Neuropersonality: A Psychosomatic Unity Paradigm

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Abstract

In this paper we discuss how recent discoveries and insights in neuroscience and psycho-neuro-endocrine-immunology (PNEI) confirm and support the "psychosomatic unity paradigm," which views human beings as a "unitary psychosomatic system" and highlights how the Self and the main psychosomatic functions are regulated by seven "emotional systems" (Panksepp 2012). The disequilibrium of these seven systems may have a deep impact on consciousness and on the neuro-psychosomatic structure of the Self, thus providing a scientific explanation for human personalities, for the origin of psychosomatic blocks and for Reichian character and muscular armour. This scientific evidence suggests the need and the challenge for a more scientific body-oriented methodology that can include the development of a more integrated therapeutic approach based on self-awareness and deep psychosomatic consciousness.

Keywords: Psychosomatic PNEI paradigm - integrated approach - emotional systems - hormones and neurotransmitters – neuropersonality – self-awareness.

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1 - The Psychosomatic Self: a scientific approach for body psychotherapies

Psychoanalysis, and later psychotherapy, have continued to question the connection between mind and body; each providing different answers according to their own paradigm. Wilhelm Reich (1945, 1948), as well as numerous body-oriented psychotherapy schools such as Alexander Lowen's "Bioenergetic", Ola Raknes's "vegetotherapy", Malcolm Brown's "Organismic psychotherapy", David Boadella's "Biosynthesis", Federico Navarro's "Somatopsicodinamica", John Pierrakos's "Core Energetic" Gerda Boyesen's "Biodynamic psychotherapy", Jerome Liss's " Biosystemic psychotherapy," Charles Kelly's "Radix" (Lowen, 1958; Boadella & Liss, 1986; Navarro, 1988; Latorre, 2000), have extensively investigated this paradigm since the early 1900s and have adopted an integrated approach in which psyche, emotions and body are perceived as a unitary psychosomatic system. This paradigm has been the core of ancient Eastern traditions and worldwide holistic medical school trainings. Current neuroscientific evidence (LeDoux, 1996; Damasio, 2010) endorses this psychosomatic paradigm. Candace Pert, the NIMH researcher and internationally recognized pharmacologist whose early work identified the first opiate receptor and neuropeptides in the brain, stated that we have to think of the mind and the body as an integrated whole (Pert, 1999), as a "*psychosomatic network*" (Pert, 1985).

The research and theories of Nobel Prize winner Gerald Edelman (2003), Antonio Damasio (2010), and Jaak Panksepp (1998a), include body, emotions, mind and consciousness as dimensions of an interconnected psychosomatic unity in which the Self is understood as the cognitive center that governs and gives coherence to the whole network system.

In particular, scientific evidence from the new interdisciplinary field of *psycho-neuro-endocrine-immunology* (PNEI) (Ader et al., 1995, 2006; Blalock, 1997; Bottaccioli, 2005) considers the physical-hormonal and psychological-emotional dimensions as complementary aspects of the human being that deeply reflect and influence each other as functions of the same system.

In contrast to the traditional reductionist neuropsychiatric model, which believes that neurotransmitters and neurophysiological structures can explain and determine the entire dimension of the human psyche and considers mental disorders as neural "mistakes" that must mainly be "repaired" by psychoactive drugs, the psychosomatic unity paradigm, based on PNEI systemic vision, suggests that any psychological, emotional, or body-oriented intentional therapeutic action can eventually modify and re-organize the individual's neural and endocrine system resulting in psychosomatic equilibrium. According to the psychosomatic unity paradigm, the psyche-body relationship is firmly established—it is not merely a metaphorical reflection or a somatic repercussion of psychic tensions. In this light, a deeper understanding of neurocognitive structures and their functions can facilitate a better understanding of the character analysis of the person and the alterations and distortions that lead to mental disorders, supporting more precise therapeutic orientation and practice.

The psychosomatic unity paradigm considers human beings as a whole, multidimensional psychosomatic system. The term unitary in this context means that each person has his/her own unique self-awareness (the sense of body-mind identity or individuality). The term multidimensional means that every human being has a complex structure and lives simultaneously at different psycho-somatic dimensions, from physical-instinctive consciousness, to affective-emotional consciousness, to mental-cognitive consciousness. Today, insights from neuroscientific research and PNEI contribute to a deeper and more complex understanding of the nature of the Self and of these dimensions of consciousness based on successive developmental steps of the brain/mind evolutionary process.

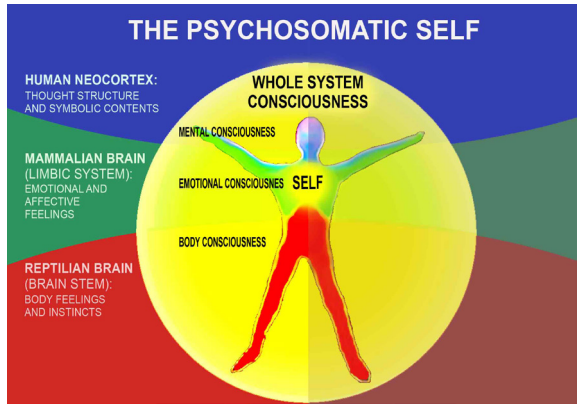
These modes can be expressed in a unitary way through Paul MacLean's concept of the "triune brain" (MacLean, 1990):

1) The body structure and physical-instinctive dimension controlled by the reptilian brain is the oldest and most primitive level of consciousness.

2) The emotional and relational dimension, our affective level of consciousness, is controlled by the mammalian brain (limbic system).

3) The cognitive, mental dimension, and its rational and imaginative contents, controlled by the neocortical brain, represent our most evolved level of consciousness.

The "psychosomatic Self" in this perspective can therefore be considered the center of the "triune brain" and our whole system consciousness—the awareness of one's own global identity—that represents the effect of the coherent, synchronic activity of the three brains' neural networks and their physical, emotional and cognitive functions and dimensions.



2 – Neuroscience, system consciousness and the "Psychosomatic Self"

According to "general systems theory" (Bertalannfy, 1968) each system consists of a number of sub-systems that operate and function according to their own intelligence and complexity (Capra, 1996; Jantsh, 1980; Laszlo, 1996). The global system has rules that are evolutionarily superior to the sum of its single parts. We can also refer to such a coherent, intelligent network as "system consciousness", where the concept of consciousness is decoupled from the concept of spirituality or mysticism.

Starting from David Bohm's insight that "*meaning is the bridge between consciousness and matter"* (Peat, 1987, p. 74), we can define consciousness in a cognitive way as *"the system's capacity to perceive the meaning of information and to use it for the whole system's wellbeing and evolution*" (Montecucco, 2001, p. 120). The concept of consciousness therefore becomes anchored to our psychosomatic perception, our personality traits, and our mental architecture.

Until a few decades ago, scientists believed that consciousness and the sense of Self were the expressions of the higher cognitive functions of the neocortex: the most evolved and mental part of the brain, while the emotional and bodily functions, connected with the ancient subcortical areas of the brain—the mammal and reptile (limbic system and trunk)—were essentially automatic and unconscious. Today, neuroscientific research shows that surgically removing an animal's neocortex at a young age does not result in a deficiency of consciousness; therefore, the center of consciousness and Self is subcortical (Merker, 2007).

Edelman (2004), Damasio (2010) and Panksepp (2012) have shown that consciousness and the sense of Self are strongly related to the neuronal network that connects the thalamus (the center of the limbic system and the brain mammal) to the whole neocortex (higher human brain) and to the lower reptilian brain. The Self is able to be conscious and to unify the information of the brain-mind system through a higher level of network communication between the thalamus and all brain areas, which is measured as electroencephalographic (EEG) coherence (Llinas, 2001; Montecucco, 2006).

Panksepp showed that this consciousness network is triggered by the old reptilian brain, which regulates the basic bodily and instinctive functions and awakens the state

of consciousness. He proposed the term "primordial seven self" (Pankesepp, 2012, p. 390) to highlight that the primary center of the Self-consciousness that arises from the peri aqueductal gray (PAG) in the midbrain (reptilian brain). It controls the basic body and emotional perceptions, a kind of 'bodily-instinctive self' that has a complete neural representation of the whole body and regulates all the body instinctive functions and the basic emotions fundamental to life (Pankesepp, 2012). Edelman called it the "*bodily self*" (2004, p.73).

The PAG activates the thalamus and the thalamus then activates the neocortex. Both the PAG and the thalamus are now considered the two main areas of Self-consciousness. In fact, even small lesions of the thalamus and/or the PAG seriously affect or nullify ("switch off") consciousness. The thalamus-neocortex network that Edelman called the "*dynamic core of consciousness*" (2004, p.71), represents the higher and most Self-conscious part of the network.

The thalamus and PAG are the primary centers of consciousness, with strong psychosomatic activity that regulates all major bodily and emotional functions. The neocortical functions govern the higher cognitive consciousness functions related to psychological, social, rational and ethical behavioural aspects (Uddin, et al., 2007), as well as the unique and prominent human capacity of Self-awareness, that Edelman called the capacity to be "*conscious of being conscious*" (2004, pp.7-8).

According to this neuroscience evidence, the "self"—the psychosomatic consciousness of our being—appears to be primarily rooted in the body and in the emotional levels, and only secondarily in the mind.

The psychosomatic Self that emerges from neuroscientific and PNEI research represents the center that governs the whole being by generating a highly coherent EEG communication between the physical, affective and cognitive areas of the brain. The Self is the core of the psychosomatic unit paradigm.

Reich Freud divergences on libido

Reich suggested to Freud that he consider the libido not just as a psychological concept but as a real and measurable energy (Reich, 1948, introduction). Today we have to reconsider the Self not only as a mere psychological or metaphysical concept but as a real entity that governs the psychosomatic system with measurable psychosomatic effects. In recent years there have been thousands of neurophysiological and clinical studies on meditation and more than 2,400 on mindfulness alone (PubMed, 2013) showing that the development of a deeper "self" awareness produces a substantial and lasting balance in the psychic, nervous, hormonal and immune systems improving relationships, empathy, learning, family and working relationships, and developing a greater self-esteem (Chiesa et al., 2010; Davidson et al., 2010). Many studies have validated the clinical effects of the practices of Self-awareness to promote the healing of stress, anxiety, depression, emotional distress and other psychological and psychosomatic problems (Miller et al., 1995; Segal et al., 2002; Young et al., 2010).

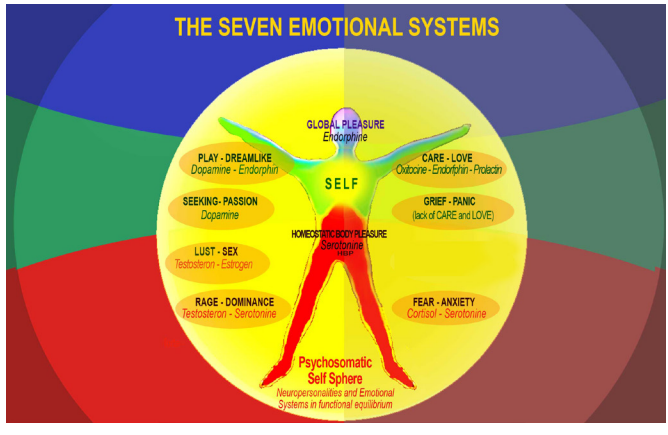
In order to complete the whole human psychosomatic system, we have to understand the most recent significant discoveries of the brain-mind neuronal anatomy and of the "emotional systems" originating from the subcortical areas of the reptilian and mammal brains that are connected with the higher neocortical areas.

3 – Personality and the seven emotional systems

Personality, defined as a particular combination of behaviours, emotional features and psychological patterns, has been deeply investigated by neuroscientific researchers in the last years. According to Jaak Panksepp (1998, 2012), the human Self appears, operates and is accomplished through seven main emotional systems common in all mammalian and human brains. The seven emotional systems are: RAGE/DOMINANCE, FEAR/ANXIETY, LUST/SEXUALITY, SEEKING/ENTHUSIASM, CARE/LOVE, GRIEF/PANIC and PLAY/DREAMLIKE. These emotional systems are the basic psychosomatic functions that manifest through specific physical, emotional and cognitive behaviours essential for the survival of the Self.

The seven emotional systems are activated by neurotransmitters, neuropeptides and hormones, that Candace Pert (1999) called "molecules of emotions". The emotional systems are modified by epigenetic, familial and social conditionings creating a unique pattern of body, emotional and psychological traits interacting with the Self-consciousness neural network and also creating the roots of personality. Like the seven basic colours, the unique assemblage of the seven emotional systems can create every imaginable pattern of personality with infinite and unique shadings and traits.

While the reductionism vision believes that neurotransmitters are the main cause for psychic unbalance, we believe, out of robust scientific evidence, that by voluntarily changing our physical, emotional, and psychological behaviours and consciousness we can change our neurosystem patterns and our neurotransmitter, neuropeptide and hormonal levels thus promoting a new psychotherapy approach.



The seven emotional systems, along with their activating hormones and neurotransmitters, constitute the human "psychosomatic network" (Pert, 1985), and the neurophysiological roots of the psychological, emotional, and somatic expressions of personality and character (Panksepp, 2006).

We coined the term "neuropersonality" (Montecucco, 2009, p. 325) to represent these expressions in order to highlight the strong neural grounding of the emotional systems. Through the study of neuropersonality we hope to understand the neurophysiological roots of the various definitions of personality and character that are used by the psychotherapeutic schools (Reich, 1945; Eysenck, 1953; Lowen, 1958, Cloninger, 1994, 1999).

The Emotional Systems and their Complex Psychosomatic Effects:

The Homeostatic Body Pleasure system and serotonin

The Homeostatic Body Pleasure system is the brain's primary somatic energetic system source. It is evolutionarily connected with the basic need for food in order to survive and is present in the most primitive animals around the digestive tract. Thus, serotonin transmits the pleasurable sense of satiety in the presence of food or a state of unpleasant sensation and alarm due to lack of food; it stimulates the food search. This very primitive system can therefore be considered the "vital engine" that sustains all of the other seven systems. Ninety percent of our serotonin is located in the gastro intestinal tract.

Serotonin is the main neurotransmitter regulating this system and it is connected with all of the well-being physical perceptions: the sense of corporal pleasure resulting from food, eating, stability, sleep, territory, relaxation, dominance, sex and muscular strength (Bottaccioli, 2005; Panksepp, 1998a). In the absence of danger, it leads to a behavior of relaxation, pleasure, and enjoying life. We consider this system the biopsychic substrate that generates the neurophysiological basis of Bowlby's and Ainsworth's secure base attachment theory—the basic sense of physical security and the pleasant and protective (not yet affective) maternal energy (Bowlby, 1969, 1988). Serotonin is the neurotransmitter related to homeostatic stability, presence, and physical and psychological grounding that increases during meditation. Serotonin stimulates oxytocin and prolactin production.

It is a fact that when the body consciousness and the pleasure system, mediated by serotonin, become weak, psychological and psychiatric disorders begin to emerge (Cloninger, 1999; López-Ibor, 1992; Bottaccioli, 2005). Clinical researchers have suggested that high levels of serotonin are related to a maniac state, while lower levels of serotonin are related to depression (Owens et al., 1994).

High serotonin levels reduce aggressive behaviors in rodents and primates. (Panksepp, 1998a, 2012). Low serotonin levels indicate low impulse control in rodents, primates, and in violent suicide (Golden, 1991). In conditions of difficulty or physical weakness (with low testosterone and high cortisol), it generates avoidance behaviors or "harm avoidance" and results in the search for physical security and avoidance of risks and dangers (Cloninger, 1999).

Body-oriented psychotherapeutic efforts to enhance better body awareness, trust, confidence and pleasure, along with "grounding" practices are related to this system. Many psychological and psychiatric disorders, from depression to mood disorder, alimentary disorder, obsessive-compulsive disorder, post-traumatic stress disorder, social phobia, and generalized and social anxiety disorder, are based on a deficit of serotonin. In a reductionist psychiatric approach, they are usually treated with selective serotonin re-uptake inhibitors (SSRI drugs) that increase serotonin. Our clinical research suggests that deficit serotonin production usually emerges when the body-consciousness and pleasure system become weak and insufficient to ensure a satisfying physical life; it can be improved by psychotherapy work aimed to reintegrate somatic self-awareness, grounding, and bodily pleasure (Ghiroldi & Montecucco, 2011, 2013).

1. **The SEEKING system and dopamine:** the SEEKING system (Panksepp, 2012), is activated by dopamine and governs all the active emotional processes: exploration, passion, and the search for pleasure. The SEEKING system is the most import activating system of the limbic system, the heart of the mammalian emotional brain. It stimulates the brain's active functions. Its main characteristic behavior is called "novelty seeking" (Cloninger, 1999). Allan Shore (2003) suggested that the dopaminergic activation, related with

positive emotions, represents one of the main pathways for infant development, maternal security and self-regulation. In association with serotonin, high levels of dopamine are related with the arousal of the SEEKING system that promote a maniac state, while lower levels of dopamine promote depression. People with high levels of dopamine tend to show a narcissistic and exteriorized behavior.

The psychosomatic aspect or the neuropersonality associated with the SEEKING system is related to the passionate, physical, and energetic activity connected to emotional and cognitive attention and enthusiasm—a sense of vitality in every movement, dynamism and warmth of the body, watchful, lively and brilliant eyes, and open breath in the chest. We developed a special training process that enhanced this system in depressed and avoidant patients.

2. **The FEAR-ANXIETY system:** The FEAR-ANXIETY system (Panksepp, 2012) is connected to the emotion of danger (shock, trauma) and activates the hypothalamus-pituitary-adrenal (HPA) axis and the "fight or flight" active response (Fink, 2010) or the "inhibition of action" passive response (Laborit, 1969). The "inhibition of action" plays a major role in the genesis of human emotional and psychosomatic blockages. In fact, the majority of children and people cannot react with an active, aggressive "fight or flight" response (mediated by adrenaline) to negative situations with their parents or with school teachers (Laborit, 1969); therefore, they must inhibit their active actions and emotions. This generates an over-activation of the fear system and of the inhibitory hormones like cortisol and norepinephrine.

   In clinical psychotherapy, the psychosomatic aspect of the FEAR neuropersonality is, in many aspects, similar to Lowen's "masochist" character and is related to decreased sympathetic tone, and inhibition of instinctive (muscular) and emotional (affective) activity. Thus, it is related to the inhibition of breathing with contraction of the throat, chest, and diaphragm, with tense muscles and contracted shoulders, buttocks (anus) and legs, deep neuro muscular tension, deflated and weak chest, stiffness of the neck, downcast eyes and a weak and insecure voice (Lowen, 1958, 1975; Reich, 1933). The neuropersonality shows a specific alexithymia related to the emotions of anger and aggression.

Cortisol is a stress related hormone. Its levels increase in states of fear, action inhibition, anxiety, and "harm avoidance". It is the most studied hormone in international stress research (Fink, 2010). The presence of anxiety and stress in mothers is an important epigenetic and psychosomatic factor in child development: the research shows that high cortisol levels in pregnant women epigenetically activate the highest levels of cortisol release and the FEAR system response in children (Austin, et al., 2005; Essex et al., 2002; Weinstok, 2005). Even low levels of emotional care in early childhood increases stress and cortisol sensitivity. The "inhibition of action" increases the cortisol level and creates sympathetic nervous and muscular tension with progressive difficulties in parasympathetic relaxation and somatic serotoninergic pleasure. Cortisol is therefore related with the need for stability and security by inhibiting aggressive actions and avoiding the related strong emotions (Kertes et al., 2009). In this context, cortisol and serotonin are considered activators of the "harm avoidance" neuropersonality described by Cloninger (1999).

Norepinephrine generates a state of attention, mental acuity, clarity, determination, speed of response and presence (Fink, 2010). The norepinephrine excess, generated by the stress and by the "inhibition of action", creates and maintains anxiety, fear, arterial hypertension, mental tension, blockage of the diaphragm and of breath rhythm, and muscular rigidity. The decrease in norepinephrine (as in depression) determines confusion, dependence, uncertainty and lack of mental determination. It is the neurophysiological root of all "rigid" characters and tense behaviors in personality.

The psychosomatic aspect of the FEAR neuropersonality is related to decreased sympathetic tone, inhibition of instinctive (muscular) and emotional (affective) activity; thus, it is related to the inhibition of breathing, with contraction of the throat, chest and diaphragm, with tense muscles and contracted shoulders, buttocks (anus) and legs, deep neuro muscular tension, deflated and weak chest, and stiffness of the neck. Characteristic are downcast eyes and a weak and insecure voice. The neuropersonality shows a specific alexithymia related to the emotions of anger and aggression.

3. **The RAGE-DOMINANCE system and testosterone:** the RAGE-DOMINANCE system (with the help of testosterone, serotonin, and adrenaline) is one of the most powerful emotional systems (Panksepp, 2012). It is based on aggressiveness, anger and dominance—the basic emotions that allow living beings to defend themselves from attack—to preserve well-being (food, sex) and to defend the territory. Testosterone is the main hormone correlated with inter male aggression and dominance. Athletes who take testosterone become physically stronger, more aggressive and engage in more risk taking behaviors. In our clinical work, we observed an evident inhibition of the RAGE-DOMINANCE system in children and persons who have lived in aggressive, abusive, and unprotected families that strongly inhibit their personal power, courage to live, and strength to be themselves. Due to this consideration, in our practice, we developed some exercises to reduce the over activation of the FEAR-ANXIETY system by enhancing the RAGE-DOMINANCE system, through activation of the primary defensive reaction (anger, aggressiveness) that showed to be particularly useful in action inhibited patients. Through careful reinforcement of the primary vital reactions of defense and aggression, we have seen excellent clinical results helping submissive and weak people to react and defend their "territory" (personal space, work place, etc.), their personal values and themselves. In case of hyperactivation of the RAGE-DOMINANCE system, we usually work to enhance the CARE-LOVING system, which has significant efficacy to reduce and calm anger and aggression. The RAGE-DOMINANCE system is the neurophysiological root of all powerful charismatic leader's neuropersonality. In some points similar to Reich and Lowen's "psychopath" character, and, in the worst cases, of the DSM-V aggressive behavior and personality disturbance like antisocial and borderline.

The "inhibition of action" based on the FEAR-ANXIETY system, typical of babies and children living in aggressive and unprotected families, can deeply inhibit aggressiveness and anger within the RAGE-DOMINANCE system and strongly inhibit personal power, the courage to live and the strength to be themselves.

The psychosomatic aspect of the RAGE neuropersonality is characterized by increased sympathetic tone, strong and erect physical structure, a high and growing chest and high nasal breathing, with a high degree of muscular tension in the right arm, intense aggressive emotions and thoughts of conflict and revenge. There is also a decisive and

determined look, volitional movements, and a strong and directive voice that is often prone to verbal aggression.

4. **The LUST-SEXUAL system:** the LUST-SEXUAL system (Panksepp, 2012) is activated by sex hormones: testosterone, estrogen and vasopressin. It influences physical strength, dynamism, sexual energy, aggression, competitive game, risk and individualism. In animals it is correlated with inter- male aggression and dominance. The "inhibition of action" based on the FEAR-ANXIETY system, typical of babies and children who have grown up in aggressive and unprotected families, can deeply inhibit the LUST-SEXUAL system. The psychosomatic aspect of the LUST-SEXUAL neuropersonality is characterized by sensual and relationally open behaviors, with an attractive look and sensuous and pleasant behavior. The pelvis and the legs are loose and relaxed. In our clinical studies we observed that the inhibition of this system is associated with closure of the muscles of the pelvis and thighs, and relational behaviors of closure and rigidity.

5. **The CARE-LOVING system and oxytocin:** the CARE-LOVING system (Panksepp, 2012) is probably the most important human affective system for the development of a functional and mature self (Schore, 2003a). It is present only in mammals and human beings; it is absent in reptiles. It activates the behaviors of affection, parental care, intimacy, empathy, friendship, affective memory (baby recognition), attention and kindness (Bottaccioli, 2005; Panksepp, 2012).

   The function of the CARE-LOVING system is of vital importance for all mammals and human beings in particular because babies are completely dependent on their parents in order to thrive and become adults. The CARE system is activated by oxytocin, which increases the affectivity and the empathy between mother and baby and enhances their memory for the cross recognition of face, body and smell to synchronize with one another. It is the psychobiological foundation of the affective quality of Bowlby's and Ainsworth's secure base attachment theory (Bowlby, 1969, 1988). Because of the large connections with the frontal cortex, the thalamus, and the PLAY-SEEKING dopaminergic system, this affective system seems to be one of the main psycho-neural functions that promotes the development of the self (Schore, 2003a).

   Oxytocin slightly inhibits the male and female sexual steroid hormones promoting a different, more intimate and loving sexuality (Panksepp et al. 2012; Unkelbach et al., 2008). Oxytocin is the most powerful anti-stress hormone. When it is given to autistic children it tends to minimize their relational difficulties and facilitates better expression of emotions (Guastalla et al., 2010). The psychosomatic aspect of the CARE-LOVING neuropersonality is characterized by increased parasympathetic tone and calm, affectionate and friendly behaviors. The look is loving and empathetic, hands tend to be warm and gestures are reassuring.

   In our clinical studies we observe how this neuropersonality shows a strong tendency to justify others and a specific alexithymia related to the emotions of anger and aggression.

6. **The GRIEF/PANIC system:** the function of the CARE-LOVING system is vital; therefore, the absence of care and love arouses the GRIEF/PANIC system (Panksepp, 2012), which is the system of loneliness, affective needs, sadness, crying, and, ultimately, depression. It is the neurochemical ground of panic crises. The dysregulation of the

CARE system and the parallel activation of the GRIEF-PANIC system, appears to be one of the main causes disorders of the self (Schore, 2003b) and the different forms of depression and panic crisis.

In our clinical studies we observe that the psychosomatic aspect of the GRIEF/PANIC neuropersonality is characterized by insecure, needy and anxious behaviors. The eyes are sad and look for loving kindness. The chest (heart) is contracted with narrow shoulders. The voice is characterized by high-pitched and plaintive sounds (crying, whining) oriented to the request for help and kindness.

We developed a number of psychotherapy practices and trainings to "calm" the grief and panic of this neuropersonality by restoring the full activity of the CARE system. We used many kinds of warm affective body contact: "maternage" exercises; regressions and emotional release of sadness and grief; and expression of personal affective needs and negative feelings. These practices help people to feel part of a protected, supportive, understanding, and loving group, to "reopen the heart", and trust that they deserve love. The interventions were particularly useful with depressed patients.

Particularly in patients with panic crisis, we observed a consistent emotional alexitimic "compression" that can be cured by specific emotional release exercises and by enhancing the capacity of emotional expression.

7. **The PLAY/DREAMLIKE system:** the PLAY system (Panksepp, 2012) is activated by dopamine and governs the play and socialization processes: from "hide and seek" and "rough and tumble" childhood play to adult sports and dances.

   This is a fundamental system of human activities that must be widely applied in education and psychotherapy (Shore, 2003). The psychosomatic aspect of the PLAY system neuropersonality is similar to the SEEKING system with a marked feeling of joy, playfulness, and laughter and fun. This neuropersonality can often manifest as "narcissistic" character.

   The DREAMLIKE or SATISFACTION system represents the higher part of the PLAY system and is connected with the higher values and meaning of life, related to the frontal and prefrontal cortex, like knowledge, beauty, unity, meditation and spirituality (Pert, 1999). It is activated by endorphins—hormones that are secreted within the brain and the nervous system. Endorphins (endogenous morphine) have an anesthetizing effect on increases in pain and stress as they activate the body's opiate receptors resulting in an analgesic effect thereby reducing our perception of pain and triggering positive feelings in the body similar to that of morphine resulting in a sense of global satisfaction, pleasure, wellbeing and serenity. The SATISFACTION system is activated by harmonious and friendly relations (oxytocin), by relaxation (serotonin), meditation and orgasm. It slightly decreases the effects of sexual hormones and the more instinctive libido in favor of a deeper sexuality.

   To conclude this complex and fertile argument, we underline how Panksepp suggested that the seven emotional systems are the main biological foundation of our soul (Pankespp, 1998b) and that their inhibition or over-activation are the biological substrate of many psychological and psychiatric disorders (Pankespp, 2004). In our therapeutic practice we realized that, by enhancing psychosomatic and emotional awareness, we have not only cured the disorders, but also people's self-awareness and inner spiritual dimension.

4 – From Reichian characters to neuropersonalities

Body-oriented psychotherapies, as described in the beginning of the article, in relation to human development of personality and psychosomatic blockages, have adopted an integrated approach where body and emotions play a leading role. Reich captured the connections among these various human psychosomatic experiences and emotional expressions and referred to them as "character", from Greek *kharakter*, etymologically the "engraved sign", but also the "imprint on the soul". The character shows the individual's biological, relational and biographical history (Ferri & Cimini, 1999) and has a temporal evolution and stratification. The detailed map of body blocks is truly a picture of the personal psychosomatic biography of an individual. It is as if each person carries a picture of his/her own ancient and recent personal history through the body-mind expressions and shape.

Reich supported the idea that *"a genetic-dynamic theory of the character... and a well-founded examination of the genetic differentiation of character types would be of importance for the theory and therapy" and for "a comprehensive, systematic psychoanalytic characterology"* (Reich, 1933, preface to the first edition).

Reich evidenced that the human personality is the complex result of three main elements: the biological-genetic structure; the affective and psychological maternal, familial and social conditionings; the deep sense of self-identity of the person.

Neuroscientific and PNEI understandings of the psychosomatic origins and the development of emotional systems and neuropersonality create a scientific root for the Reichian discoveries and the subsequent psychosomatic unity paradigm, providing the scientific genetic foundation for a modern theory of personality.

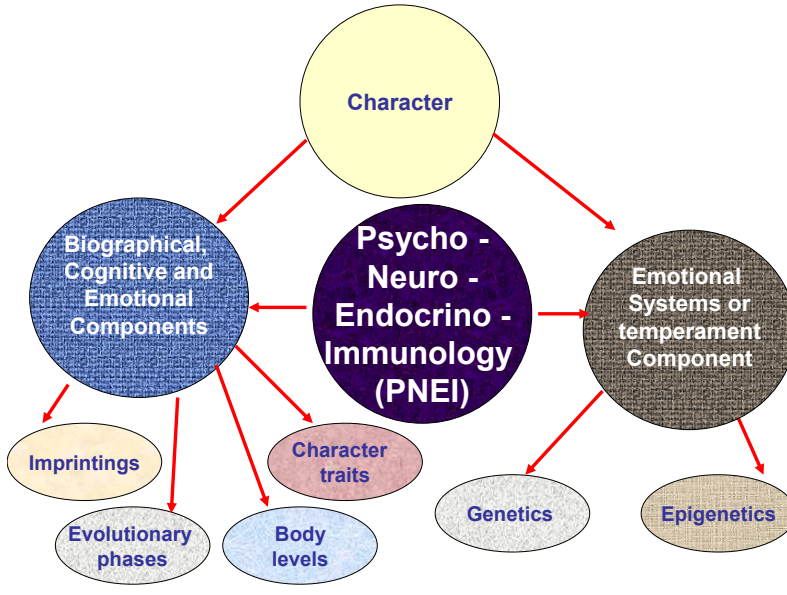
There is robust evidence from PNEI research that the emotional system's expression and the neuropersonalities' activity are in part determined by genetics and epigenetics and in part by external conditioning (Cloninger, 1994, 1999; Talge et al., 2007; Masterpasqua, 2009.

In *Character* Analysis Reich (1933, pp. 198-199) wrote: "*We do not deny that the modes of reaction are hereditarily predisposed, in fact the newborn already has its own character. It is likely that some deeper qualities of personality are innate.*" Therefore, it appears that every human being is born with his/her own temperament (neuropersonality), which will be modified in a unique way by life experiences and maternal, affective and social conditionings, leading to a specific personality or character.

Numerous PNEI research results have evidenced that pregnant mothers who are in a state of stress, depression or trauma during pregnancy have a deep epigenetic and psychosomatic influence on the emotional systems (cortisol) and on other fetal psychosomatic parameters developing traits that persist for years in the child as neuropersonality structures particularly exposed to anxiety and fear (O'Connor et al., 2002; Ruth et al., 2007; Weinstok, 2005; Talge et al., 2007).

The concept of character is very near to that of neuropersonality; it can be described as an extended structure, the evolution of personality. Indeed, this is a complex system that can be seen from two viewpoints: the emotional and psychological component and the temperamental component that refers more specifically to the neural, genetic, and epigenetic components.

As Reich understood, the ancient personal emotional experiences developed as early as during intrauterine life, and the more recent experiences produced by the repetitiveness of our cognitive and emotional mechanisms tend to "reiterate" the same specific character and blocks throughout our lifetime.



The inhibition or hyperactivation of every single emotional system simultaneously blocks specific muscular, emotional and psychological structures expressed through the body as muscular armour. So, a particularly strong or deep inhibition or hyperactivation, as happens in trauma, can cause a state of entire Self inhibition or hyperactivation.

The structure and the modes of inhibition and hyperactivation of the seven emotional systems are stored in brain areas as body remembrances (cerebellum, striatum), emotional reminiscences (hippocampus, amygdala) and psychological autobiographic memories (neocortex, prefrontal cortex).

The neuroscientific understanding concerning the body's response to "negative" emotions, and the activation of the FEAR-ANXIETY system, connected to the stress response and to the "inhibition of action" (Laborit, 1969, Fink, 2010), provides the scientific basis of the "instinct-inhibition" of the emotional energy that Reich posed as the main origin of the various types of characters.

Most of these specific character blocks are not consciously perceived. They constitute the unconscious, the place where the history of the individual resides, which is out of awareness but emerges through the verbal, oneiric and body languages. In other words, fixations originating from childhood experiences combine to determine in the unconscious way how the individual feels, expresses himself and behaves during life. Body-oriented psychotherapy can help people become conscious of these blocks and restore a more authentic and natural psychosomatic consciousness.

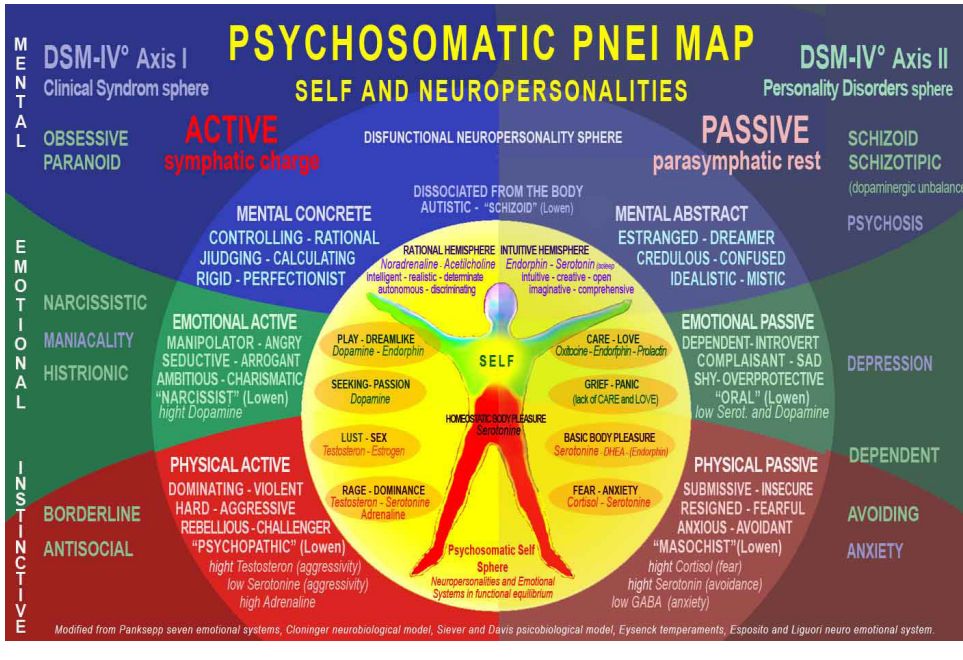
Over the past twenty years, in our Institute, we developed specific psychotherapy practices and exercises to help people restore and activate their repressed and/or inhibited emotional systems, and/or calm and govern their overstimulated systems. All of these practices are performed in a space of deep self-awareness and are based on a psychosomatic use of mindfulness and other types of active meditations. This produced an important

improvement of the symptoms and disorders, a psychotherapeutic process acceleration and an improved sense of identity and self-awareness.

For this reason, the psychosomatic PNEI system, governed by the Self and by the seven emotional systems, may potentially offer a scientific foundation for modern body-oriented psychotherapies and a strong support for the development of a new and more psychosomatic Self-consciousness therapeutic approach.

5 - The "psychosomatic map" of Self and neuropersonalities

The seven emotional systems are considered the basic ways through which the Self can manifest in life. In fact, their inhibition or imbalance is associated with the entire range of psychosomatic and psychological disturbances: from light unbalance of the personality traits to major forms of psychological distress; to psychiatric and personality disorders, in which the sense of Self is altered, fragmented or dysfunctional. The interaction and development of these seven emotional systems allows us to understand the scientific basis of human personality and character. Their inhibition or hyperactivation easily generates an immediate, parallel, inhibition or disharmony of the natural bodily, emotional and psychological functions that are the basis of the psychosomatic blocks, of the muscular armour and of the structure of the "character" as expressed by Reich (1945) and Lowen (1958).



In other words, these distortions lead to the development of a "false self", a structured and dysfunctional personality designed to adapt to a specific family or to social constraints.

The PNEI Psychosomatic Map

We created a **PNEI Psychosomatic Map** where we systematized the main neuronal structures according to their anatomical evolution and functions. The three main levels of

evolutionary development: instinctive, emotional and mental, corresponding to the reptilian, mammalian and neocortical brains, are represented respectively in red, green and blue. On the right side of the human figure, we find the emotional systems and hormones stimulating the active response (charge) of the sympathetic system, on the left side we have the systems and hormones stimulating the passive response (rest) of the parasympathetic system. The three concentric areas are related to the levels of clinical severity:

- **the central area:** the yellow "psychosomatic self sphere" represents the Self's essential functions, the core of the psychosomatic system. This is the functional and balanced neuropersonalities area, where all the main emotional systems and their hormones and neurotransmitters are in a natural equilibrium
- **the middle area:** represents the "slightly unbalanced and dysfunctional neuropersonality sphere" and the homologues character. In this area we find one or more personality traits that people tend to identify with, thus creating a "false self"
- **the external area:** represents the severe personality disorders sphere corresponding to the highly unbalanced and dysfunctional neuropersonalities, from here we can define a connection between the neuropersonalities and the personality disorders as defined by DSM-V. We can say that a disequilibrium of the emotional systems, with a prevalence of one or more, creates a neuro-hormonal inhibition or disharmony that is the root of personality disorders or of the characters.

In the PNEI Map, we established general correspondences that take into account several factors: the seven emotional systems, the triune brain, the sympathetic/parasympathetic autonomic nervous systems, and the core Self. The interaction of these factors must still be deeply studied, which could be one orientation for future research. Above all, we need to study how the basic neuropersonalities react with the personal history and with the childhood imprintings beginning with intrauterine life. We believe that we now have the instruments to connect what Freud already wanted to discover: the human being's basic biological structure as neuro-scientifically studied, with the evolutionary biographical history studied by modern psychology. What we already know is that this interaction creates the personality and its disorders in all the physical, emotional and cognitive aspects.

From an integrative and holistic perspective, we can say that the emotional systems effects and hormonal actions do not appear to be purely mechanical, but are largely affected by childhood imprinting, upbringing, familial traditions, individual determination, and personal awareness. It is, therefore, essential to avoid any form of scientific reductionism, which is always a danger when trying to interpret the complexity of the human being.

The results of current and forthcoming neuroscientific research must be considered complementary to the research in the field of mental and symbolic processes, personal emotional experiences and ancient memories, as they enable us to gain a deeper understanding of the personal history and of the developmental process of each human being from birth onward.

6 – Conclusion: brain-mind integrity and Self-awareness

The model of the human being that emerges from neuroscientific and PNEI research is a "unitary psychosomatic Self system", an organic and inseparable body, emotional and cognitive unity that supports the understandings and the clinical fields of action of the psychosomatic unity paradigm we have proposed.

The concept of psychosomatic self-consciousness emphasizes the need for advancement in psychotherapy that promotes an integrated psychotherapeutic approach for the dissolution

and melting of bodily, emotional and cognitive inhibitions and blockages, and simultaneously for the development of a more global and deeper self-consciousness.

In the human being, psychic and cognitive modalities are strictly related to "functional operation", namely to the functioning of the inter-relation and exchanges between the various sub-systems. The mind and the seven emotional systems can be considered a privileged gateway to the Self. If the levels of consciousness change, the bodily functions and the perception of reality change. Thus, we can say that at the end of the psychotherapy process, when remission is achieved, many patients perceive an expansion of their personal awareness marked by emotional de-conditioning and a minor repetitive perception of reality less influenced by the childhood experiences (Barbato, 2011).

When defenses, fears or emotional blocks fade away, when the mental "cage" of our own conditioning, opinions and our often preconceived assumptions slowly dissolves, then it may happen that Self-consciousness and our perception of reality becomes clearer. Life is revealed in its deepest essence without being filtered through any psychic and bodily obstruction. Clients often express a feeling of integrity, a "state of oneness" that is essentially analogous to the meditation or mindfulness state, a stronger contact with their inmost energetic core, which is naturally in harmony with other people and with nature energetic processes (Montecucco, 1997, 2003).

This only happens as a result of an integrated psychosomatic process in which physical, emotional and mental components are processed by the individual's Self-awareness and then re-arranged according to their symbolic and abstract expressive capabilities and connected to the biological-biographical history. The disconnection from these elements, the separation between mind, body, and emotional systems, is the evidence of the first primary separation of the human being from its own real natural Self, the primary breeding ground of psychopathology and its symptoms.

Therefore, we can assume that spiritual evolution is tantamount to moving from knowledge to deep psychosomatic awareness and finally to deep Self-consciousness. At the end of the journey, our techniques, pains, fears, and words are like life rafts that must be abandoned; at that point, we are able to land safely at the harbour of our inner Self, the intangible being who helps us share the love we cannot contain.

To conclude, we quote Sri Aurobindo (1996, p.7) who beautifully described the connection with the Self as follows: *"The body is the divine instrument provided for the fulfilment of the right law of our nature."*

BIOGRAPHY

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