; Inverted posture lying on floor with legs up on chair.

Virabhradrasana was modified from static to dynamic; the stay or hold in position for three breaths was removed since it was found to be too heating and aggravating. Liam's feedback was that his arms would "*ache*" and that he would feel more "*heat*".

[43]Laksana-parinama – change in the form of time- past, present and future.

Yoga Therapy Intervention (YTI) 4:

Seated Sitali Pranayama; Seated Neck Twists with alternate arm raises, due to the degree of heat/fire/excitation in his nervous system and to introduce movement particularly targeting his ocular/eyes and neck regions (by following the middle finger as the arm is raised and bent to the opposite shoulder). [44]

Yoga Therapy Intervention (YTI) 5:

Ardhauttanasana to chair with alternate arm raises[45]; Wounded buffalo. Both these asanas aimed to encourage dynamic movement in Liam's stiff and painful thoracic region, described as *"tight"*, *"rigid"*, *"red burning heat"*, *"very stiff"* and with *"stabbing pains."*[46]

Yoga Therapy Intervention (YTI) 6:

YTI 6 entailed further experimentation with the exhalation, again to foster the relaxation response and some release of tension. Included were the progressive increase in exhale; exhale with the progressive increase in the hold/suspension -'bahya kumbhaka' [47] after the exhale. Holds after exhale were later ceased, due to Liam's feedback of experiencing panic and describing it was like *"nothing was there"*, clearly it was too premature to introduce this component of breath and it was not re-introduced into the latter therapy period.

Yoga Therapy Intervention (YTI) 7:

Ujjayi Pranayama and the option to include or not include the clicking sound.

Repeated Liam's *"Ocean/wave breath"*: (on-shore -inhale, off-shore -exhale) with Ujjayi Pranayama and with an emphasis on the qualities of water being cooling, cleansing, soothing, carrying and supportive.

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[44] See **Appendix 3: Yoga Therapy Practices/Sequences: Diagram 2**.

[45] Included in later **Yoga Therapy Sequence 1** step **9** See **Appendix 3: Diagram 4**

[46] See **Appendix 2: Body Map Excerpts 19** to **21, 34, 36, 38** and **40**

[47] Inhalation - Retention ('antah kumbhaka') - Exhale - Suspension ('bahya kumbhaka') - constitute the four components of breath.

Introduced another visualization/Bhavanam that of the full moonlight at the farm; with emphasis on the 'felt-sense' and qualities of cooling, clearness and clarity, stillness and quiet.

Yoga Therapy Intervention (YTI) 8: - Yoga Therapy Sequence 1

Development of the 1st personalized, individually tailored **Yoga Therapy Sequence 1 (YTS 1)**, on 25/10/10, based predominantly on Liam's individual practice or List of Asanas.[48]

It was apparent early in the therapy that Liam was very attached[49] to his this practice which took over one hour. Liam's individual practice (List of Asanas) obviously pleased him as an indication of his level of fitness, it also felt sacrosanct, like a 'life-line' for him. Careful, sensitive and collaborative alteration of his list of asanas and development of the first more formalized Yoga Therapy Sequence (**YTS 1**) was undertaken in the therapy sessions and as a process of experimentation or trial and feedback over several sessions. This method aimed to ensure Liam did not feel imposed upon or that something had been taken away from him, rather that he gained a sense of ownership and agency, input and influence in the process.

Liam described how he did his practice as a means of preparation before he conducted his Saturday yoga class so that he *"could teach from the heart"* and ensure he *"did not bring into the class* (his) *stuff"*. His ability to alter, manage and contain, what Liam described as his *"stuff"*, was evidence of some capacity for self regulation and a 'positive samskara' that was emphasised and reinforced in therapy, as was the reality he must have had some beneficial connection and relationship with his students for the class to have continued for ten years.

YTS 1 consisted of the following: more appropriate sequencing or the order of placement of most of the asanas in Liam's list. Throughout **YTS 1** the sequence incorporated IBM (Intention-Breath-Movement) - any movement being co-ordinated and contained within the breath.
The sequence was made more dynamic and used 'vinyasakrama' for entering and exiting some asanas (see **5**, **7** and **9**), aiming to progressively reduce (or eliminate) the number of stays in

[48] See **Appendix 3: Diagram 3: List of Asanas** and **Diagram 4: Yoga Therapy Sequence (YTS) 1.**
[49] 'Raga' or excessive attachment is one of the five 'kleshas' or obstacles to clear perception/mind.

positions: Liam had been doing stays in most asanas on his list from one up to three minutes that would have been too heating/aggravating and Brhmanam in effect.

YTS 1 included cooling Sitali Pranayama, Ujjayi Pranayama and the *"Ocean/wave breath"* with Bhavana. Choice and flexibility was offered in relation to how Liam ended the AM or morning practice (10 being a repeat of 1 and completing with 11 or, minimally just 11), and in the PM or evening practice (repeating 1, 2, and 3 of the AM practice and 11 or, minimally just 11) depending on Liam's assessment of his need and time constraints.

Yoga Therapy Intervention (YTI) 9:

With the intention to foster a sense of empowerment or agency, choice and flexibility was offered in the options of **YTS1**, or Salute to the Moon, or as a bare minimum seated Sitali Pranayama.

Yoga Therapy Intervention (YTI) 10:

Yoga Therapy Sequence 1 was broken down into components or 'units', with the evening (PM) practice as before.

Again, with the intention to foster a sense of empowerment or agency, further choice and flexibility was offered in regards to how Liam undertook **YTS 1**.

Options were made available of dividing **YTS 1** into 'units' or components for example 1,2,3, and 11 or without any stays if Liam felt he was *"burning up"* with aggravated pitta.

Also presented as alternatives were the choice of **YTS 1**, or Salute to Moon sequence with Sitali Pranayama, or as a bare minimum, seated Sitali Pranayama.

The selection of options respected Liam's competency as a yoga practitioner and teacher and provided choice based upon his assessment of what would be appropriate or most beneficial at that particular point in time.

Yoga Therapy Intervention (YTI) 11:

Development and introduction 21/04/11, of the 2nd personalized, individually tailored **Yoga Therapy Sequence (YTS 2)**[50], due to a change in jobs and work activities. Liam changed from a sedentary supervisory position to a job that was more physically demanding entailing physically exerting, manual labouring work activities.

The initial order (Version 1) of **YTS 2** was deliberately designed to be similar to the order of **YTS 1**, for it not to be a radical and potentially de-stabilizing change for Liam, however by June **YTS 2** was re-ordered. See NOTE. [51]

This **YTS 2**Version 2 was not practiced for long as Liam was diagnosed with calcified deposits (spurs) located in his neck/ cervical spine at C5 and C6.

Yoga Therapy Intervention (YTI) 12:

Modification to **YTS 2** subsequent to diagnosis of cervical spurs at C5 and C6.

In **YTS 2**(V2) **1**vinyasakrama the last two components – Ardhauttanasana – half forward bend with arms folded behind the back and then with the arms at right angles were modified.

YTS 2(V2) **2** vinyasakrama the last two parts - Cakravakasana[52] and Ardhomukhasvanasana[53]were also modified. These asana were to be undertaken either with caution, ensuring critically that Liam's head aligned with his spine i.e., not raised, or preferably were to be omitted completely from the sequence if Liam was experiencing pain in his neck.

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[50]See **Appendix 3: Diagram 5: Yoga Therapy Sequence (YTS) 2**.

[51]**NOTE**: The re-ordering of **YTS 2** Version 1(V1) to Version 2 (V2) entailed:
YTS 2 V1 component 5 vinyasakrama became the 1st component in V2;
V1 component 4 became the 2nd component or vinyasakrama in V2; 3 remained in the same order;
V1 component 2 became the 4th component in V2; V1 1A/B seated Sitali Pranayama became 5th component in V2;
components 6 and 7 remained the same as choice options for Liam.

[52]Cakravakasana -mythological bird pose more commonly called cat pose.

[53]Ardhomukhasvanasana – downward facing dog pose.

Yoga Therapy Intervention (YTI) 13:

The 13th Yoga Therapy Intervention entailed further refining, streamlining and maintenance of choice from a 'menu' or options.

YTS 2 'unit' or component - **5B** Sukasana (seated on floor with crossed legs) with any combination of the following -

Inhale Sitali Pranayama and exhale Ujjayi Pranayama; *"Ocean/wave breath"*;

One or three Candle meditation with visualization/Bhavana or the actual ritual/Yajna with one or three candles;

Candle meditation with affirmation *"I'm OK", "I'm safe where I am."*[54]

Yoga Therapy Intervention (YTI) 14:

The 14th Yoga Therapy Intervention involved choice from the following selection -

Pranayama *"Ocean /wave breath"* with Bhavanam with the qualities of cooling soothing lubricating the C5 and C6, and ideally washing away, dissolving and eroding the spurs -the crystallized or calcified deposits.

Samastiti (standing posture), with slow clockwise and anti-clock wise rotations, slight neck twists, progressively increasing circular expansion of gaze or distance of vision.

YTS 2 5A Seated in a chair or 5B Sukasana position cross-legged on the floor, and the incorporation of same abovementioned slow clockwise and anti-clock wise rotations, slight neck twists, progressively increasing circular expansion of gaze or distance of vision.

The intention or aim was to bring movement, motility and mobility, as well as flexibility to Liam's head, ocular/eyes and neck region.

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[54] Affirmative statements, as with mantras, when combined with visualization of their meaning and 'felt qualities' can change vyuthana samskaras or negative patterns to nirodha samskaras or positive patterns.
With this affirmation of 'being safe' *"I'm safe where I am"*, if the sound, words and meaning are combined with the 'felt sense" that resonate in the body, this is called 'nirvastuka'. It can indicate that Sraddha (at the Vijnanamaya level) - faith, trust and a valuing of self is present and unfolding.

Savasana or 'corpse pose'- lying on the floor with the 'felt sense' and qualities of support, grounding and the release of tension and relaxation response.

Yoga Therapy Intervention (YTI) 15:

Morning (AM) practice Meditation/Affirmation *"I trust in the process"* or *"I am lovable."*

The 15th Yoga Therapy Intervention was streamlined independently by Liam, down to an essence and the bare essentials of what he felt was manageable and that also maintained some thread or positive intention 'sankalpa' for him. That these affirmations or positive statements or 'sankalpa'[55] of *"I trust in the process"* or *"I am lovable"* were self-generated was taken as evidence of a developing sense of agency in Liam's life.

Liam's 'positive' experiences such as the candle, the ocean waves, the full moon, the farm and the relationship and connection with his friend and two sons, were utilized in the YTI's and throughout the therapy as Bhavanam or visualization imbued with a 'felt sense' or specific embodied qualities. All consistent with the premise that the most effective kind of visualization or imagery is somatic and kinesthetic imagery – imagery that elicits the feeling or 'felt sense' and sensation of something happening in the body.

"In order to extinguish all of the traumatically-based procedural/implicit memory that perpetuates the kindled cycle of trauma, it is of critical importance to reconnect somatic awareness. The guided somatic and kinesthetic imaging aspect is essential to the efficacy of trauma therapy ...ultimately imaging is intimately involved in all somatically-based therapies." (Robert Scaer in Naparstek: 314)

Bhavanam or visualization imbued with a 'felt sense' or the embodiment of pertinent qualities, is used as a method of reinforcing or building 'positive samskaras' and well as providing refuge or "islands of safety." (Levine 2010:79) Trauma survivors are asked to remember, re-experience and embody the 'felt-sense' of times or places of safety or relief... something that offers a positive experience, the bi-polar opposite to the experience of trauma symptoms. This becomes their "island of safety" or "oasis" imagery that they can re-imagine and re-experience when they become flooded with distress.

[55] Sankalpa is Sanskrit for 'vow' sam = very well kalpa = create.

A technique in somatic-oriented trauma therapy, that deliberately enlists and utilizes opposites or the oscillation of the 'dualities' is called "**pendulation**". It involves moving between highly chaotic traumatic material and the calming "island of safety" imagery. This movement back and forth enables an unwinding and a discharge of the activation held in the ANS and space - 'akasha' to metabolize and integrate the experience of trauma as well as for any impulses held implicitly in the body to discharge their pent up energy and complete.

Patanjali's Yoga Sutra 2:10 makes reference to recognizing inherent impulses that can eliminate the causes of suffering at a subtle level, according to Bouanchaud (1997:87) by 'pratiprasava' or "the production or cultivation of a countermovement." Feuerstein suggests the subliminal activators, the vasanas and samskaras "can be destroyed by means of pratiprasava" that is, by means of a "counter-flow."(Feuerstein 1979:65)

Patanjali's Yoga Sutras 2:33 and **2:34** also address the cultivation of the opposite and 'pratipaksa bhavanam', cultivating the opposite side or opposing state of mind (Bouanchaud 1997:116). Ideally, this method is not about the suppression of contradictory impulses but rather to work with them back to their source to understand them and be able to foresee their impacts.

The critical element of the process of pendulation is to proceed slowly, 'titrated' a little bit at a time - 'kseman', with time to allow for 'cooking' and digestion, metabolization and integration to occur before moving on. Catharsis and abreactions, or strong emotional reactions are potentially too overwhelming and risk compounding, exacerbating, fuelling or 'kindling' the cycle of trauma: they have a disintegrative rather than integrative effect.

Chapter 7:

QUESTIONNAIRE RESULTS and BODY MAPS

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This chapter presents graphically and discusses the results of the Questionnaire designed upon the characteristic categories of trauma symptoms expressed as hyper-arousal or hypo-arousal of the ANS.

The Questionnaire content relates to **Diagram 6: ANS Arousal or Modulation Model: Spectrum of Trauma Symptoms**, as well as **Chapter 5: Subject/Client's Symptoms of Trauma** that covers in detail the Subject's (Liam's) symptoms of trauma that the Questionnaire systematically and progressively quantified, illustrated and recorded.

Six (6) graphs were produced from the results of the H/H Questionnaire completed by the subject on four (4) separate occasions each colour-coded accordingly: **August 2010**, **April 2011**, August 2011 and **April 2012.** The graphs comprise of:

GRAPH 1: **Category 1**: Sleep difficulties/disturbances and **Category 2**: Somatic/physical /physiological experiences

GRAPH 2: **Category 3**: Hyper-arousal: Alterations in regulation of affect and impulses

GRAPH 3: **Category 3**: Hypo-arousal: Alterations in regulation of affect and impulses

GRAPH 4: **Category 4**: Alteration in attention or consciousness

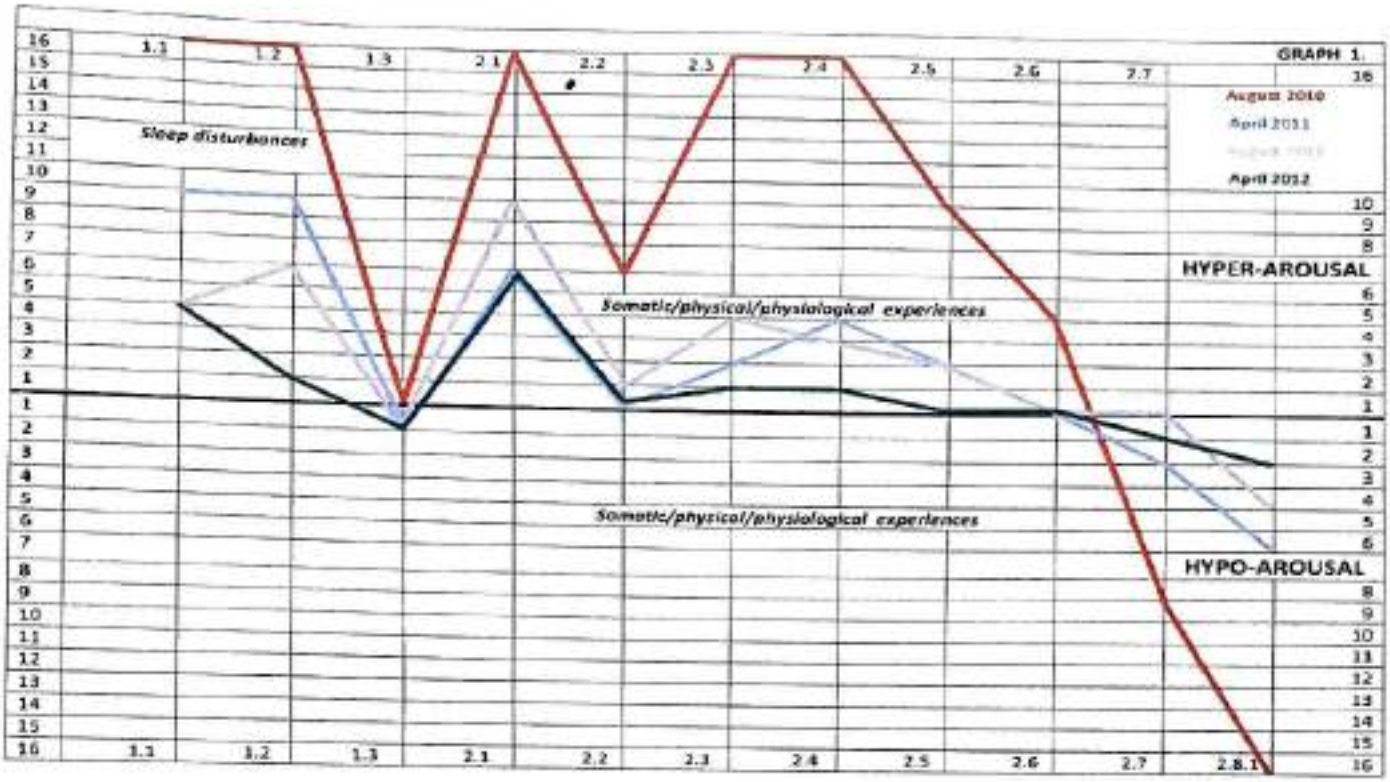
GRAPH 5: **Category 5**: Alterations in relationships with others

GRAPH 6: **Category 6**: Alterations in self-perception

Each graph incorporates a hypothetical, arbitrary and conservative band to illustrate a 'window of tolerance' or optimal ANS arousal, this band is indicated by a light green colour. Discussion of the results focused primarily on symptoms that fell outside this light green band, particularly at the extreme hyper or hypo-arousal levels, as well as any trends evident over the progression of therapy treatment. To the left and right side of each graph is the total rating score for each 'descriptive statement'; the highest being +16 (above the mid-line) for extreme hyper-arousal and -16 (below the mid-line) for extreme hypo-arousal of the ANS.

For ease of reading and reference, accompanying each graph is the relevant Questionnaire Category and the related 'descriptive statements' of trauma symptoms.

QUESTIONNAIRE RESULTS: GRAPH 1



QUESTIONNAIRE– Category 1: Sleep difficulties / disturbances and Category 2: Somatic/physical/physiological experiences

1.	***Sleep difficulties / disturbances***
1.1	Difficulty falling or staying asleep
1.2	Being awoken by bad dreams/nightmares, disturbing images/thoughts, feelings/sensations
1..3	Oversleeping
2.	***Somatic/physical/physiological experiences***
Hyper-arousal	
2.1	Experience of chronic pain, tension patterns in body, stiffness, painful sensation in all/parts of body (musculoskeletal issues) (use Body-Map diagram)
2.2	Shortness of breath when not exerting yourself
2.3	Complaints of nausea, gagging/choking sensations, stomach/digestive upsets without medical condition
2.4	Heart palpitations, beating strongly/irregularly, chest pains
2.5	Dizziness, wooziness
2.6	Seizures / convulsions / fainting
2.7	Blurred vision or vision as if seeing through a veil, through a tunnel, dimmed down/too bright lighting
Hypo-arousal	
2.8.1	Weakness, feeling collapsed, trembling, shakiness

DISCUSSION of RESULTS: GRAPH 1:

Category 1: Sleep difficulties / disturbances:

Descriptive statements **1.1** and **1.2** reflect the disruption on sleep patterns by chronic hyper-arousal. The normal regulation of bodily states and biological cycles of sleep and wakefulness have been chaotically disrupted; bedtime had become a time associated with heightened terror/anxiety rather a time of rest and comfort. Liam described heightened anxiety at bedtime like *"butterflies to fire"* in his stomach; he would frequently be woken during the night with a startle reflex waking with a gasp. He would wake up rigid, stiff and aching particularly as mentioned in the neck, shoulders and thoracic regions. Liam also experienced nightmares that comprised of intrusive sensations *"dreaming of spiders crawling all over body"* (see Body Map Excerpt 9).The use of alcohol in an attempt to manage hyper-arousal and intrusive the symptoms of insomnia and nightmares exacerbated and compounded the distress and self-admonishment. As stated by Herman (1992:37), the traumatic moment(s) encoded in implicit memory, break spontaneously into consciousness, both as flashbacks during waking states and traumatic nightmares and intrusive sensations during sleep.

The intrusive sensations and nightmares showed significant amelioration by the 4th Questionnaire, arousal levels for **1.1** fell from +16 to +4 and **1.2** decreased from +16 to +1, falling within the (hypothetical and conservative) comfort zone. The Yoga Therapy Interventions that were progressively introduced that were exhale-focused were primarily targeted to reducing anxiety and fostering the 'relaxation response.'

Category 2: Somatic/physical/physiological experience:

Descriptive Statement **2.1:** 'Experience of chronic pain tension patterns in body, stiffness, painful sensation in all/parts of body.'

Descriptive Statement **2.1** and the utilization of Body Maps were both aimed at identifying 'somatization' whereby the traumatized individuals experiences emotions as physical problems and there can be an inability to translate or articulate somatic sensations into basic feelings (called 'alexithymia'), that can cause somatization.

As noted in **Chapter 4: Objectives and Methodology**, somatization appears intimately related to numbing and dissociation. Somatization can also, either metaphorically or directly, reflect the nature of the imprint of the traumatic experience.

It is important to remember with trauma, that the person dissociates not only from the external world, from processing external stimuli associated with terror and overwhelm, but also from the internal world, that is, painful stimuli originating within the body. It is confronting to hold or keep in mind that the body of an abused child is physically assaulted, and therefore in pain. Naparstek (2004:78) relates chronic pain conditions to the constant activation of the 'alarm' state that leads to accumulation of metabolic waste products in the muscle fibers and the release of kinins and other chemical pain-generators in the tissue. As Darwin commented so many years ago, pain, is first a stimulant and excites action however cannot be tolerated indefinitely, and if severe soon induces extreme depression or utter helpless prostration. (Darwin.1872:31)

Constellation or Clusters of Trauma Symptoms Identified:

The Body Maps highlighted and identified **constellations** of symptoms predominantly clustered around the **head/ocular-eyes/neck region, the arms**, and **thoracic region.** Correspondence was found between these clusters of symptoms and the instinctual survival responses i.e., the relatively fixed sensory-motor patterns of fight, flight, freeze or fold/immobilization, engaged as a response to traumatic experience.

Liam's constellation of symptoms of chronic pain / tension patterns in the head/ocular-eyes/neck region, in particular what he referred to as the "*stare*" where there was a blank, glazed look, a shutting out or down in appearance and a fixity or rigidity in his vision or gaze.

Liam suffered neck pain and stiffness, he also experience neck spasms or twitches[56] that were observed at times, as mentioned in **Chapter 5: Subject/Client's Symptoms of Trauma**, to have a mechanical and 'staccato' movement; sharp jerky abrupt robotic movements. These neck spasms were usually accompanied with "*the stare*" (as well as the scratching his dominant arm.)

[56] See **Appendix 2: Body Maps Excerpts 8, 9, 26, 27, 30, 43 to 48.**

The "stare" and the neck spasms reflect some **freezing "type 2"** of the orienting response in particular the arrest/alert, scanning and hypervigalent components of orienting: sympathetic and parasympathetic mediated survival responses combined together, both brake and accelerator on at the same time. There was a high level ANS activation with hypervigilance yet also paralysis, utter entrapment and inevitable violence. The orienting response was ineffective in alerting and averting harm. The *"stare"* could also be interpreted to reflect a 'trance-like' state, some disconnect or **dissociation** at the somatic level with his **sense of vision/perception or dissociation** or disconnection with the **sense of pain**, shutting down the sensation/feeling of the pain blows to his head at the time of the traumatic event.

Dissociation is "a defensive disruption in the normally occurring connections among feelings, thoughts, behaviour, and memories, consciously or unconsciously invoked in order to reduce psychological distress" (Briere 1992: 36). Dissociation will be discussed in detail in relation to **Graph 4: Alteration in attention or consciousness**.

Interestingly by October 2011, there was significant reduction in Liam's neck spasms even though spurs located at C5 and C6 had been diagnosed in June 2011.[57]

Another constellation of symptoms, of chronic pain and tension in the neck, across Liam's shoulders, in his arms, particular in his dominant arm and thoracic region were identified: Liam appropriately called his *"fighting/boxing stance"*, with *"everything so ready"* and *"geared up"* charged, activated to fight, the arms ready to defend or protect the vulnerable eyes and head. These patterns of contraction are called "armoring" by Reich (1949) the 'father' of somatic psychotherapy and reflect constriction, discomfort and suffering, i.e., considerable 'dukham'.

The instinctual impulse for fight behaviour, as previously noted, is experienced somatically as tension - muscular contraction in the hands, arms and shoulders; hands tightened into a fist; lifting of the hands or arms; and narrowing of the eyes. There was a high level sympathetic activation 'to fight'

[57] See **Body Maps 41** to **49**

combined with paralysis, overwhelm, entrapment, futility and ineffectiveness, unable as a child to match his father who had been a boxer.

The *"fighting/boxing stance"* reflects **"type 2" freezing** of the **fight response** that was rendered incomplete or ineffective, that is, the instinctual sensory-motor fixed action-pattern of fight (to defend/protect) had "lost its utility" (Herman 1992).

Liam's experience of symptoms, as 'implicit' memory at the somatic level, the chronic pain, the patterns of tension and distressing sensations reflected dissociated fragments of past traumatic event(s), had become a major source of anxiety and fear, forming a vicious repetitive cycle exacerbating and perpetuating the hyper-arousal, his body had become both the enemy and the battleground.

Liam's attachment to his Brhmanam yoga practice with its heating-effect, his over-exertion and excessive physical activities, as well as destabilization from 'abusive' relationships with his partner and work manager, all examples of 'state-dependent' memory at play, were factors that recurrently elicited and contributed to the persistent high level of hyper-arousal.

While there was significant reduction (+16 to +6) indicated by the time of the 4th Questionnaire the reduction however was not incremental with August 2011 results for **2.1** peaking higher than the results of the previous April 2011 Questionnaire. These chronic pain and tension patterns were persistent and were the only Category 2: Somatic/physical/physiological symptoms that remained marginally outside the (hypothetical) window of tolerance by the time of the 4th Questionnaire.

Descriptive Statement **2.2** 'Shortness of breath when not exerting yourself', was interestingly only +6 marginally outside the optimal arousal zone as indicated by the 1st Questionnaire: probably due to being a long-term yoga practitioner.
Descriptive Statement **2.3** 'Complaints of nausea, gagging/choking sensations, stomach/digestive upsets without medical condition' and **2.4** 'Heart palpitations, beating strongly/irregularly, chest pains' symptoms were at excessive levels (+16) of hyper-arousal as indicated by the 1st

Questionnaire results however, within 8 months, by the 2nd Questionnaire, both had fallen to +1, within the optimal arousal zone.

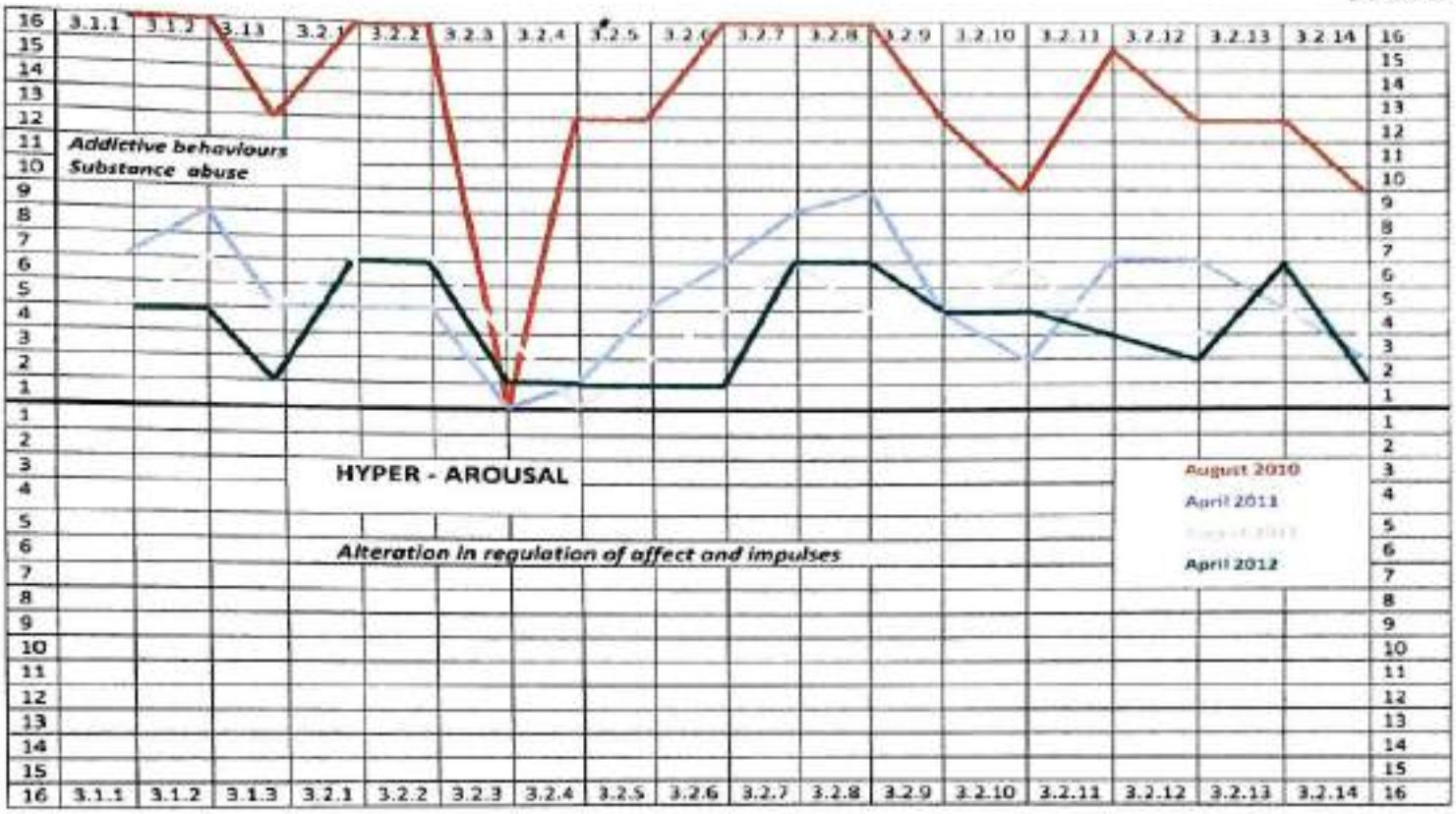
Descriptive Statement **2.6** 'Seizures/convulsions/fainting' results illustrate the limitations either of the subjective 'self report' methods (the Questionnaire constitutes 'self-reports' or rating in regards to the descriptive statements of trauma symptoms) or the Questionnaire rating scales as reliable forms of measurement. While Liam knew he had experienced fainting as a child, diagnosed as 'epilepsy', neither in Liam's reporting or the Questionnaire was there the ability to capture the distress caused by these incidences that was conveyed by him in the therapy sessions. Only in the August 2010 Questionnaire had Liam rated the severity as 4 yet frequency as 1, in all the following 3 Questionnaires he rated frequency and severity both as 0. (Perhaps this reflects dissociation about dissociation!)[58]

Descriptive Statement **2.8.1** 'Weakness, feeling collapsed, trembling, shakiness' showed improvement from -16 to -2.

The August 2010 Questionnaire results shows the extreme 'swings' that Liam experienced between hyper-arousal symptoms and hypo-arousal dorsal vagal symptoms (**2.8.1**). Overall, there was a significant reduction in these 'bi-nodal' alterations; the polarities became less extreme as early as the 2nd Questionnaire in April 2011.

[58] See **Appendix 1: Questionnaire** for the Results Table.

QUESTIONNAIRE RESULTS: GRAPH 2:



QUESTIONNAIRE- Category 3: Alterations in regulation of affect and impulses

3.	***Alterations in regulation of affect and impulses***
3.1	**Addictive behaviors/substance abuse:**
3.1.1	Overworking /being a "workaholic" /over doing-excessive (any) activity / over-exercising
3.1.2	Alcohol, tobacco, non-prescription or prescription drugs
3.1.3	Eating disorders - over/under- eating
3.2	**Dysregulation: Hyper-arousal**
3.2.1	Feeling nervous, tense, stressed, agitated, anxious (***physiological hyperarousal, psychomotor agitation***)
3.2.2	Feeling fearful
3.2.3	Panic, panic attacks, hyperventilation
3.2.4	Frozen terror/immobilized can't move with fear "rabbit in the headlights" "stuck"
3.2.5	Feeling 'dumb-struck', mute, stunned, shocked
3.2.6	Nervous, 'jumpy', easily startled
3.2.7	Feeling "on guard", "on alert", hypervigalent, anticipating danger/ concerned for safety/protection
3.2.8	Feeling overwhelmed by feelings, (***emotional flooding***)
3.2.9	Emotionally reactive, volatile, more than would have expected/ out of proportion/for the situation, hair-trigger reactions, jumping to the defense (***reactive defensive***)
3.2.10	Feeling quickly/easily triggered/provoked, hurt/angry (***reactive defensive)***
3.2.11	Feeling uncontrolled anger, short tempered, volatile
3.2.12	Feeling abusive/destructive/violent (towards self)
3.2.13	Impatience, frustration
3.2.14	Impulsivity/impulsive action, risk taking behaviors

DISCUSSION of RESULTS: GRAPH 2:

Category 3: Alterations in regulation of affect and impulses:

3.1 Addictive behaviors/substance abuse:

Descriptive Statement **3.1.1** Relates to excessive activities and over-exertion that Liam would undertake in order to discharge some of his agitation and alter internal states and affects these behaviours however were often self-abusive and inevitably fueled his 'over-heating' and level of hyper-arousal or led to symptoms of hypo-arousal depletion, debilitation and weakness.

Descriptive Statement **3.1.2** Relates to substance abuse or misuse. Liam admitted to drinking alcohol in order to *"wipe (*himself*) out"* or to induce sleep. He also drank, as an attempt to suppress *"dampen down"* or to contain or *"cocoon"* his intense feelings and sensations, or in order to *"not feel"* at all. He also drank to *"switch off the noises"* in his head. While the quantity of alcohol Liam claimed he consumed was not excessive (in my estimation as Liam's therapist) and had been significantly reduced when he entered therapy, his perception and reaction to his drinking set up a repetitive compulsive cycle of feeling out of control or alcoholic and *"bad"* like his father, this cycle compounded and perpetuated his high level of sympathetic arousal.

"These driven behaviours (and addictions) are about trying to get some sense of control over wildly dysregulated feelings, and a biochemistry that has run amok. The compulsive aspects of the condition, the dysregulated ups and downs, and the shame and self disgust involved, all fit right into the pattern of PTSD behaviour." (Naparstek 2004: 138,139).

While the 4th Questionnaire shows a reduction (+16 to +4) in compulsive behaviours and alcohol 'abuse', falling within the 'optimal arousal' zone, Liam's anxiety around drinking remained a concern for him.

DISCUSSION of RESULTS: GRAPH 2:

3.2 Dysregulation: Hyper-arousal:

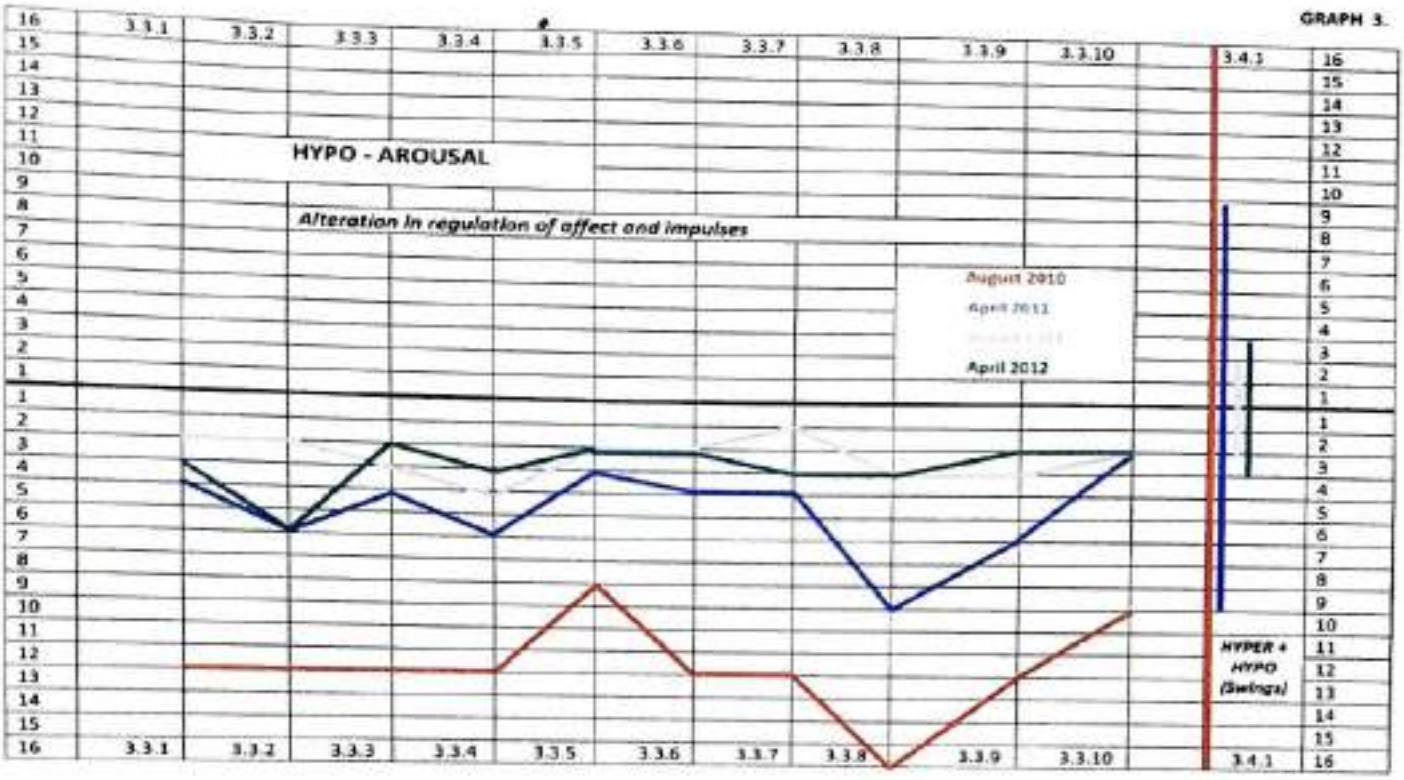
Descriptive Statement **3.2.1** 'Feeling nervous, tense, stressed, agitated, anxious' and **3.2.2** 'Feeling fearful' illustrate the 'conditioning' of the fear response that is involved in trauma, whereby fear becomes so generalized it is like an alarm ringing all the time. While there was some reduction over time, with a significant drop occurring early as indicated by the 2nd Questionnaire, the level of anxiety and fear remained slightly outside (+6) the (hypothetical) window of tolerance or optimal arousal zone as reflected in the last 2 Questionnaires.

Results for **3.2.7** that indicates the on-going holding or tension pattern of alertness, hypervigilance, orienting / expecting danger and the defensive "*on guard*" posturing remained marginally above (+6) the zone of comfort. Similarly for **3.2.8** the emotional overwhelm or flooding that felt so 'out of control', also remained marginally above (+6) the zone of comfort.

Descriptive Statement **3.2.11** 'Feeling uncontrolled anger, short tempered, volatile' relates to Liam's sensations of rising heat, pressure and "*explosiveness*" that also felt 'out of control' and unsafe (see **Body Map Excerpt 5**).
The 4th Questionnaire results showed a significant amelioration of these symptoms (+15 down to +3), with Liam developing and increasing capacity to tolerate anger and a sense of being able to manage and contain these feelings.

There remained residual impatience and frustration **(3.2.13)** however these expressions of anger remained only marginally (+6) outside the optimal ANS arousal zone.

QUESTIONNAIRE RESULTS: GRAPH 3



QUESTIONNAIRE– Category 3: Dysregulation: Hypo-arousal; and Hyper + Hypo-arousal

3.3	**Dysregulation: Hypo-arousal**
3.3.1	Feeling numb, little/no feeling body senses/sensation (in part/ or whole body, use Body-Map diagram)
3.3.2	Experiencing little/no emotion, "flat", numbing of general responsiveness
3.3.3	Listless, lethargic, collapsed, no enthusiasm
3.3.4	Feeling vague, not present, "not here", "switched off" or "shut down" emotionally
3.3.5	Feeling low energy, slow, "lazy"
3.3.6	Exhausted/depleted/drained, empty, lifeless/ dead (***energetically/emotionally dissociated***)
3.3.7	Feeling ineffective, lacking in capacity, "couldn't even if wanted to", unable to act/take action/defend
3.3.8	Depressed, disinterested, loss of motivation, "why bother", no point, no expectations/future aspirations (foreshortened future)
3.3.9	Not wanting to be alive, thoughts of suicide, thoughts of /preoccupation with dying/death
3.3.10	Loss of previously held beliefs, loss of hope, faith, loss of meaning/value of life/living ***(alterations in systems of meaning)***
3.4	**Hyper-arousal + Hypo-arousal**
3.4.1	Mood swings or erratic, changeable moods

DISCUSSION of RESULTS: GRAPH 3: 3.3 Dysregulation: Hypo-arousal:

Descriptive Statement **3.3.2** 'Experiencing little/no emotion, "flat", numbing of general responsiveness' reflects 'constriction' or a diminishment in ability to respond and feel emotions and a narrowing or restriction in the range of affect (e.g., unable to have loving feelings.) These symptoms, by the 4th Questionnaire remained slightly outside (-6) the zone of comfort. Apart from this indicator of constriction, other hypo-arousal symptoms were reduced to well within the optimal arousal window.

Descriptive Statement **3.3.4** Indicates the presence of any slowing or shutting down of cognitive functioning and emotions characteristic of hypo-arousal. Body Map Excerpts 22 to 30 and 34 reflect cognitive, sensory and emotional shutting down, disorientation, numbness as well as doubt and confusion. The results of the 4th Questionnaire indicate some reduction (-3) of these symptoms to within the optimal arousal zone.

Descriptive Statement **3.3.7** Indentifies collapse, depletion, loss/lack of capacity to act and indicates the sense of helplessness, that according to Herman (1992:41) "constitutes the essential insult of trauma, and that restitution requires the restoration of a sense of efficacy (agency) and power" The results of the 4th Questionnaire show a reduction (-12 to -3) of these symptoms to within the optimal arousal zone.

Descriptive Statements **3.3.8** and **3.3.9** indicate the perception of hopelessness, despair, a sense of doom, the future appears bleak and there is a feeling of being destined to suffer or fail. High levels are associated with depression or dysthymia (inability to feel pleasure) and correlated with suicidality particularly with the presumption that their current predicament of distress is unlikely to change, hence stopping, escaping or surrendering at any cost, is found attractive. As mentioned, Liam had planned to suicide; fortunately this was revealed and dealt with in therapy. He found some relief and sense in understanding his suicidal plan as an attempt to have some control in his life and stop the level of distress he was experiencing.

Descriptive Statement **3.3.8** As shown in the 4th Questionnaire results, dropped significantly from -16 to -3 falling within the window of tolerance.

Descriptive Statement **3.4.1** Shows specifically Liam's experience of 'bi-nodal' swings or oscillations between the peaks and troughs of hyper and hypo-arousal. It is important to keep in mind the state 'switch' from sympathetic-terror/anxiety into parasympathetic-hopeless and helpless "the switch from anxiety to the catatonoid response is the subjective evaluation of the impending danger as one that cannot be avoided or modified. With the perception of fatal helplessness in the face of destructive danger, one surrenders to it." Krystal (1988:114-115)

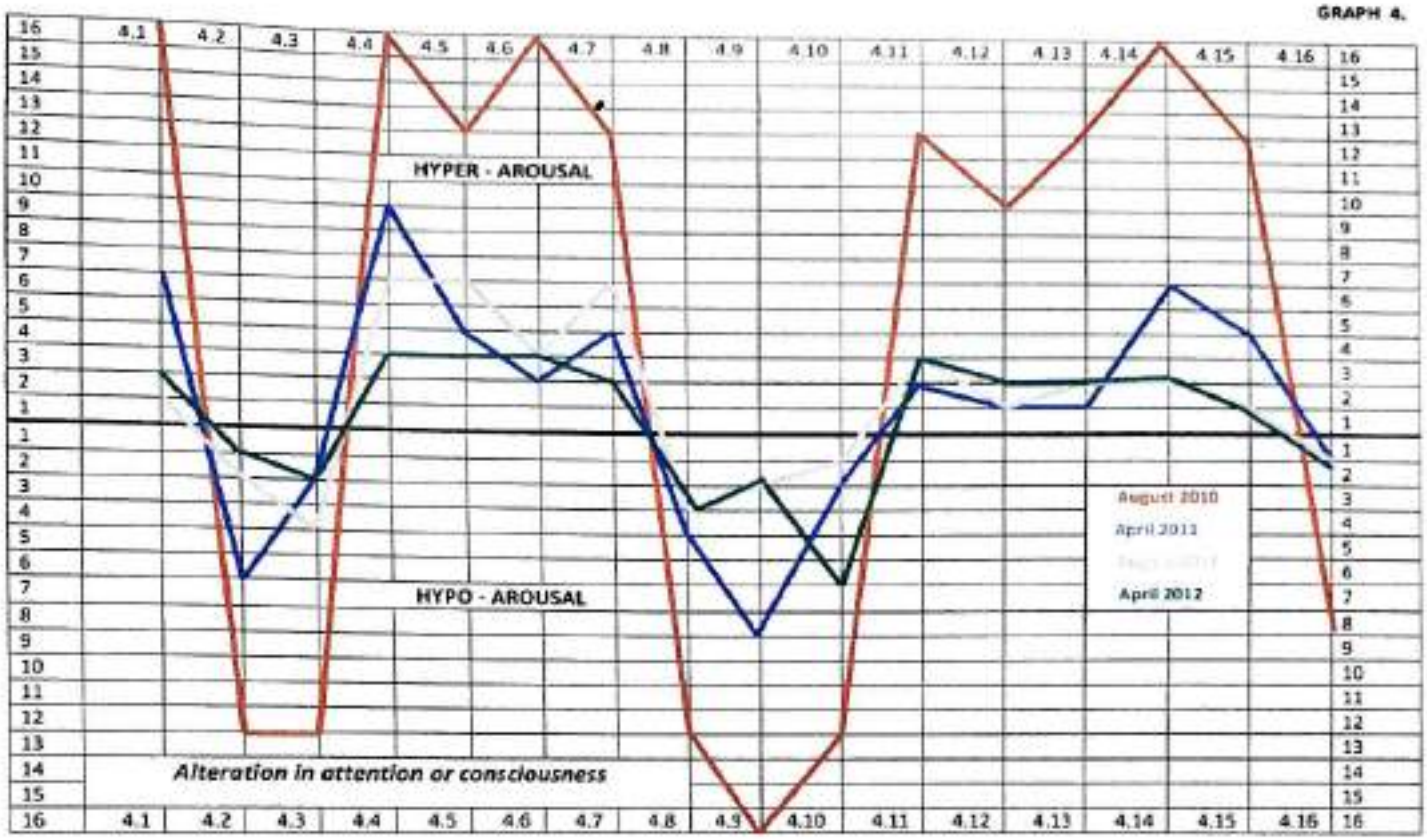
As mentioned, Herman (1992:47) calls these bi-polar swings the "dialectic of trauma", this oscillation between opposing psychological states is most typical of PTSD. The destabilization created exacerbates the sense of unpredictability, loss of control and helplessness...and can be a self-perpetuating, self-sustaining neurological feedback circuit or cycle and like 'kindling' fuels, exacerbates and further entrenches trauma symptoms. Bi-polarity relates to a technique employed in somatic-oriented/inclusive trauma therapy called 'pendulation' where opposites are used therapeutically.[59]

These extreme 'bi-polar' swings or dualities, or as Bouanchaud (1997:134) states "being torn between these poles" creates much 'dukham'- or suffering and relates to Patanjali's **Yoga Sutra 2.15**. The aim of therapy, not only to foster regulation or modulation of arousal, but also to increase resilience and the capacity to contain and tolerate these dualities, resonates with **Yoga Sutra 2.48**.

While the results do not illustrate a steady progressive reduction in bi-polarity, there was a significant reduction in these 'bi-nodal' alterations, the polarities became less extreme (between +2 and -2) as indicated by the by the 3rd Questionnaire in August 2011, however with a slight increase in swings (between +3 and -3) shown in the 4th Questionnaire; importantly however both the 3rd and 4th Questionnaire results fell within the 'window of tolerance'.

[59]Discussed in **Chapter 6: Yoga Therapy Interventions** and **Appendix 2: Body Map 56: 'Utilizing any Positive'**.

QUESTIONNAIRE RESULTS: GRAPH 4



QUESTIONNAIRE– Category 4: Alteration in attention or consciousness

4.	*Alteration in attention or consciousness*
4.1	Mind distracted, poor concentration, scattered/racing thoughts, "can't think straight"
4.2	Mind vague, slow, absent-minded, lose things, can't remember if done something or just thought about doing it, find evidence of having done something but can't remember doing, forgetting, amnesia (***cognitively dissociated***)
4.3	Mind "not present/not here", "stare off into space", disengaged, disinterested "switched off" "shut down", not aware of the passage of time (***cognitively dissociated***)
4.4	Mind repeatedly dwells on negative/distressing memory of past experience
4.5	Mind preoccupied with negative/distressing images/scenes/scenarios/thoughts
4.6	Mind repeatedly replays negative/distressing memory of past event
4.7	Mind 'replays' over and over some negative/distressing images/scenes/scenarios/thoughts
4.8	Not being sure whether recollections really happened or whether imagined/dreamed them
4.9	Perceiving other places/objects/people as "surreal"/ unreal or different than usual
4.10	Being in a familiar place but finding it strange/ being in a strange place and finding it familiar (desa vu)
4.11	Past experiences suddenly 'intrude' and feel as if reliving/ happening in the present, 'flashbacks'
4.12	Scene(s)/image(s), suddenly come up and interrupt, 'intrude'
4.13	Scene(s)/image(s), suddenly 'intrude' their impact is felt immediately, at that moment/in the present
4.14	Intrusive interruptive sensations/feelings/emotions suddenly come up/arise
4.15	Involved in daydreaming/fantasy that can feel as if actually happening
4.16	Occasions where hearing or vision goes

DISCUSSION of RESULTS: GRAPH 4: Category 4: Alteration in attention or consciousness:

Descriptive Statement **4.1** signifies hyper-arousal symptom of disorganized cognitive processing. Liam described feeling *"explosive"* with pressure and *"noise"* (tinnitus) in his head like the *"screaming of cicadas inside"*. The distressing sensation of heat in Liam's head would *"come up... then out... a blur.* Liam, would attempt *"to make sense of it... like a puzzle"* to find some cohesion, context, and make some sense in order to understand what was happening to him rather than fragments or pieces like a puzzle.[60]

Recall that traumatic memory is laid down or stored as sensory imprints remembered implicitly and experienced in the present 'here and now', it is accessed or retrieved as isolated bodily sensations, isolated images or impulses, disconnected intense emotions, without a context of time or place, that feels alien and separated from other life experiences of the person.

By the 4th Questionnaire there had been a significant amelioration (from +16 to +2) of disorganized cognitive functioning to within the band of optimal ANS arousal.

Descriptive Statements **4.2** and **4.3** reflect hypo-arousal slowing of cognitive processing or cognitive dissociation.[61] The Body Maps clearly portray Liam's *"shutting down"*, his *"scattered"* and *"cloudy"* thinking, his confusion and doubt - *"Did it really happen to me???"* with lots of questioning, as well as disorientation feeling *"lost"*, *"empty"* and *"numbness"*.

The questioning -*"Did it really happen to me???"* reflects the failure of the integrative cognitive function of 'personification'; with this failure events seem "unrelated to self" (Tulving 1972) personal experiences are not integrated with an awareness of self, that is, it reflects noetic as opposed to autonoetic consciousness.

By the 4th Questionnaire there was a significant reduction in the symptoms of cognitive slowing, shutting down or dissociation all falling well within the 'window of tolerance': **4.2** fell from -12 to -1 and **4.3** fell from -12 to -2. (Both **4.2** and **4.3** relate to **6.7**, all different expressions of cognitive dissociation.)

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[60] See **Body Map Excerpts 4 and 5.**

[61] See **Body Map Excerpts 22 to 30**

DISCUSSION of RESULTS: GRAPH 4: Alteration in attention or consciousness: (continued)

It needs to be reiterated that **dissociation** is "a defensive disruption" in the normally occurring associations or links between sensations, feelings, emotions, thoughts, beliefs and behaviour, consciously or unconsciously invoked in order to lower psychological distress, the "trade-off" or sacrifice is "fully integrated functioning in order to lessen the sometimes overwhelming anxiety and pain associated with complete awareness of traumatic events." (Briere 1992 :36,37). Dissociation operates to ensure information (i.e. the traumatic experience) that is intolerable, unbearable and inescapable is not processed or integrated.

For Liam there was evidence of cognitive/ psychological and somatic (somatoform) dissociation, with the failure to fully integrate some of the somatic components of his traumatic experience.

Descriptive Statements **4.4** to **4.7** elicit whether the subject has had experiences of the repetitive intrusion of thoughts and the experience of **flashbacks**. While **4.4** to **4.7** aimed to highlight/differentiate the cognitive aspect of intrusions and flashbacks: the activity of the mind of 're-playing', repeating intrusive thoughts, images and trauma scenes; nevertheless, sensation/feeling/emotional components are invariably present in these experiences and that is why they are extremely disturbing and destabilizing.

As mentioned, Rothschild succinctly states "**Flashbacks** are comprised of dissociated, implicitly stored information that becomes elicited under state-dependent conditions." (Rothschild 2000: 71-73). During a flashback the person does not black out or lose consciousness, but temporarily does leave the present reality and re-experiences the original traumatic situation;, terror, fear or anxiety, for example, can return in all of its original intensity during a flashback. Liam's terror or "*anticipatory anxiety*" the state of hypervigilance that, with the state-dependent conditions of evenings and bedtime, persisted into his adulthood, and the startle reflex that would wake him during the night with gasps, are examples of dissociation or flashbacks.

Descriptive Statements **4.8** to **4.10** reflect the experience of any perceptual distortion, disconnection or dissociation.

Dissociation can involve a sense of "unreality", distortions of time and place (Naparstek 2004:89). Ballis et al (1978:309,310) used the term "estrangement" which is appropriate here, designating an experience being altered, lacking the familiar reality-feeling; in derealisation, the experience of "strangeness" is of the outer world.

Descriptive Statement **4.10** 'Being in a familiar place and but finding it strange' describes the sense of estrangement, disconnection and alienation involved in such experiences. At times there was no familiar safe place, not even in adult Liam's bedroom and bed. Note, this particular persistent symptom of trauma remained slightly outside the optimal arousal zone (-6) at the time of the 4th Questionnaire.

Descriptive Statements **4.11** to **4.15** evidence the experience of repetitive intrusive flashbacks of **sensations**, feelings, emotions and somatic dissociative states. The DSM IV defines **flashbacks** as "sensory experiences that remain unadulterated and stable over time, return triggered by reminders of the original trauma, with a vividness as if the subject is having the experience all over again." (DSM IV in Siegel and Solomon 2003:179).

Somatic (somatoform) dissociation manifested for Liam in hyper-arousal and hypo-arousal symptoms, and either returned recurrently or persisted with a high level of intensity for him throughout most of the first 10 month period of therapy: he was re-experiencing dissociated fragments of past traumas; the sensorimotor components of implicit memory.

There were heightened somatic experiences characteristic of hyper-arousal such as the chronic pain and tension patterns in the specific body regions that mirrored the instinctual somatic survival responses (discussed in Graph 1: **2.1**) the posture or stance of orienting and fight responses and Liam's distressing sensations, for example of *"explosive pressure" "burning heat" "irritation" "electric" "crawling"* under his skin and in his body. These chronic patterns of pain and distressing

sensations reflected **somatic dissociation** or **intrusive flashbacks** the body's memory and imprint of trauma.[62]

By the 4th Questionnaire the level of dysregulation had improved for Descriptive Statements **4.11** to **4.15** falling between +2 to + 3 within the optimal arousal zone.

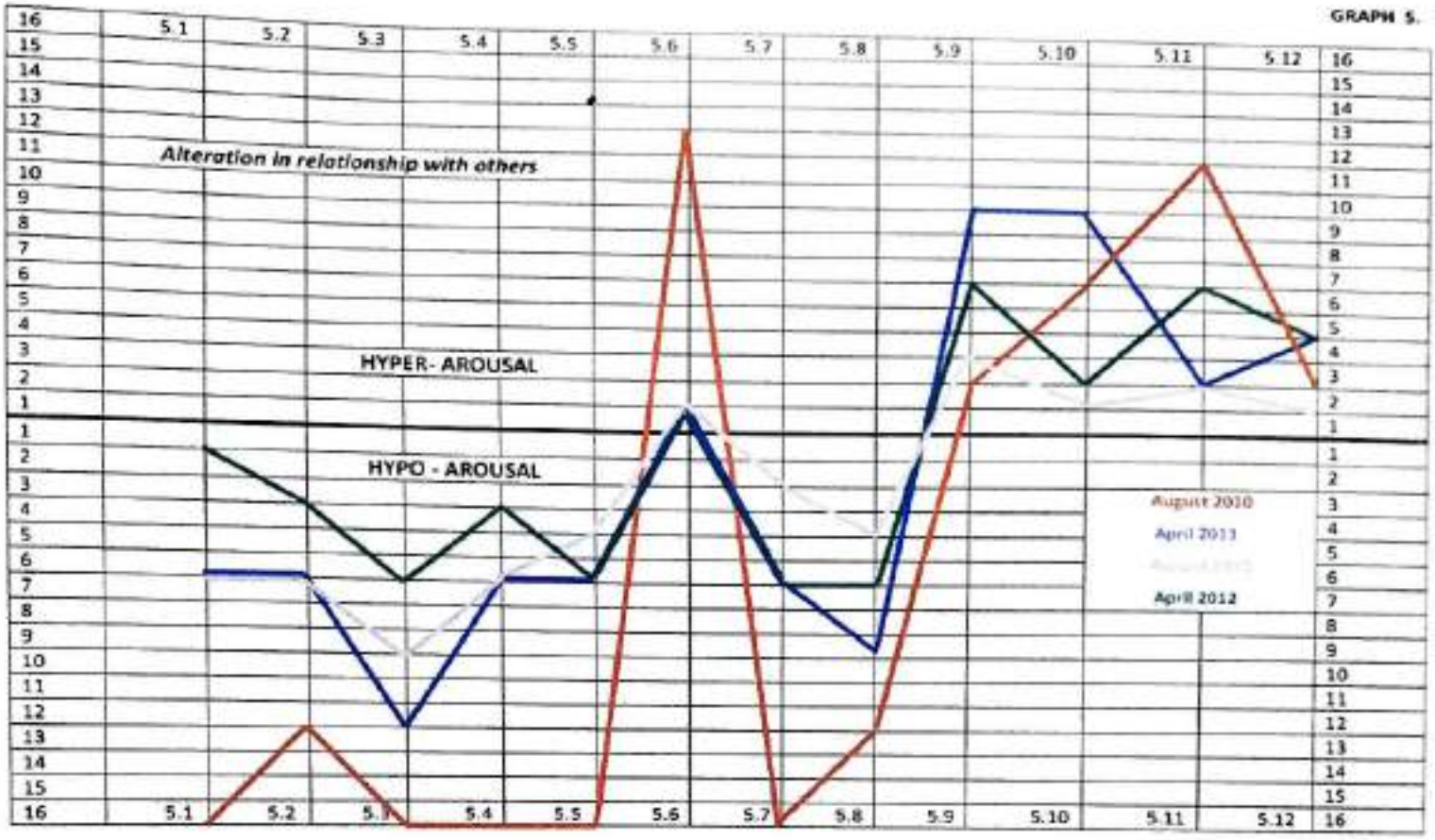
There were somatic experiences characteristic of hypo-arousal. There was the 'absence' of experience - 'analgesia' for example, with Liam's "*numbing*" and "*shutting down*". As a boy there was the 'absence' of experience - 'anesthesia' with Liam's "*fainting/epilepsy*".
The sensations of "*stiffening*", contraction, tightening and the sensations of "*weight*" being weighed down dragged towards collapse, these patterns of "*stiffening*" and "*numbing*" and the distressing sensations such as "*weight*" indicate **somatic (somatoform) dissociation.**

"In the state of surrender and catatonoid reaction, all pain is stilled and a soothing numbness ensures" (Krystal 1988: 117). The numbness according to Fanselow (1986) is "due to the sudden massive elevation of endogenous opioids in stress -induced catalepsy or immobility." "The individual tends to hide in small dark places... and prefer to physically disappear when they feel threatened....they seem unresponsive to external stimuli." (Nijenhuis.1998:114-115). Bodily stiffening frequently accompanies these incidents, and the passive defense of dissociation increases with the severity of the abuse (Shore 2001:24), as was in Liam's case.[63]

Graph 4 shows the extreme swings and destabilization Liam was suffering in the early period of therapy. There were oscillations between the heightened somatic experiences such as his chronic pain and the 'absence' of experience (analgesia) with the numbing sensations. The relative persistence of some intrusive symptoms can be seen in **4.4**: 'Mind repeatedly dwells on negative/distressing memory of past experience' and **4.14**: 'Intrusive interruptive sensations/feelings/emotions suddenly come up/arise', however, by the 4th Questionnaire had reduced to (+3 and +2 respectively) within the 'window of tolerance.

[62] See **Appendix 2: Body Maps 1-21** for examples of Hyper-arousal.
[63] See **Appendix 2: Body Maps 22-40** for examples of Hypo-arousal.

QUESTIONNAIRE RESULTS: GRAPH 5



QUESTIONNAIRE– Category 5: Alterations in relationship with others

5.	***Alterations in relationship with others***
5.1	Feeling disengaged, distant, disconnected as if through a fog/veil so world/others appear unclear or at a distance
5.2	Feeling disengaged, distant, estranged, disconnected from others
5.3	Difficulty trusting, suspicious of others
5.4	Feeling used, exploited, manipulated, disregarded
5.5	Reduced interest/avoidance of participation in social activities/engagements, certain people/places
5.6	Feeling anger/hatred/abusive/destructive/violent (towards others) (Hyper)
5.7	Nobody can/will understand you/your experience
5.8	Long periods of no sexual desire
5.9	Distress/dissatisfaction/concern associated with sexual activity
5.10	Uncontrolled or preoccupation with sexual thoughts/fantasies/feelings
5.11	Unwanted sexual thoughts/images/fantasies/feelings
5.12	Difficulty managing/balancing sexual involvement

DISCUSSION of RESULTS: GRAPH 5: Alterations in relationship with others

Trauma, like Liam's, that is 'relational' or interpersonal creates the deepest wounding at all levels. Trauma shatters assumptions about safety of other human beings and the world, the positive value of the self and violates any faith in a natural or divine order, and often casts those traumatized into states of existential crisis. "Traumatic events violate the autonomy of the person at the level of basic bodily integrity. The body is invaded, injured, defiled.... (and this) destroys the belief that one can be *oneself* (let alone be) in relation to others." (Herman, 1992: 51, 52)

Trauma that is inflicted by caretakers has profound effect on the capacity to **trust**. Caregivers play a critical role in modulating children's physiological arousal by providing the balance between stimulation and soothing. Consistent external support appears to be a necessary condition for children to learn to soothe and comfort themselves, and later derive comfort from the presence of others. (Van der Kolk 1996: 185,186). For Liam, recourse to engaging the 'social engagement' instinctual response was not a reliable or effective option for him given that his mother would *"hit then hug"* him. Liam held as a core belief as 'truth' that love equated with hurt (love=hurt).

Descriptive Statements **5.1** to **5.5** illustrate the constriction, the diminishment of life that is the impact of trauma.

5.1 'Feeling disengaged, distant, disconnected as if through a fog/veil so world/others appear unclear or at a distance' and **5.2:** 'Disengaged, distant, estranged disconnected from others'. Both represent the experience of some form of dissociation in particular derealisation in that the connection or link to others or the outside world seems altered or distorted. Both also indicate the lack of engagement or ineffectiveness of the 'social engagement' response to 'soothe' or modulate arousal levels.

Descriptive Statement **5.3:** 'Difficulty trusting, suspicious of others' results reflected the persistence of a level of parasympathetic arousal, the results of the 4th Questionnaire indicate these symptoms remained slightly outside (-6) the hypothetical optimal arousal band.

Descriptive Statement **5.6:** 'Feeling anger/hatred/abusive/destructive/violent (towards others)' The disruption or loss of self-regulation processes or the capacity to modulate arousal leads to problems with 'self definition' and poorly modulated affect and impulse control such as aggression

towards self and others, as well as "insecurity in relationships, distrust, suspicion, lack of intimacy and isolation." (Van der Kolk 1996:187)

The results by the 4th Questionnaire indicated a significant reduction (from +12 down to +1) in the experience of intense anger towards others. (These results relate to Descriptive Statement **6.8** - anger directed towards self.)

Descriptive Statement **5.7**: 'Nobody can/will understand you/your experience' and **5.8**:'Long periods of no sexual desire', not feeling or a shutting down of sexual desire, symptomatic of hypo-arousal, both still fell slightly outside (-6) the 'comfort zone' as shown in the 4th Questionnaire results.

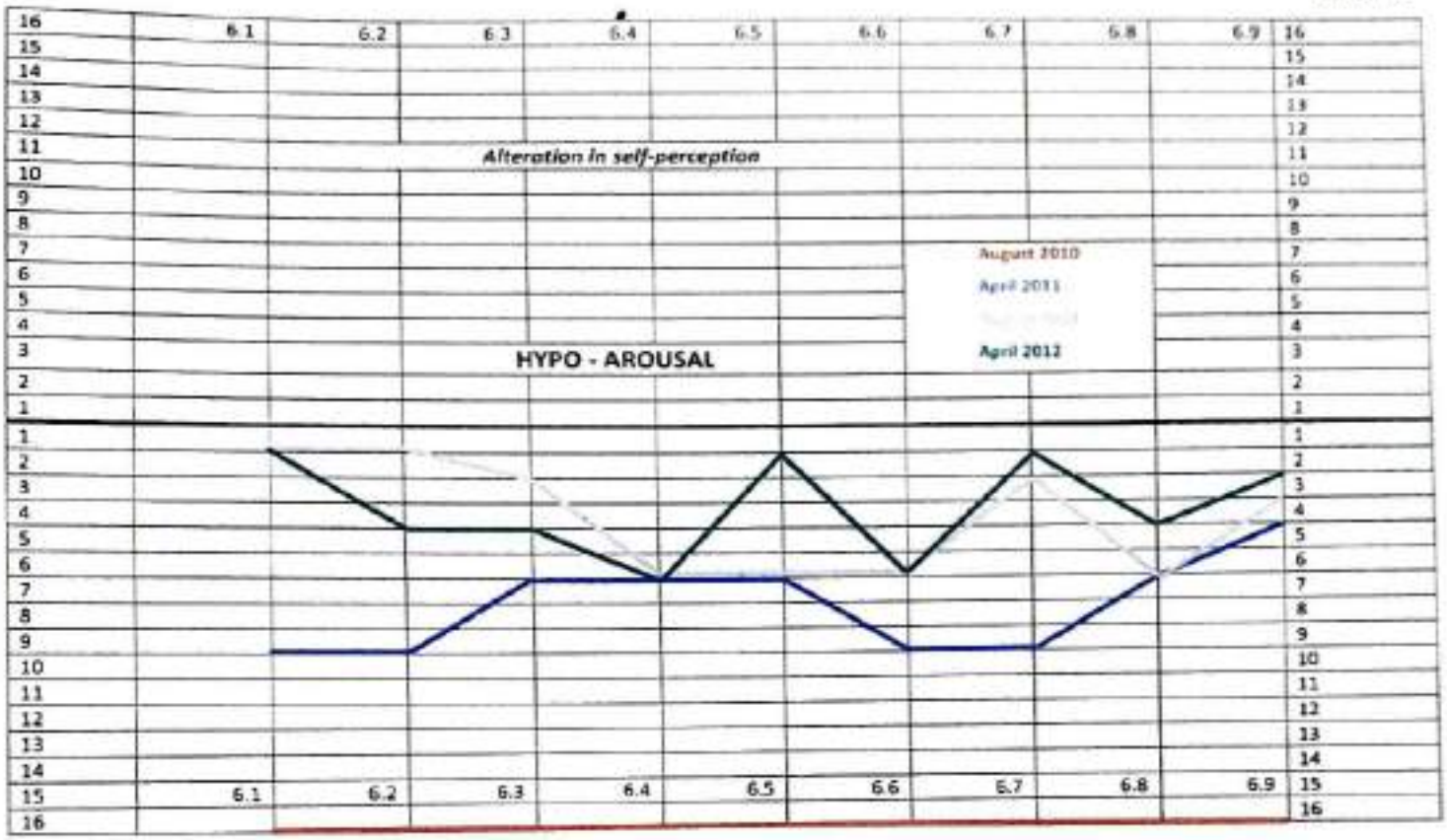
Descriptive Statements **5.9**, **5.10** and **5.11** deal with symptoms of hyper-arousal: intrusive thoughts/images/ fantasies/feelings regarding matters of relationship specifically sexual activity and expression.

Interestingly, this area did not display some general consistency in pattern or trend across the four (4) Questionnaire results as found in the other areas of the Questionnaire (e.g., if there was a hyper-arousal peak then some degree of peak was consistently shown across the four sets of results). Liam over the two periods of therapy went through several separations and ending of his relationship with his partner. When together, the dynamics of their relationship involved ambivalence, unpredictability, disregard for his feelings, disappointment and betrayal. The effect was one of considerable destabilization, pressure and conflict given that Liam was in his early 40's and felt, if he ever was going to have a family of his own, time was running out. This caused Liam deep anguish and grief.

Descriptive Statements **5.9** and **5.11** remained slightly outside (+6) the zone of optimal arousal as indicated in the results of the 4th Questionnaire.

QUESTIONNAIRE RESULTS: GRAPH 6

GRAPH 6



QUESTIONNAIRE– Category 6: Alterations in self-perception

6.	*Alterations in self-perception*
6.1	Feeling ineffective, slow/slowed "lazy", lacking in capacity, "couldn't even if wanted to", unable to act/take action/defend
6.2	Feeling unable to manage/control/influence important aspects of life, powerless
6.3	Feeling "wrong", defective, "damaged goods", handicapped, deficit/deficient
6.4	Feeling "wrong", embarrassment, deep humiliation, shame
6.5	Feeling guilt and responsibility (I should have...but did not), at fault, to blame
6.6	Feeling like withdrawing, hiding, disappearing
6.7	Feeling disorientated/disoriented/ lost (dissociation/consciousness)
6.8	Self loathing, self criticism, judgment, self rejection
6.9	Holding that your experience is *nothing* compared to....others (minimizing)

DISCUSSION of RESULTS: GRAPH 6: Category 6: Alterations in self-perception

As mentioned, Cole and Putnam (1992) have proposed that people's core concepts of themselves or self-perceptions are defined to a substantial degree by their capacity to regulate their internal states and by their behavioural responses to external stress.
The loss or disruption to development of self-regulatory processes leads to problems with self-definition: disturbances in the sense of self, such as a sense of separateness and isolation, loss of explicit (autobiographical) memories and autonoetic consciousness as well as, disturbances in body image and aggression towards self.

Descriptive Statements **6.1**, **6.2** and **6.3** indicate the feelings of being ineffectual /powerlessness as opposed to the having the sense of capacity and the capability and choice to act, to take action, that is, a sense of 'agency'.

A loss of an internal 'locus of control' is common for those traumatized who responded with freezing or immobilizing defenses: shame, blame and self-derision solidify even more these habitual patterns. Without a sense they can trust themselves or their bodies, they become identified with these habitual reactions i.e., they are taken as "this is just who I am"... "this is me".

'Fight' had formed part of Liam's core identity *"the fight made me who I am"*, to have to fight or be ready to fight, had become a way of life a way of being for him.
Liam believed he had to *"fight to keep huge energy down...and to control it"* if not, the perception he would hold of himself would be of being *"small"*, or he would identify as being *"weak"*, *"not strong"* or with *"no strength"* and *"empty"*, that is, with no capacity, deficient and lacking in some way. [64]

[64] See **Appendix 2:Body Map Excerpts 31, 35** and **37**

DISCUSSION of RESULTS: GRAPH 6: Category 6: Alterations in self-perception (continued):

There was a pivotal realization in the latter part of therapy in relation to the notion or prospect of having choice, (which certainly was absent in his childhood) that was encapsulated in Liam's statement that he repeated to himself thereafter in therapy, *"I don't have to get into the boxing/fighting ring!"*

There was some developing sense of 'agency' and this was reflected in a reduction in the level of hypo-arousal, results for **6.1** for example, dropped significantly (from -16 to -1) to fall well within the optimal arousal zone by the 4th Questionnaire.

Descriptive Statement **6.4** 'Feeling "wrong", embarrassment, deep humiliation, shame.' Matsakis (1994:29) reminds us that at the moment of an attack typically "the individual does not feel like a valuable person with the right to safety, happiness, and health.....rather more like a thing, a vulnerable object subject to the will of a power or force greater that oneself" and is an example of **depersonalization** ... "the stripping away of one's individuality and humanity."

Liam held a core belief and felt he must be inherently *"bad"* if his mother beat him; he must be *"wrong"* in some way and to have caused the violence (that he was responsible or to blame), and *"must have deserved or provoked it"*. These comments of Liam's conveyed the extent of the (conscious and unconscious) attribution of self-blame and personal responsibility for such negative outcomes, characteristic of victims of trauma.
Results for **6.4** remained slightly outside (-6) the 'comfort zone' as shown by the 4th Questionnaire results.

Descriptive Statement **6.6** 'Feeling like withdrawing, hiding, disappearing', reflects the 'constriction' of life that ensues after traumatic experience.[65] Results for **6.6** remained slightly outside (-6) the 'optimal arousal zone' as shown in the 4th Questionnaire results.

[65] See Appendix 2: **Body Map Excerpt 34.**

DISCUSSION of RESULTS: GRAPH 6: Category 6: Alterations in self-perception

Descriptive Statement **6.7** 'Feeling disorientated/disoriented/lost (dissociation/consciousness)'
As mentioned a major contributing factor in an "impaired self reference" (Briere 1992:46) are dissociative episodes in childhood, "any phenomenon that alters ongoing conscious awareness" in an attempt to deal with painful overwhelming sensations, feelings and emotions, is likely to have an impact on the child's sense of coherent "me"-ness and sense of self that is likely to persist into adulthood.

For Liam, he had a 'discontinuous sense of self': his experiences of various immobilizing dorsal vagal responses such as fainting (or epilepsy), extreme startle/shock, overwhelm or being knocked unconscious, these traumatic experiences created a discontinuous sense of self and formed the patterns of feeling "*lost*" and disoriented "*what happened?*", of confusion "*how did I get here*", "*????Not sure what is happening around me*", "*...trying to make sense of it*" and doubt "*Did it really happen to me???*" despair "*I was just a small boy* (too hard to believe)" and self loathing "*I must be mad.*" Anger or aggression towards self was a component in Liam's plan for suicide. [66]

A child whose sense of self includes "discontinuous memories of childhood, whose affective experience fluctuates as a result of intrusive or avoidant symptomatology is unlikely to develop a stable point of reference or home base from which to address the world." " (Briere 1992:46)

The degree of destabilization, ambivalence and insecurity that Liam manifested, was significant. There was no stable base or ground for him particularly in the first 10 month period of therapy. Every aspect of his life felt like it was on shifting ground, unpredictable and inconsistent.
These experiences are illustrated in the Body Maps with Liam's notes such "*Watery feet can't get footing*", "*Everything keeps changing*"[67] and his comment I am "*empty.*"[68]

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[66] See **Appendix 2:Body Maps Excerpts 22 – 30**

[67] See **Appendix 2:Body Map Excerpt 36**
[68] See **Appendix 2:Body Map Excerpt 28**

DISCUSSION of RESULTS: GRAPH 6: Category 6: Alterations in self-perception

The aspects of self perception reflected in **6.5** 'Feeling guilt and responsibility (I should have...but did not), at fault, to blame' and **6.7** 'Feeling disorientated/disoriented/lost (dissociation/consciousness)' showed a significant reduction in the level of hypo-arousal (from -16 to -1) by the 4th Questionnaire. There appeared to be a more realistic perception of himself and a coherent or more integrated sense of 'self' in context, that may indicate some re-formation or formation of autonoetic consciousness.

Liam's self perception was dangerously low or poor.The results of the 1st Questionnaire show all scores located at -16 on the rating scale: extreme hypo-arousal.
This picture relates to Descriptive Statement **3.3.8** depression and pointlessness and **3.3.9** suicidality.

Descriptive Statement **6.1**: 'Feeling ineffective, slow/slowed "lazy", lacking in capacity, "couldn't even if wanted to", unable to act/take action/defend', Descriptive Statement **6.5**: 'Feeling guilt and responsibility (I should have...but did not), at fault, to blame' and Descriptive Statement **6.7**: 'Feeling disorientated/disoriented/ lost (dissociation/consciousness)' showed the most significant reductions from -16 down to -1.

BODY MAPS DISCUSSION and RESULTS

As mentioned, the Body Map template outlines body segments for the person to illustrate or draw their subjective experience of somatic symptoms since, "as debilitated as most PTSD sufferers are with using words to process their trauma, they can readily respond to nonverbal engagement"(Naparstek:29) – to images, symbols, metaphors, drawing, writing and to sensation, impulse and movement.

Correlation between Body Maps and Therapy Observations:

The Body Maps highlighted, correlated with and verified the various manifestations of hyper-arousal and hypo-arousal trauma symptoms that Liam displayed in therapy sessions. The Body Maps provided a means by which to identify, select or choose specific elements to work further and in more depth in the therapy sessions. Liam was always part of this selection and choice. Intrusive sensations, chronic patterns of tension and pain were clearly evidenced and highlighted in the Body Map drawings. [69]

Tracking/Monitoring Therapeutic Progress:

Both the Questionnaire and Body Maps were used as instruments that enabled the tracking and monitoring of particular trauma symptoms or certain themes and the therapeutic process over time. For example, the Body Maps were effective in monitoring the intensity of Liam's neck spasms or twitches and their amelioration, [70] as well as tracking specific aspects of Liam's experience of pain.[71]

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[69] Refer to: **Appendix 2: Body Map Excerpts 1-9** Hyper-arousal: Head Eyes Neck;

Body Map Excerpts 10-21 Hyper-arousal: Arm Thoracic.

Body Map Excerpts 22- 30 Hypo-arousal: Head Eyes Neck;

Body Map Excerpts 1-40 Hypo-arousal: Arm Thoracic.

[70] See **Appendix 2: Body Map Excerpts 41-49** Neck Spasm/Twitching and Abatement.

[71] **See Body Map Excerpts 50 -53** that show examples of following/tracking the specific theme of the experience of pain.

The Body Maps were also useful in tracking and indicating any shifts or any "bi-nodal" swings that may have occurred between therapy sessions such as from hyper-arousal symptoms of "*burning heat*" and "*blisters*" to hypo-arousal symptoms of feeling "*empty*" or "*numbness*". This enabled the identification of possible (state-dependent) 'triggers' that may have occurred that led to these traumatic reactions or the re-experiencing of the original trauma, and guided the therapy focus in those sessions.

Body Maps as Illustrations of Emotional States:

Body Maps as avenues of expression/communication and means of illustrating emotional states were found to be useful since traumatized individuals experience emotions as physical problems and, as mentioned, there can be an inability to translate or articulate somatic sensations into basic feelings ('alexithymia'). Hence, to be able to identify and name/articulate, evaluate the meaning of sensations and emotional states is critical in healing trauma: it engenders a sense of agency or mastery and enables differentiation between different emotional and feeling states.

The traumatized can often express their internal states more articulately in images and drawings rather than words. With trauma and traumatic recall, there is a loss of language and ability to verbalize or articulate: a 'decommissioning' of the pre-frontal cortex (specifically the dorsolateral region) a 'dimming' in Broca's area, the area responsible for generating words to attach to internal experience. With the inability to put feelings into words (alexithymia), as Van der Kolk (1996:193) commented this leaves the "emotions to be mutely expressed by dysfunction of the body."

The psychotherapeutic process can be confronting and challenging in dealing with trauma and traumatic experience, at times can be frustrating or seems pointless[72], that searches for answers "*Why ????*" that tries to find understanding and some making sense of these experiences.

[72] See **Appendix 2:Body Map 54** that encapsulates Liam's anger, frustration and pointlessness.

BODY MAPS DISCUSSION and RESULTS (continued)

Identification of Dissociation - Body Map 55: Trauma

Body Maps facilitated the identification of dissociation or lack of integration.[73]
Complete memory of an experience involves integrated recall of all of the elements of the experience. There was evidence in Liam, of **somatic (somatoform) dissociation** that is, the failure to fully integrate the somatic components of experience as well as cognitive or psychological dissociation.

There was some 'disconnect' or 'dissociation', an absence of any perception or sense of relationship or link for Liam between three (3) elements of his experience : firstly, the distressing somatic symptoms for example, the pain across his forehead, heat and soreness around his eye sockets, pain in his thoracic region or dominant arm; and secondly, the words or language that Liam progressively started to used to describe these symptoms e.g., waking up stiff and aching, sore in the ribs like *"having been a punching bag"*; and lastly, the actual nature and the reality of having been repeatedly violently beaten in his childhood by his father.

A pivotal/significant turning point in therapy came when these connections were made: there was a realization, a greater awareness, a making sense for Liam that had an obvious observable settling effect; this settling can be the 'gift' of integration (and the activation of the pre-frontal cortex). This realization arose from the therapy work using this **Body Map 55: Trauma.**

Liam's experience of symptoms - the chronic pain, the patterns of tension and distressing sensations are examples of 'implicit' somatic memory and reflected **dissociation** isolated disconnected somatic-sensory fragments of traumatic experience from past violent beatings inflicted upon him.
The sickening nauseating overwhelm of this trauma, the imprint of his father's fists and broom handle used in some of the beatings, the trauma imprints (samskaras and vasanas[74]) impressed in

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[73]Refer to **Appendix 2: Body Map 55: Trauma** illustrates the identification of dissociation or lack of integration.

[74]Samskaras are patterns, imprints or impressions. Vasanas, likened to the trace smell of garlic on the fingers, are deeper impressions from the past that remain and continue to influence the samskaras.

and upon his head, shoulders, thoracic and arm regions, as evidenced in this Body Map, became undeniably apparent to him.

Body Maps as means of Utilizing the Positive

Body Maps are a means by which any 'positive' can be identified, further developed or reinforced as positive 'samskaras'.

Body Map 56: Utilizing any Positive

This Body Map[75] could also been named 'Slivers of Sraddha.' Note Liam's comment that points to his heart region *"Something here some feeling of niceness other times calm and bring a very light smile"*. 'Sraddha', located within the Vijnanamaya level of the Panca Maya Model, is a 'warm' emotion; it is the conviction, faith and valuing of self and higher Self; it is something precious that supports, embraces and holds with infinite benevolence. 'Sraddha', when combined with self-study or 'svadhyaya', self-reflection and self-awareness are an integral part of the psychotherapeutic process: it is associated with 'Isvara Pranidhana' – the connection with something higher/outside ourselves. 'Sraddha' and introspection -'svadhyaya'- are entrees into the Annandamaya layer in the Panca Maya Model, the domain of deep fundamental and existential feelings and emotions where there is space not constriction, where there is lightness not darkness and heaviness.

As mentioned in **Chapter 6: Yoga Therapy Interventions** relating to Bhavanam, the most effective kind of imagery is somatic and kinesthetic imagery – imagery that elicits the 'felt sense'. It is of critical importance to reconnect somatic awareness in the treatment of trauma and an essential component to ensure the efficacy of any trauma therapy.

The '"pendulation" technique employed in somatic-oriented trauma therapy utilizes bi-polarity or opposites therapeutically. Trauma survivors are asked to remember, re-experience and embody the 'felt-sense' of times or places of safety, relief and calm...for example, Liam's experience of

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[75]Refer to **Appendix 2: Body Map 56: Utilizing any Positive**

"niceness", "calm" or *"light smile", something* that offers a positive experience, the bi-polar opposite to the experience of trauma symptoms. This becomes their "island of safety" or "oasis" imagery (Levine 2010) they re-imagine and can re-experience when they become flooded with distress. "Pendulation" entails the movement back and forth between chaotic traumatic material and the calming "island of safety" imagery, helps unwind and discharge the activation of ineffective or incomplete instinctual somatic survival responses held in the ANS, and allows for time and space to metabolize, assimilate and integrate the traumatic event, as well as allow space for the impulses and survival instincts held implicitly in the body to discharge their pent up energy and complete.

With this therapeutic technique of pendulation; its rhythm engenders a willingness to start trusting the body, the self and a benevolent process; it allows the person to move from fragmentation towards integration. Pendulation allows the person to integrate traumatic experience into their sense of self and the broad context of their whole life, that is, it facilitates the forming or re-forming of an autonoetic consciousness, it can effectively 're-commission' these functions of the pre-frontal cortex.

Any "island of safety" or positive samskara, coined 'Slivers of Sraddha', offer glimpses of hope, faith and trust that there can exist some benevolence rather than malevolence within one's body, in one's sense of the self, others and the world. They offer the potential and the vehicle for unwinding the near indelible impressions, imprints and impact of trauma.

Chapter 8:

SUMMARY/CONCLUSIONS

Chapter 8:

SUMMARY and CONCLUSIONS:

The aim of this research, as mentioned was twofold: first, to evaluate the efficacy of combining Yoga Therapy *and* Trauma Therapy treatments in the context of individual psychotherapy.

The second component to test or pilot the use of 2 'tools': the Questionnaire and Body Maps, to monitor the Subject's experience of trauma symptoms and assess psychotherapeutic treatment outcomes.

The hypotheses entailed firstly, that there will be evidence of some amelioration or stabilization of the 'symptoms' of trauma if yoga *and* trauma therapy treatment modalities are complementary and efficacious, and secondly, that there will be evidence of concurrence or some correlation between the Questionnaire and Body Maps if they have utility and validity as 'tools' or indicators of the experience of symptoms of trauma. Both hypotheses were affirmed by this research.

Findings - Single Case Study Research Methodology:

Single case research, as earlier described, is both descriptive and exploratory and involves the collection of data from multiple sources to reduce bias and can offer benefits of tentative support for a psychological theory or conceptual framework. Evidence was found that supports and demonstrates the utility of the ANS Arousal or Modulation Model as a conceptual framework: this support was evident from the concurrence of data collected from multiple sources[76] - the Questionnaire, the psychotherapy sessions and the Body Maps; there was congruency with each of these different sources in their reflection and mirroring of the Subject's experience of symptoms of trauma.

The purported problems with single case research were lack of 'scientific' control, limited internal validity and also limited external validity, that is, a problem with generalizing findings from a single individual. The form of data obtained from the Questionnaire involved the identification and measurement of patterns of ANS modulation - regulation or dysregulation - as reflections of hyper-arousal and hyper-arousal, as such; any generalization of findings from one single individual would be in terms of patterns of modulation. The Questionnaire offers a means of standardization across

[76] Discussed in **Chapter 4: Objective and Methodology** as part of 'triangulation'.

individuals by providing a quantitative measurement of ANS modulation, and with a number of single case studies, may provide a picture that can allow for generalization from an individual.

The research objective was focused on the combination of somatic-oriented Trauma Therapy *and* Yoga Therapy within the context of individual psychotherapy; as such the differentiation of the individual or discrete impact of each of these different treatment modalities was not part of this methodology and could form the basis for future research. The incorporation of certain bio-medical measurements such as saliva tests and heart rate variability and closer co-operation and collaboration with medical (allopathic and alternative) practitioners would also enhance any future research.

Findings - Hyper-arousal/Hypo-arousal Questionnaire:

The Hyper-arousal/Hypo-arousal Questionnaire did reflect a significant reduction in the frequency and intensity of the impact of traumatic experience and traumatic re-experiencing.

There was evidence of significant stabilization, pacification and amelioration of the symptoms of trauma, within a relatively short timeframe (8 months) that support the hypothesis that yoga *and* trauma therapies as treatment modalities are complementary and efficacious.

The results of all 6 Graphs reflected that the greatest reduction took place predominantly between the 1st Questionnaire (August 2010) and the 2nd Questionnaire (April 2011), thereafter there were smaller yet progressive incremental reductions indicated across all Graphs.

Internal consistency and reliability of the Questionnaire was suggested in the congruity of scores for the same or similar 'descriptive statements' that were located in more than one of the Categories, for example, **Category 3**: Descriptive Statement **3.3.8** 'depression and pointlessness' and Descriptive Statement **3.3.9** 'suicidality' and **Category 6:** Descriptive Statement **6.6** 'feeling like disappearing' and **6.8** 'self-loathing and refection.'

Findings - Body Maps:

In **Chapter 7** the utility of this instrument or tool 'upayam' was discussed. The Body Maps, in summary, facilitated the treatment process as a means of visual expression and communication as opposed to verbal articulation, as well as identifying critical areas that needed addressing such as the nature of dissociation highlighted in the **Body Map 55:Trauma**.

Body Maps enabled the identification of clusters of symptoms at the somatic level that reflected the engagement of the 'active' instinctual survival responses that had been thwarted and ineffective in averting the threat of violence as well as the Subject's recourse to the 'passive' instinctual survival responses. Hence, Body Maps were valuable in highlighting priorities in terms of the physical regions that needed to be targeted by the Yoga Therapy Interventions at the Annamaya and Pranamaya level, as well as the emotional and spiritual Vijnanamaya and Annandamaya levels, for example, as shown in **Body Map 56: Utilizing any Positive.**

The Body Maps correlated with and verified the manifestations of trauma symptoms displayed in the psychotherapy sessions and those quantified in the Questionnaire and, finally, they enabled the tracking/monitoring of specific trauma symptoms as well as the therapeutic progress. Hence, the second hypothesis - that there will be evidence of concurrence or congruence between the Questionnaire and Body Maps if they have utility and validity as 'tools' or indicators of the experience of symptoms of trauma was affirmed by this research.

Findings - Yoga Therapy Interventions:

The Yoga Therapy Interventions were aimed predominantly at stabilizing the high level of dysregulation and physiological activation or 'angamejayatva', predominantly ANS hyper-arousal and reducing the associated pain, discomfort and suffering 'duhkham'.

In Yoga Therapy terms, the goal or 'hanam' was 'Samanam'[77] aims to pacify, reduce or contain the heat or 'pitta' aggravation evident in his presenting symptoms of trauma.[78] At the outset, there was

[77] In contrast to 'Sodhanam': the goal of purification or elimination of symptoms or their causes.

[78] Refer back to **Diagram 7: Yoga Therapy Interventions Timeline.**

a progressive introduction of more cooling and relaxing- 'langhana' and balancing -'samana' practices to counter-balance and reduce the heating 'brhmana' effect of Liam's physically exacting and vigorous sequences, particularly in relation to his 'List of Asanas' that contained a number of stays or holds in postures. With this reduction or counter-balancing of the 'brhmana' effect, there was evidence a corresponding reduction in the aggravation of Liam's symptoms of trauma. Examples include **YTI 1** and **YTI 2** - the introduction of Sitali Pranayama and IBM (movement coordinated and contained with the breath) into the Salute to Moon sequence, the slow and incremental emphasis on exhale, and the use of the candle meditation to quiet or "*slow*" of Liam's mind. **YTI 5** Ardhauttanasana to a chair with alternate arm raises targeted Liam's thoracic stiffness and pain.
These interventions were largely at the body -'Annamaya', breath - 'Pranamaya' and mind - 'Manomaya' layers, according to the Yoga Therapy Pancha Maya model.

Concurrently however, there was another goal that was 'Sodhanam' in purpose, that of facilitating connection. Liam suffered a significant amount of disconnection, dissociation or a loss of connection ('ayoga'), at a number of levels and ways. There was a disconnect within his body his organism, a disconnect or 'vyadhi' with his sense of self that was unstable and discontinuous, and with a perception of self 'ayuktasvatmuka gaurava' that was hate-filled and rejecting, there was also a disconnect and disengagement with others and with broader systems of belief, faith and meaning or 'sraddha'[79].
The YTIs that employed meditation with visualizations or 'bhavanam' for example **YTI 2**: utilizing the candle(s) – aimed to connect or re-connect with the sense of loving relationship with his mother and a continuous sense of self across time, as well as to "*slow*" Liam's mind. Other examples include:
YTI 7: utilizing the full moon, the ocean waves, and the bird/parrot - that aimed to connect or re-connect with nature that we are part of and that can benevolently take us beyond our small sense of self.
YTI 7 also enlisted the relationship with his friend and especially his two sons - that aimed to connect or re-connect with the sense joy, love and delight, and with Liam's inherent value, goodness, playfulness and light.

[79] Conversely, there was too much connection or 'atiyoga' with the conditioning of the fear response or 'abhinivesa' with traumatic experience: with the Subject's predisposition towards and expectation of threat.

The therapeutic work with **Body Map 56: Harnessing any Positive**, was used not only for the trauma technique of "pendulation" but for building positive patterns - 'samskaras', for fostering movement from 'vyuthana samskara' to 'nirodhā samskara', from suffering to greater wellbeing.
These Yoga Therapy Interventions were predominantly at the level of Vijnanamaya and Anandamaya levels or dimensions according to the Yoga Therapy Pancha Maya model. These distinctions or differentiations appear to be arbitrary at times, as the Pancha Maya model is holistic and like a hologram each layer is inextricably entwined, each containing elements of all the dimensions of human existence or consciousness.

Other Findings - Trauma Research Terminology- Need for Congruity and Consistency

For traumatized individuals who can suffer 'alexithymia' and somatization, to be able to identify, name, to form a narrative and articulate the meaning of sensations and emotional states, that is, form an explicit 'narrative', has been discussed an important and integrative stage in the process of healing trauma. However as Levine (2005) comments, "when the implicit (procedural) memory is activated and completed somatically, an explicit narrative can be constructed, not the other way round." It is also vital in and for the future, that there be a greater degree of agreement and consistency between researchers and clinicians in the field of trauma in their identification, definition and differentiation of trauma phenomenon particularly dissociation and the instinctual somatic survival responses of freezing and immobilization: such consistency is not the case at present.
Also vital is that incorporated into these definitions are the somatic substrate of these instinctual survival responses: in the coverage on the **Somatic Nature of the ANS Instinctual Survival Responses**, this research attempted to offer some clarification and contribution towards this end.[80]

As Herman (1992:195) realistically comments, "the reconstruction of the trauma is never entirely completed; new conflicts and challenges at each stage of the lifecycle will inevitably reawaken the trauma and bring some new aspect of the experience to light."
The traumatized can never control but rather 'manage', with awareness, the frequency and intensity of their traumatic re-experiencing: in their lifetime this may include basic minimization harm (self

[80] In **Chapter 3: Trauma Theory.**

harm) and the developing capacity to pacify, modulate or regulate their distress their symptoms, the near indelible impressions or imprints of traumatic experience.

In conclusion, undigested, uncooked or unassimilated experience -'ama'- is toxic and is one of the sources of disease: unresolved, un-metabolized trauma is also toxic and at the root of violence.
As a final conclusion for the future, both individually and globally, it is essential that awareness and understanding of trauma be continually expanded and the use of different treatment modalities be encouraged, respected, supported and embraced.

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APPENDIX 1:

HYPER-AROUSAL / HYPO-AROUSAL

QUESTIONNAIRE

HYPER-AROUSAL / HYPER-AROUSAL

QUESTIONNAIRE

Precautionary Note:

This Questionnaire must not be used without permission.

Clients, subjects, people in responding to some questions
contained within this questionnaire
are vulnerable and susceptible to provocation
hence it is urged that this questionnaire be completed
within a therapy session,
within a safe therapeutic relationship and holding environment

QUESTIONNAIRE Instructions

This questionnaire contains a list of experiences:
These experiences cover physical symptoms such as *"blurred vision"* or *"shortness of breath"*; feeling and emotional states such as being *"agitated"* or *"down"*, as well as mental states such as *"vague"*, being easily *"distracted"* or having *"poor concentration"* and *"racing" thoughts.*

As you read this list of experiences - for each experience answer the questions below and 'rate' the experience.
For example, if *"blurred vision"* has been experienced but say only a few times in your lifetime, then ***Rarely*** would describe the frequency of the experience and it would be rated at **1**, yet if this experience of *"blurred vision"* caused significant anxiety, then ***High*** would describe the severity of the experience and it would be rated at **3.**

(A)

How *often* do you experience this? (i.e., the *frequency*)				
0	**1**	**2**	**3**	**4**
Never	***Rarely***	***Sometimes***	***Frequently***	***Constantly***
Not at all	Once every 6 months to years	Once or twice a month	Once or twice a week	Daily

(B)

How *anxious/ distressed* is this experience for you? (i.e., the *severity*)				
0	**1**	**2**	**3**	**4**
None	***Minimal***	***Moderate***	***High***	***Severe***
No anxiety/distress	0-45%	50-65%	70-85%	90-100%

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Name: _____

QUESTIONNAIRE V6

Date: _____

A	B
Frequency (How often)	Severity (How distressed/anxious)
0 1 2 3 4	0 1 2 3 4
Never Rarely Sometimes Frequently Constantly	None Min'al Mod High Severe

		A	B
1.	***Sleep difficulties / disturbances***		
1.1	Difficulty falling or staying asleep		
1.2	Being awoken by bad dreams/nightmares, disturbing images/thoughts, feelings/sensations		
1..3	Oversleeping		
2.	***Somatic/physical/physiological experiences***		
	Hyper-arousal		
2.1	Experience of chronic pain, tension patterns in body, stiffness, painful sensation in all/parts of body (musculoskeletal issues) (use Body-Map diagram)		
2.2	Shortness of breath when not exerting yourself		
2.3	Complaints of nausea, gagging/choking sensations, stomach/digestive upsets without medical condition		
2.4	Heart palpitations, beating strongly/irregularly, chest pains		
2.5	Dizziness, woodiness		
2.6	Seizures / convulsions / fainting		
2.7	Blurred vision or vision as if seeing through a veil, through a tunnel, dimmed down/too bright lighting		
	Hypo-arousal		
2.8.1	Weakness, feeling collapsed, trembling, shakiness		

A	B
Frequency (How often)	Severity (How distressed/anxious)
0 1 2 3 4	0 1 2 3 4
Never Rarely Sometimes Frequently Constantly	None Min'al Mod High Severe

	A	B
3. *Alterations in regulation of affect and impulses*		
3.1 Addictive behaviors/substance abuse:		
3.1.1 Overworking /being a "workaholic" /over doing-excessive (any) activity / over-exercising		
3.1.2 Alcohol, tobacco, non-prescription or prescription drugs		
3.1.3 Eating disorders - over/under- eating		
3.2 Dysregulation: Hyper-arousal		
3.2.1 Feeling nervous, tense, stressed, agitated, anxious (***physiological hyperarousal, psychomotor agitation***)		
3.2.2 Feeling fearful		
3.2.3 Panic, panic attacks, hyperventilation		
3.2.4 Frozen terror/immobilized can't move with fear "rabbit in the headlights" "stuck"		
3.2.5 Feeling 'dumb-struck', mute, stunned, shocked		
3.2.6 Nervous, 'jumpy', easily startled		
3.2.7 Feeling "on guard", "on alert", hypervigalent, anticipating danger/ concerned for safety/protection		
3.2.8 Feeling overwhelmed by feelings, (***emotional flooding***)		
3.2.9 Emotionally reactive, volatile, more than would have expected/ out of proportion/for the situation, hair-trigger reactions, jumping to the defense (***reactive defensive***)		
3.2.10 Feeling quickly/easily triggered/provoked, hurt/angry (***reactive defensive***)		
3.2.11 Feeling uncontrolled anger, short tempered, volatile		
3.2.12 Feeling abusive/destructive/violent (towards self)		
3.2.13 Impatience, frustration		
3.2.14 Impulsivity/impulsive action, risk taking behaviors		

A	B
Frequency (How often)	Severity (How distressed/anxious)
0 1 2 3 4	0 1 2 3 4
Never Rarely Sometimes Frequently Constantly	None Min'al Mod High Severe

	A	B
3.3 Dysregulation: Hypo-arousal		
3.3.1 Feeling numb, little/no feeling body senses/sensation (in part/ or whole body, use Body-Map diagram)		
3.3.2 Experiencing little/no emotion, "flat", numbing of general responsiveness		
3.3.3 Listless, lethargic, collapsed, no enthusiasm		
3.3.4 Feeling vague, not present, "not here", "switched off" or "shut down" emotionally		
3.3.5 Feeling low energy, slow, "lazy"		
3.3.6 Exhausted/depleted/drained, empty, lifeless/ dead (*energetically/emotionally dissociated*)		
3.3.7 Feeling ineffective, lacking in capacity, "couldn't even if wanted to", unable to act/take action/defend		
3.3.8 Depressed, disinterested, loss of motivation, "why bother", no point, no expectations/future aspirations (foreshortened future)		
3.3.9 Not wanting to be alive, thoughts of suicide, thoughts of /preoccupation with dying/death		
3.3.10 Loss of previously held beliefs, loss of hope, faith, loss of meaning/value of life/living ***(alterations in systems of meaning)***		
3.4 Hyper-arousal + Hypo-arousal 3.4.1 Mood swings or erratic, changeable moods		
4. *Alteration in attention or consciousness* 4.1 Mind distracted, poor concentration, scattered/racing thoughts, "can't think straight"		
4.2 Mind vague, slow, absent-minded, lose things, can't remember if done something or just thought about doing it, find evidence of having done something but can't remember doing, forgetting, amnesia (*cognitively dissociated*)		

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Frequency (How often)					Severity (How distressed/anxious)				
0	1	2	3	4	0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Constantly	None	Min'al	Mod	High	Severe

		A	B
4.3	Mind "not present/not here", "stare off into space", disengaged, disinterested "switched off" "shut down", not aware of the passage of time (*cognitively dissociated*)		
4.4	Mind repeatedly dwells on negative/distressing memory of past experience		
4.5	Mind preoccupied with negative/distressing images/scenes/scenarios/thoughts		
4.6	Mind repeatedly replays negative/distressing memory of past event		
4.7	Mind 'replays' over and over some negative/distressing images/scenes/scenarios/thoughts		
4.8	Not being sure whether recollections really happened or whether imagined/dreamed them		
4.9	Perceiving other places/objects/people as "surreal"/ unreal or different than usual		
4.10	Being in a familiar place but finding it strange/ being in a strange place and finding it familiar (desa vu)		
4.11	Past experiences suddenly 'intrude' and feel as if reliving/ happening in the present, 'flashbacks'		
4.12	Scene(s)/image(s), suddenly come up and interrupt, 'intrude'		
4.13	Scene(s)/image(s), suddenly 'intrude' their impact is felt immediately, at that moment/in the present		
4.14	Intrusive interruptive sensations/feelings/emotions suddenly come up/arise		
4.15	Involved in daydreaming/fantasy that can feel as if actually happening		
4.16	Occasions where hearing or vision goes		
5.	***Alterations in relationship with others***		
5.1	Feeling disengaged, distant, disconnected as if through a fog/veil so world/others appear unclear or at a distance		
5.2	Feeling disengaged, distant, estranged, disconnected from others		
5.3	Difficulty trusting, suspicious of others		

A					B				
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Never	Rarely	Sometimes	Frequently	Constantly	None	Min'al	Mod	High	Severe

		A	B
5.4	Feeling used, exploited, manipulated, disregarded		
5.5	Reduced interest/avoidance of participation in social activities/engagements, certain people/places		
5.6	Feeling anger/hatred/abusive/destructive/violent (towards others) (Hyper)		
5.7	Nobody can/will understand you/your experience		
5.8	Long periods of no sexual desire		
5.9	Distress/dissatisfaction/concern associated with sexual activity		
5.10	Uncontrolled or preoccupation with sexual thoughts/fantasies/feelings		
5.11	Unwanted sexual thoughts/images/fantasies/feelings		
5.12	Difficulty managing/balancing sexual involvement		
6.	***Alterations in self-perception***		
6.1	Feeling ineffective, slow/slowed "lazy", lacking in capacity, "couldn't even if wanted to", unable to act/take action/defend		
6.2	Feeling unable to manage/control/influence important aspects of life, powerless		
6.3	Feeling "wrong", defective, "damaged goods", handicapped, deficit/deficient		
6.4	Feeling "wrong", embarrassment, deep humiliation, shame		
6.5	Feeling guilt and responsibility (I should have...but did not), at fault, to blame		
6.6	Feeling like withdrawing, hiding, disappearing		
6.7	Feeling disorientated/disoriented/ lost (dissociation/consciousness)		
6.8	Self loathing, self criticism, judgment, self rejection		
6.9	Holding that your experience is *nothing* compared to....others (minimizing)		