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The internal gateway to healing trauma-spectrum manifestations (TSM): A SHIP® perspective on spontaneous healing reactions (SHRs)

Johan O Steenkamp, BA, BA Hons, MAPsych, DLitt et Phil*
Private Practice, Brooklyn, South Africa

Abstract

Innate autonomic self-regulation towards people's natural healthy blueprint disposition reflects the SHIP® (Spontaneous Healing Intra-systemic Process) point of reference. SHIP® proposes that spontaneous healing reactions (SHRs) are subcortical somatic flashbacks in the service of autonomic self-regulation and the gateway to healing trauma-spectrum manifestations. Mapping through the integration of experiential research on SHRs and literature on brain specificity is documented in support of this assumption.

Keywords: Autonomic self-regulation, individual specific field, psychology, SHIP®, spontaneous healing reactions (SHRs), trauma, trauma-spectrum manifestation (TSM)

Introduction

Unresolved neurological changes in the brain induced by trauma, especially developmental trauma, are an initiating complement for trauma-spectrum manifestations (TSM), an integrated SHIP® diagnosis for trauma-related dis-eases (1). ("The trauma spectrum" was introduced by Van der Kolk in 1988 [2].) TSM diagnosis incorporates the doctrine that chronic dis-eases are part of people's internal natural disposition towards a solution and that spontaneous healing reactions (SHRs) are the gateway to the solution. Addressing the cause of chronic symptom manifestation requires an understanding of SHRs and their role as part of the system's autonomic self-regulation of unconscious/trauma material towards healing, integration and balance.

The writing of this article was prompted by decades of work with clients and their SHRs in SHIP®. Precursors to the birth of SHIP® in the mid-1980s were the concept of self-regulation promoted

* ***Correspondence:*** Johan O Steenkamp, Private Practice, PO Box 35077, Menlo Park, 0102, South Africa. E-mail: jos@intekom.co.za

by Autogenic Training and the intuition that dis-eases are part of an internal healing plan where the internal wisdom of the client's system will point the way (3, 4). The SHIP® psychotherapeutic setting facilitates a healing space within which clients are activated through their trauma-activating events gathered from autobiographical information, and other activators discovered during the development of SHIP® (4). Clients in SHIP® are asked to refrain from voluntary action while they are lying on the psychotherapy bed. Because the clients remain passive in the face of SHIP® activation, clients' SHRs are exposed and facilitated towards completion of previously uncompleted responses.

The function of this article is to present a SHIP® perspective on SHRs that may assist practitioners of trauma psychotherapy. It could also stimulate further research on SHRs, leading to a greater understanding of TSM and its treatment.

To open a debate on SHRs, the author will focus on the following research questions:

- What are the etiological constituents of SHRs?
- What are the characteristics and natural disposition of SHRs?
- Could mapping of SHRs locate unconscious territory?

Explanations and discussions on the etiology, characteristics and mapping of SHRs will be introduced in the following paragraphs. This will incorporate other authors' views. For the sake of brevity and in deference to the journal parameters the focus where possible will be on concise explanations.

Explanations and discussions on the etiology, characteristics and mapping of SHRs

Some basic etiological determinants are clarified below to create a platform for the discussion on SHRs. These etiological factors are classified into energy-chemical communication, autonomic self-regulation, the HPA axis protection system and trauma.

Energy-chemical communication

According to the quantum perspective the universe is a holistic information matrix constituted of extensive and dynamic intertwined, interdependent and integrated energy fields. The building blocks of the universal matrix, the quantum atom structures, each have their own unique energy signature of miniature energy radiating universes with vibrating, spinning vortices (5). This forms the medium in which chemical communication is generated. All material structures are collectively made up of assemblies of atoms called molecules (6, 7), and molecules are the smallest units of meaning in chemistry (8).

According to SHIP® theory, the individual specific field (ISF) is the person's holographic field within the universal matrix that harbours all past, present and potential future experiences, both intra- and inter-systemically (1, 3, 4). Intra-systemic experience involves all energy-chemical information during impulse transmission that links internal systems into a multidirectional communication web. This internal web forms the substrate of the manifestations that allow the ISF to experience itself in its interactions and translations with the inter-systemic external world.

Proteins, the stuff of life such as enzymes, are the essential molecular physical building blocks of the intra-systemic domain that determine the cell's structure and behaviour, and catalyse processes of chemical change (5, 8). Nerve impulses start at cellular level and the cell membrane, also referred to as the brain of the cell, functions as an interface for certain proteins. Cell death is imminent in the absence of its membrane or if the membrane does not allow the translation of environmental signals (5, 8). Integral membrane proteins (IMPs) embedded within either side of the cell membrane are the fundamental physical subunits of the cell's intelligence/awareness mechanism and chemical communication (5). IMPs are divided into two classes that function as an autonomic stimulus-response mechanism regulating information transportation or signal transduction across either side of the membrane (5, 8). This allows nutrients, waste products, and other forms of information molecules, necessary for the smooth functioning of the cytoplasm, to be transported through the membrane. Signals can be sent down the

tendril that releases the chemicals through the membrane into the synaptic cleft on their journey to neighbouring neuron dendrites. The two functional classes of protein complexes that link reception of environmental stimuli to response-generating pathways are the receptor and effector protein reflexive perception switches (5):

- *Receptor proteins (awareness oriented)*: These IMPs are the cell's sense organs and function as physical sensation nanno-antennae tuned to respond to specific environmental stimuli (vibrating energy fields and physical stimuli). Some IMPs extend inwards from the membrane surface and monitor the internal world of the cell while others extend outwards, monitoring external signals. Cells possess a uniquely tuned receptor protein for every environmental signal. When a specific molecule is in the cell's vicinity a specific receptor locks onto it. This locking-on changes the receptor's electromagnetic charge and the protein shifts into its active conformation, entering the environmental data into the cell. This in turn stimulates the effector proteins, altering their molecular angles.
- *Effector proteins (action oriented)*: Effector proteins are the creators of physical sensation and engage in action-generating life-sustaining cellular behaviour responses. There are different kinds of behaviour control effector proteins for different actions. In active mode the effector proteins ensure the smooth functioning of the cell through open action, such as shuttling information from one side of the membrane to the other (transport proteins) or facilitating cell energy production to empower biological processes (channel proteins).

The two classes of protein complexes cause expansion or contraction of the cell membrane, determining the shape and size of the molecules able to pass through it (9). Constant changes in the shape of protein conformations, which can occur thousands of times per second, are exploited by cells to empower specific metabolic and behavioural functions that support life. The complex behaviour of a living cell is collectively created through the simultaneous interactions of tens of thousands of reflexive perception IMP switches in the functioning membrane, each directly reading an individual environmental signal. Cell survival depends on the ability to adjust dynamically to an ever-changing environment. If movement stops functions stop. When the number of these IMPs is maximised, awareness is increased, which translates to greater resilience and survivability (5). Consciousness depends on IMP flow – the more molecular conversations the greater consciousness (8, 10).

Complementary environmental signals are required to animate the protein's movement (5). Cells are impaired when the environment is less than optimal. Epigenetics ("control above the genes") is the science of how environmental signals select and regulate the protein-gene activity (5, 7-9, 11-17):

Genes are physical memories, a molecular record, of an organism's learned experiences and evolution. Current external life affects this memory bank – when a gene product is needed, the quality of external signals from the environment outside of the cell will set in motion a set of energy-chemical instructions. The receptor-effector complex acts as a molecular switch: The acceptance of environmental signals by the receptors stimulates the effector proteins to activate the reading of genes by un-wrapping the protein sleeve around the DNA. Certain genes within the human DNA will be switched on and express while others will remain inactive. The expression of a gene is therefore not an emergent property of the gene itself and the brain appears to be naturally driven by both genetic information and the impact of experience. It is the perception of the environment that causes cells to change their structure and behaviour. Constant remoulding and modification of genes without changing their basic DNA code is complemented by other environmental influences and life experiences (e.g., nutrition, stress) that all contribute to the change in brain structure and the shaping of biology.

Epigenetic mechanisms may compromise the internal process of autonomic self-regulation.

Autonomic self-regulation

Autonomic self-regulation within the ISF can be defined as a self-organisational interactive feedback process that emerges from the nature of the properties of the ISF. It incorporates fine tuning devices for multiple energy-chemical correction and integrative functions that move the system towards its optimal healthy blueprint and maximal complexity (1, 8, 13).

The brain is the main controlling role player in autonomic self-regulation. Through the nervous system and its protein-activated reflexive perception switches the brain perceives, monitors and interprets environmental signals, and responds by organizing and coordinating appropriate behavioural responses in all the cells in the system (5). In view of the discussions that follow, a concise summary is presented of the Triune Brain Model of the evolutionary development of the brain (18):

- The first and oldest area, which is fully developed at birth, consists of the primitive systems responsible for survival, the ongoing autonomic self-regulatory firing patterns of important basic life-affirming processes, including the regulation of heart rhythms, respiration, states of alertness and sleepiness, and aspects of the fight/flight/freeze response. These deeper structures are referred to as the reptilian brain (the arousal system) and consist of the brainstem, medulla, pons, and a section of the cerebellum.
- The limbic system or mid-brain (the interpretive system of the brain consisting of the hippocampus, amygdale, hypothalamus and thalamus) and the basal ganglia are the second part of the brain to develop. This region, which is fully developed at birth although not fully functional, is a primary source of stimulus evaluation and is involved in attachment, memory and meaning regulation (especially processing events into factual and autobiographical forms), emotion and the fight/flight response.
- The largest section of the brain, the cortical regions, is the third part to develop. It consists of areas such as the left and right prefrontal cortex, the orbito-frontal areas and the anterior cingulate. Most of the cortical regions (needed for higher thought processes) develop after birth and are affected by the constant interplay between the internal and external environments (13, 16).

The connections between the reptilian and limbic brains that organize our lower reflexive sensorimotor processing and responses to sensory stimuli can function independently of top-down regulation, whereas top-down processing depends on the lower levels. All autonomic self-regulation is controlled and organized by signals sent from the connections and close collaboration of the more primitive brain regions via the neural pathways to every individual muscle or organ (19, 20). The body is continuously detecting signals from its quantum field and neurons of these lower levels switch on distinct gene combinations whose responses are initially concerned with movement and the responsibility for carrying out tasks in different locations (21). The hypothalamus within the limbic zone enables such direct influences on the body (13, 22).

The hypothalamus-pituitary-adrenal (HPA) axis protection system

The body has two protection systems that form part of autonomic self-regulation: the HPA axis for the perception of external threats and the immune system for internal threats such as those caused by bacteria and viruses (5). In preparation for the discussion on SHRs further on in this paper, the focus in the following paragraphs will be on the HPA axis.

Perception exists in conjunction with the potential for action. During initial threat perception information processing of the higher mode, the cortical region, is deactivated so that the deeper reflexive survival regions of the brain, the brainstem and limbic regions, can take immediate, automatic and instinctual control. Stimulation of the immediate reflexive response initiates the motor behaviours necessary for fight/flight as follows (2, 5, 10, 16, 17, 22-28):

Sensory input is sent to the *locus coeruleus*, a part of the brainstem and the anatomical core of the physiological arousal mechanism (stress responses) in the central nervous

system; the *locus coeruleus* is a principle site for brain synthesis of norepinephrine. Norepinephrine is the neurotransmitter responsible for delivering messages to the rest of the brain about the need to prepare for emergencies. The *locus coeruleus* is therefore involved in intensive alertness modulation and autonomic reflexes. During stress neurons of the *locus coeruleus* evaluate the threat value of the sensory input and initiate and mediate the arousal response by secreting increasing levels of norepinephrine. The enhanced norepinephrine postsynaptic responsiveness in the neuronal pathway will stimulate arousal in parts of the brain such as the amygdale, which mediates processing of arousal-based memories.

The activated amygdale quickly assesses and evaluates the emotional content of the external activating event and initiates the following two fight/flight response sequences:

- Outside of conscious awareness and via the release of neurotransmitters the amygdale mediates the regulation of the autonomic nervous system's (ANS) preparation for bodily execution. The somatic nervous system takes over from the ANS, and the hypothalamus (the master hormone regulator within the limbic regions that functions as a way station for signals originating elsewhere in the brain) and pituitary gland (the master gland of the endocrine system) sense and coordinate the flow of behaviour-regulating signals within the cellular community. The hypothalamus receives the environmental threat and activates sympathetic acceleration of the initial involuntary activation by stimulating and engaging the HPA stress hormonal axis through a signal sent to the pituitary gland. The pituitary gland launches the body's organs into action by sending a signal to the adrenal glands (adrenal alarm). In endocrine response the adrenal stress hormones coordinate the flight/fight function of the body's organs. Adrenal stress hormones (epinephrine and norepinephrine) released in the blood, constrict the blood vessels of the digestive tract. This forces nutrient-rich blood to flow preferentially to the muscles of the arms and legs and stimulates the life-sustaining reflexive behaviour of the hindbrain, providing the person with great physiological power to retaliate and to get to safety.
- The amygdale sends the information to the hippocampus, which assigns a cognitive meaning to the information and then sends messages to the orbitofrontal cortex (OFC). The OFC activates the HPA stress hormonal axis to organize the autonomic and endocrine responses, increase the sympathetic discharge and inhibit parasympathetic tone (through the brainstem). The OFC functions as the master regulator (of the limbic system, the ANS, and the HPA axis) in processing arousal-based information and modulating autonomic regulation and homeostasis. Finally, from there the information will be sent to the cerebral cortex, which organizes complex survival behaviour.

When the fight/flight response discharges the arousal of the sympathetic nervous system successfully, everything returns to normal. In the absence of threat the HPA axis remains inactive. In the face of trauma an adaptive sequence of events unfolds.

Trauma

During a trauma-activating event the person experiences a perception of powerlessness to retain complete integrity (4). When fight/flight defence possibilities are mobilized but cannot be carried through, their natural progression is aborted through parasympathetic firing that takes over from the sympathetic system and creates a state of collapse (16, 21, 23). The information remains stuck as non-integrated energy-chemical material in the deeper brain arena and cannot be relayed to the limbic system or neocortex through the thalamus (which serves as a relay port through which much of perceptual input passes). This shutting off of the initiated stress response holds the neuroendocrine stress reaction (endogenous, stress-responsive neural hormones such as cortisol, epinephrine, and norepinephrine) in a time-frozen state of hyper-aroused fight/flight energy activation (2, 4). Although the information loop has gone into freeze or "play dead" response mode (23), it

still seems to involve an intensely engaged sympathetic system, since muscles have become tense and stiff, heart rate is elevated, and sensory awareness is increased to hypervigilance (21). Trauma equals disrupted neurotransmitter impulses and neuroendocrine stress hormones that were unable to discharge through the synapses to ensure the passing of impulses from one neuron to the next.

The freeze response has a short-term life-saving function, but the disrupted flow of vital energy due to the long-term freeze of activated stress-responsive neural hormones disrupts brain efficiency (4, 13). When the membrane's receptor proteins are left intact and its effector proteins are immobilized, the result is cell coma (5). Additional trauma (developmental trauma or shock trauma) accumulated after the initial trauma-activating event can add to the length of the trauma-chain that feeds excessive disruption of autonomic self-regulation.

Compromised neural integrity affects all physical organ systems. The state of disrupted autonomic self-regulation predicts the health problems and manifestation of dis-ease (1, 2, 29). Trauma-induced long-term non-alignment with the natural healthy blueprint disposition of free-flowing energy within the ISF will put the client at risk of developing trauma-spectrum manifestation or TSM (1, 16, 23). The following chronic dis-eases (TSM) have been documented as arising from epigenetic mechanisms and trauma (4, 30-36):

Growth inhibition, higher risks and rates of infections and some autoimmune dis-orders (e.g., systemic lupus erythematosus and cancer), cerebrovascular dis-eases (e.g., stroke), coronary artery/cardiovascular dis-eases, liver dis-eases, skin dis-eases, chronic lung dis-eases, irritable bowel syndrome, obesity, chronic pain, osteoporosis, dysautonomia (syndromes like fibromyalgia, somatisation dis-order, and chronic fatigue syndrome), preterm labour, ovarian dysfunction and early menopause, ADD and ADHD, PTSD and Complex PTSD, diabetes, mood disorders (such as problems which affect regulation and relatedness – depression, psychoses, and sociopathic dis-orders), fragmentation of memory and disintegration of sense of self, diminished conscious awareness and reduced intelligence, and other neural dysfunctions.

Variations of TSM could possibly originate in particular brain areas due to neurobiological abnormalities caused by the shut-down or abnormal switching on of certain genes.

Initially, before trauma entered the picture, the brain experienced raw, rich and direct unbiased sensation (4, 22). Trauma disrupts this picture; a perceptual sense of injustice in the face of powerlessness is an inhibitor of consciousness. Enhanced energy activated in the brain shape-shifts into unconscious procedural memory territory, the primary storage place of survival-based information (16). Consistent panelbeating through external influences leads to a further recession of expression and free-flowing energy of other potentialities and possible coping configurations. The adapted coping that defines also confines owing to a loss of the complete experience of ongoing sensation of the now (1, 6). Spontaneity is sacrificed to inhibition and subsequent rigidity, and clarity gives way to projection. The survival journey from the original raw and direct sensation to a narrowing in consciousness characterised by assembled and moulded perception equals a change in the physical structure of the brain (22). Life experiences have altered the natural free firing patterns within the brain's neural tracts and the ISF's natural self-organizational executive functioning towards complexity (1, 13, 21). Autonomic self-regulation has been compromised in favour of unconsciousness.

TSM is an ISF systemic 911 call focusing attention on the fact that the person is living a compromised life (1). It is part of the ISF's innate natural disposition to manifest its inherent potential, and SHIP® theory proposes that SHRs is the energy-chemical lifeline of trauma-healing in favour of living a conscious and uncompromised life with free access to all internal potentialities (1, 4).

Spontaneous healing reactions (SHRs)

The author of this article proposes that SHRs are the reflexive reaction link (apart from all the other neural complexities) between receptor and effector proteins and trauma. SHRs are at the heart of autonomic self-regulation and manifest continuous involuntary, interconnected energy-chemical reflexive perception reactions in favour of internal balance (1). During a trauma-activating event information is received by the

receptor proteins and some of the initial reflexive reactions are not distributed by the effector proteins, but the kinetic energy is kept on-hold and frozen into unconscious timeless potential energy. The disruption in autonomic self-regulation implies that the complete processing and assimilation of sensorimotor activations to the trauma-activating event have not taken place (9, 21).

Migration to a state of connectedness depends on the enigmatic wisdom of the SHRs. When activated through external associative activators to the initial trauma, the lower regions of the brain drive the continuous selective fragmented executive release of the unfreezing stored procedural memory (1, 21). In addition, autonomic self-regulation, because of its natural detoxifying process, evokes these typical bottom-up flashback somatic experiences and responses of trauma memory into consciousness (16). The limbic system (ANS) selectively regulates and exposes the person to this fragmented release of SHRs by converting energy-chemical communication into sensations (3), operating as if the danger is still imminent – which in fact it is, since unfreezing is only taking place now. It is noteworthy that neurons of the *locus coeruleus* are viewed by some as the first or second leg in the pathophysiology of the TSM circuit (26). Research has shown that chemical stimulation of norepinephrine release from the *locus coeruleus* can induce somatosensory flashbacks in TSM sufferers (2). This implies that SHRs have norepinephrine as a constituent.

SHRs can be compared with the sensations one has when one's leg "awakes" from "sleeping" – all the pins and needles and peculiar sensations signify the opening of the blocked neural communication channels. SHRs lead to the completion of the initial on-hold neuroendocrine stress reaction. This equates to the flow of energy within the ISF – the reverse movement, or freeze discharge, of timeless potential energy to in-the-moment kinetic energy. Release and completion of involuntary SHRs reciprocally lead to integration of trauma, a disappearance of TSM and the realignment of the psychobiology to its natural free flow energy disposition. SHRs restore the integrity within the ISF. This results in a reciprocal movement to spontaneity, self-assertiveness and an access to full potential. SHIP® facilitates such life-changing results with former TSM sufferers who have gone through spontaneous healing of their trauma, and has developed a wide variety of activators to activate and expose frozen SHRs (1).

The questions remain: What can SHRs teach us? Can their neural origin provide clarity on the etiology of certain dis-eases and their possible prevention or eventual healing? This article focuses on opening this debate. Potential pointers may be discovered when mapping SHRs. SHIP® categories of SHRs will be listed in order to create a platform for the discussion on mapping.

Categories of SHRs

The author of this article has noted in excess of 2000 varieties/combinations of SHRs that serve to extinguish internal trauma. It is quite common in SHIP® for a chain reaction of SHRs to follow initial activation, signifying energy release of the trauma-chain.

The two main sensory systems that are involved during the manifestation of SHRs and that are well developed by birth are the exteroceptive and interoceptive sensory systems. The categories of SHRs within these systems are based on experiential research and literature on the flashback fragments of clients' trauma memory (10, 13, 16, 21, 24, 27, 29, 37):

The exteroceptive sensory system (perception – awareness-oriented) consists of nerves that receive and transmit information from the exterior environment of the body by way of the eyes, ears, tongue, nose, and skin – these are the primary senses that warn the person of impending threat. SHRs in this system would include the following:

- *Visual* – such as seeing various images (e.g., spots, balls, wavy patterns, colours, written words, or realistic images of previous incidents), or tunnel vision, or de-realization and micropsia (distortions in visual perception).
- *Auditory* (audition) – such as hearing an incessant ringing in the ears, or a zooming sound around the whole body, or somebody calling the client's name, or a tune going

round and round in the client's head, or other sounds.

- *Taste* (gustation) – such as the taste of blood, or metal, or semen, or a bitter or acid or an acrid taste.
- *Smell* (olfaction) – something very definite such as the smell of petrol, or oil, or ether, or anaesthetic, or a hospital, or perspiration, or an attic, or an old cupboard, or perfume, or copper bangles, or the client's childhood home, or somebody's body odour from long ago.
- *Touch* – such as hot or cold sensations.

The interoceptive sensory system (somatosensory – action-oriented) consists of nerves that receive and transmit information from the interior environment of the body (from the viscera - organs of the chest and abdomen), muscles and connective tissue. SHRs in this system would include the following:

- *Proprioception* – the kinesthetic sense (of the body's spatial and internal states, which enables a person to locate all the parts of his or her body in space, and the force, timing and speed of muscle movement), and the visceral sense (which gives feedback on body states such as heart rate, respiration, digestive muscles, internal temperature, muscular tension and visceral discomfort) through nociceptors and thermoceptors: sensations such as a sharp pain in the ears, or a pressure on the ears or a strange feeling in the ears, or twitches or tics or cramping in any muscle area or tremors or turning movements of parts of the body such as the head and neck (involuntary and self-perpetuated muscle fasciculations), or the feeling that there is a tight steel band around the head or chest, or feeling someone holding the client, or someone putting pressure on any part of the body, or being strangled by someone, or someone tightening a corset around the client's middle, or a feeling of a blanket around the shoulders, or tightness in the throat, or hypoglycaemic feelings, or a spiky pain sensation anywhere in the body, or a hollow feeling in the pit of the stomach, or pressure inside or on top of the head, or jaw clenching, or heart palpitations, or suffocation, or excessive sweating, or numbness, or fever-related feelings similar to delirium, or pins-and-needles sensations, or reddening of the skin, or a flickering in the eyes, or eyes jumping, or a lot of movement behind the eyes, or squinting, or burning discomfort in the bladder, or pain in the breasts.
- *Vestibular responses* – a subset of proprioception located in the inner ear. The vestibular responses indicate which way is up and help the body sustain a balanced posture and maintain a comfortable relationship with gravity: sensations such as confusion and disorientation, or being off-balance, or experiencing vertigo or spinning in any direction and motion sickness, or lying skew or swaying, or falling through the psychotherapy bed, or somersaulting in a swimming pool and not being able to tell top from bottom, or that one's body is bumping up and down, or levitating, or being sucked backwards head first into a vortex, or flying backwards and upside down, or floating in water.
- *Depersonalization* – related to, and sometimes in conjunction with, vestibular responses, and manifesting as body distortion and out-of-body experiences: sensations such as the brain sinking deep down, or body decreasing in size and the environment increases in size, or feeling that the head is shaped like a block, or the body or hands or feet or ears or other parts feel inflated and distorted, or body parts feel separate/ disjointed from each other and do not feel like a unit, or arms have switched positions, or organs are too large for the body, or the body feels asymmetrical or cylindrical or twisted in the middle with the stomach facing down and the top half of the body facing upwards, or that the arms are short and the legs long, or the face feels pointed like a long beak, or a person feels like a triangle with a hole in the middle and falling to the left, or

de-realization experiences (that time is standing still or moving very fast).

- *Emotional feelings* – closely linked to proprioception, the combination of sensations and the urge for physical activation is experienced as an emotion: each basic emotion (fear, anger, shame, sadness, disgust, frustration, or happiness) is an integral experience of the body and has an accompanying set of discrete underlying body sensations (e.g., sadness manifesting as a burning in the throat) stimulated by pattern activity in the brain. Emotional SHRs have the common originator of a loss of complete experience due to trauma. Loss is always sad, it implies an internal knowledge that something should have been different; it is released through crying, which is a basic deep neural release present since infanthood.

Clinical practice shows two distinct interoceptive SHR release avenues: various possibilities and combinations of any SHRs found within the four interoceptive categories (suggesting the inter-relatedness), or with the absence of emotional feelings. In either case, and whether implicit or in combination with explicit memory, the result is the relief of TSM.

Mapping of the different types of SHRs will be done in the next section in view of the hypothesis that SHRs are reflexive reactions that unfreeze accumulated neurotransmitter impulses and neuroendocrine stress hormones. This exercise might indicate the location of origin of SHRs, where initial trauma found its unconscious nestling place in the brain.

Mapping of SHRs

SHIP® categories of SHRs were confirmed by the work of others who noted that activity in sensory regions of the brain may mediate perception and the specific nature of this firing may signify the different aspects of perceptual information – this led to the following mapping of the SHIP® SHRs categories (16-18, 22, 25, 29, 38, 39):

The exteroceptive sensory system:

- *Visual* – vision and its messages are routed from the visual cortex to the *locus coeruleus*; high levels of activation in the amygdale and low levels in the fusiform area (that specializes in deciphering specific visual stimuli) result in a possible dysfunction in the visual cortex through periodic fragmented effector release and projection of internal trauma.
- *Auditory* – auditory messages are sent from the auditory cortex to the cochlear nucleus in the medulla from which fibres project to the medulla level, the midbrain level and the thalamus; from the thalamus auditory fibres project to the primary auditory cortex in the temporal lobe for detection of the auditory stimulus, and from there the auditory message is sent to the auditory association areas for interpretation.
- *Taste* – the gestation pathway leads from the taste bud receptors on the surface of the tongue to the solitary nucleus in the medulla, after which the information is propagated to the amygdale, hypothalamus and thalamus; from the thalamus the gustatory information travels to the primary gustatory cortex located in the frontal insula for conscious interpretation.
- *Smell* – except for olfaction all sensory information travels through the thalamus before it reaches the cortex: smell is detected by the olfactory cortex from which it has a direct connection to the amygdale and the primitive emotional and unconscious fear responses to threat. Like vision, smell and its messages, are routed to the *locus coeruleus*.
- *Touch* – sensory receptors carry a stimulus (vibration, tactile sensation and proprioception information) along nerve fibres to where they synapse with the first order neuron in the dorsal root ganglion and from there into the spinal cord through the dorsal nerve roots; after entering the spinal cord the nerve fibres terminate by synapsing with a spinal second-order neuron that eventually runs through the brainstem

(succeeding through the medulla, pons and midbrain) and terminates by synapsing with cells/neurons in the thalamus; third-order sensory neurons in the thalamus carry the sensations to the somatosensory cortex in the parietal lobes.

The interoceptive sensory system – both the limbic system and the basal ganglia are responsible for the activation of patterns of sensory responses to external cues and set the trajectory of protection:

- *Proprioception* – the kinesthetic and visceral systems involve all autonomic self-regulatory processes of the body and its organs: the abdominal viscera have unique neural connections with parts of the brainstem and the limbic system (made possible by the somatic nervous system that sets up a continuum between the brain and the musculoskeletal system). Many musculoskeletal reflexes are automatic and are governed unconsciously by neural pathways in the spinal cord and brainstem. Vasomotor control is governed by reciprocal alternating of dominance of the sympathetic and the parasympathetic parts of the ANS, the motor cortex (where commands to move the muscles are generated) and the somatosensory cortex (a map of the body). Nerve input to the somatosensory area generally comes from the thalamus deeper in the brain. Each part of the brain is assigned a particular spot in the somatosensory cortex for processing and with less cortical space due to trauma a body part becomes more alienated – fragmented SHR release through that body part could possibly restore functionality.
- *Vestibular responses* – many brainstem reflexes that influence posture are instinctual and hardwired in the brain before birth: vestibular nuclei in the pons-medulla junction receive information about balance and equilibrium from the inner ear, midbrain, pons and cerebellum.
- *Depersonalization* – the parietal cortex in the brain helps define bodily boundaries and this could form part of the neural regions associated with the experience of identity. It has been postulated that the thalamus could be shut down during certain somatically oriented therapies, allowing input from the deeper structure of the most basic self at the brainstem level to flow directly and alter how a person perceives the body's boundary – the suggestion is that the enhanced release of SHRs stimulates a part of the parietal cortex, causing the body boundary distortion until there is eventual integration and increased neural alignment towards the healthy blueprint disposition. The sense of self is influenced by memory formation and space-time relation. It is the point of reference in life, and although memory is not stored in the hippocampus the hippocampus is necessary for processing memory (it receives input from and sends efferents to both the amygdale and the cortex) and for conceptualizing and coordinating this memory in space-time before the eventual lower activation is recorded as explicit memory in the cortex – a trauma-induced shrunken and dysfunctional hippocampus disorientates the experience of space-time and affects the sense of self and boundary specificity.
- *Emotional feelings* – the biology of emotion in the body and brain is called affect and is largely a subcortical process with a decrease in information processing in neocortical systems during intense emotional states. Immediate, automatic and unconscious emotional responses follow a direct route - the sensory information is sent to the thalamus from where it is transmitted to the amygdale. The amygdale is responsible for reflexive autonomic components of emotion, such as uncomfortable emotion and distress (e.g., changes in heart rate); the central nucleus of the amygdale projects to a variety of brain structures, including the brainstem; large bundles of neurons run between certain regions of the amygdale and the prefrontal cortex and eventual emotional control and similar high-order cognitive function is then

done by the prefrontal region, which plays a key role in regulating emotions; the anterior cingulate cortex (part of the limbic system and a central station for processing top-down and bottom-up stimuli) has extensive connections with different brain structures within the limbic system and brainstem that orchestrate and play a key role in processing the autonomic, neuroendocrine, visceral behavioural response coordination and expression of emotion (activation and modulation), enabling more response flexibility for both bodily input and affective responses. The hypothalamus works in collaboration with the limbic system in the expression of emotion and sends signals to the body to generate many of the visceral and hormonal changes that frequently accompany emotion. Disruption in the functioning in the anterior cingulate may provide a neural basis for problems with emotional regulation, as well as a generalized problem with physiological arousal and emotional numbing. A key area of the brain for self-awareness is the insula in the cerebral cortex, which sends signals to the visceral organs during emotion and monitors the body through reception of signals related to pain, temperature, visceral sensations, and the state of the blood vessels.

The author of this article has often observed when dealing with clients in SHIP® that exteroceptive sensory experiences are the key to opening the perception of interoceptive energy – awareness leads to action. This could indicate that the interoceptive SHRs are the deeper embedded truncated trauma energy-chemical release. With some clients the interoceptive SHRs are immediate, while with others they are introduced through activation of exteroceptive SHRs such as visual memory of people, events, or archetypal images. The above mapping suggests that interoceptive SHRs can largely be traced to the lower brain regions – the cortical processes in the higher brain regions could not receive and process the trauma material successfully because of disrupted autonomic self-regulation. Taken together with the proposal that SHRs are the reflexive reaction link between receptor and effector proteins and trauma, this has an interesting implication: TSM could possibly originate from curtailed reflexive behaviour in the spinal cord, brainstem and limbic regions. This should be seen in conjunction with genetic susceptibility and supplemented by additional complementary environmental constituents such as climate, diet, exercise, and other constituents of everyday life.

Conclusion

The author of this article has presented different constituents and characteristics of SHRs. It is proposed that SHRs show qualities of disrupted neurotransmitter and neuroendocrine stress hormone responses, and that trauma is born through this disruption. Mapping of the different categories of SHRs indicates that SHRs probably originate in the deeper reflex-oriented brain structures. This implies that trauma-spectrum manifestation (TSM – which includes most chronic dis-eases) could originate due to curtailed reflexive behaviour. SHRs may be defined as subcortical somatic flashbacks attempting to rectify the disruption in autonomic self-regulation caused by an energy-chemical induced unconscious. The suggestion is that TSM may be reversible through a process such as SHIP® that resurrects and facilitates interaction with the dark night of the deep brain regions. This allows the enigmatic SHRs to unleash the trauma shackles of unconsciousness and to complete the unfreezing journey towards integration and optimal autonomic and conscious functioning. Further neural-biochemical research on SHRs is needed to verify the proposal on SHRs and the implication that the neural wound can heal itself within the appropriate psychotherapeutic healing space.

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