

The skin we are, the skin we feel

Skin – symbol – consciousness

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Abstract

The human somatosensory system works in a dynamic way. Our organs receive and produce stimuli that will be converted into biological information, which are necessary for formation, maturation and the overall functioning of the body, mind, and spirit. The “wellbeing sensation” is a result of several biological phenomena that involve the central nervous system. In this context, the role of skin, tact and touch in the development and structuring of our consciousness will be discussed. The concepts of “symbolic skin” and “sensorial psychic skin” will be explored. ■



Palavras-chave
symbolic
skin, touch,
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1. Introduction

Our classic five senses as described by Aristoteles are resultant of our species evolution, they ensure our survival, development and learning. Touch, one of our most complex senses, has been investigated in psychoneurobiology research over the last 35 years. However, clinical reports originated from psychology recognize a long ago¹ that the sense of touch is crucial for the structuring and development of our psyche. Tact is the first sense to develop in the human being, early during intrauterine life. All of our senses are equally important and integrated. Our body works in a dynamic way, our organs receive and produce stimuli that will be converted into biological information, which are necessary for formation, maturation and the overall functioning of the body, mind, and spirit.

The “wellbeing sensation” is a result of several biological phenomena that involve the central nervous system. In this context, the role of skin, tact and touch in the development and structuring of our consciousness and what is called “sensorial psychic skin” will be discussed.

A brief summary of relevant investigations stemming from neurosciences which provided neurobiological substrates for the understanding of the psychocutaneous functioning in the context of Integrative Dermatology will be presented. A special attention is given to touch type C fibers, to the free nervous endings and to keratinocytes (cells present in the most superficial layers of the skin), whose connections can mediate sensations of pleasant touch, the “emotional touch”, which is vital for the survival and maintenance of our species.

2. The skin organ in integrative dermatology

2.1. What does skin and psyche have in common?

In 1923, Freud postulated that the Ego comes from bodily sensation experiences since birth, in

particular by what occurs on the body, i.e., what is experienced in the skin serves for the construction of a psychic I, “the Ego is first of all a body Ego” (FREUD, 1980). Whether during the child’s early development according to Melanie Klein’s theory” (KLEIN, 1991), in the “Essays on the Theory of Sexuality” written by Freud (1977) or the “Mirror Stage” of Lacan (1998), it is through the observation of our body functioning that we are “constructed” as subjects.

The skin expresses who we are and how we feel. Skin and psyche are boundaries between the “I” and the “other”. The skin establishes a boundary between our bodies and the environment, as well as the psyche establishes and differentiates the “psyche” (our “inner world”) from the external world. Both the skin and the psyche remind us that we are unique human beings as individuals. A good example are our fingerprints, which are identified through the skin. Another example is our memory, which is absolutely individual. Our memory, both physical and emotional, is built since the intrauterine life. Our records are continuously constructed, they are dynamically updated and processed throughout life. They are like files saved in various forms, such as images and sensations.

Our skin is a vital organ of communication. Concepts of psychoneuroimmunology has enabled a more comprehensive understanding of how the skin and our emotions communicate. The main anatomical and functional evidences supporting these concepts are:

1. The presence of nerve fibers in contact with the skin surface skin cells (keratinocytes) and with immune cells present in the skin;
2. the discovery of substances that translate the messages from the central nervous system to the functioning of the skin and vice-versa (neuropeptides);
3. the existence of a dynamic network named NICE – neuro-immuno-cutaneous-endocrine network – that is in constant communication with our emotions.

The synergy between basic science and clinical practice is important for the understanding of how the skin and our sensations, experiences and emotions work in an integrated manner. Therefore, it became necessary to develop a language that would allow the understanding among the various medical disciplines and other areas of health for the practice of the interdisciplinary care, an integrative approach. This is the concept of Integrative Medicine, the “Integrative Dermatology” is a specialization in this area. Other terminologies also employed with the same sense include “Psychodermatology” and “Psychocutaneous Medicine (KOO; LEE, 2003).” In this article we use the term Integrative Dermatology (YOSHINAGA, 2011). The advances in neurosciences brought paradigm shifts, changing Cartesian concepts that “separated” the functioning of the psyche and the body. In this context, the skin gained a new *status*; an organ of the Psycho-NICE system (SLOMINSKI et al, 2012), one of the main communication routes for the integration mind-body-spirit. The Integrative Dermatology deals with the individual through this “psychic skin”, where the skin is psyche as well as psyche is skin. Instead of being just an “envelope” of the human body, the skin has to be considered as a “communication interface”, in particular as regards the neurological mechanisms that involve the tact, touch and the “bodily emotions”.

3. Skin – Symbol – Conscience

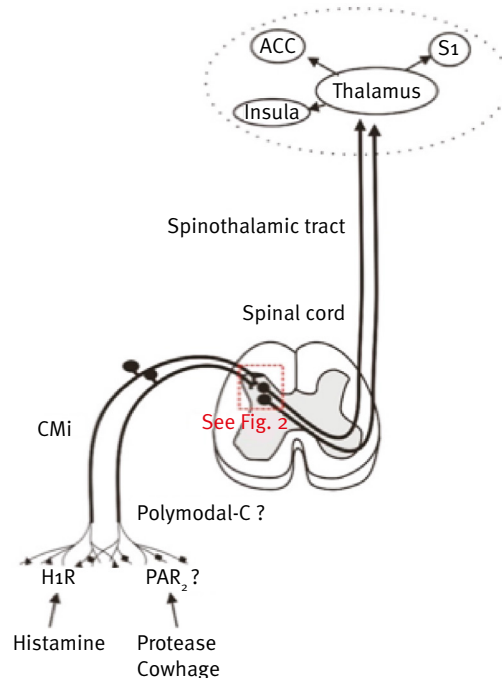
3.1. Pruritus: Symptom and Symbol

The sensation of pruritus or itching, is one of the most frequent complaints in dermatology, regardless of its etiology. As shown in Figure 1 (IKOMA et al, 2011), the pruritus is a sensation that involves: stimuli (endogenous or exogenous), afferent and efferent pathways, neuroimmunomodulatory molecules (such as Neuropeptide P) and the communication of the nervous system with the skin. Studies about the neurophysiological mechanisms of pruritus indicate that there are multiple peripheral neural pathways, some

may be specific for the itching, while others are not (Figure 1): The itching serves as a model to illustrate how a feeling or symptom may be symbolically interpreted in the framework of Analytical Psychology. In this context, we propose a model that we call: “Integrated Psychocutaneous Functional Model” (Figure 2) by using the framework of analytical psychology, as described by Jungians (JUNG, 2008) and neojunguians (GALLIÁS, 2002). In contemplating the structure of the personality and the individuation process with their respective dynamisms, the concrete and abstract symbolic skin is essential to our functioning and development.

Figure 2 represents a schematic model showing how a symbol, such as the sensation of pruritus reaches the consciousness through the Ego-Self axis.

Psychodynamic theories take into account the existence of unconscious. They consider a consciousness that is structured from the uncon-



Adapted from Ikoma et al (2011).

Figure 1 – “The Neural Pathway for Itch”

scious. Jung conceived the archetypes as arrays of inherited behaviour as a species. He describes the individuation process as the process by which these archetypes lead to our development in the second half of life. Neojunguians, as Carlos Byington (2002), have extended the concept of consciousness structuration by archetypes since our conception. Thus, we have a Self, unconscious, which contains the archetypes, that structure our consciousness through symbols. These are the mediators between our consciousness and our unconscious, our Self. This is our Ego-Self axis. Further, Byington conceives what he denominates the four structuring dimensions of this axis. One of them is the body, and each of our senses operates in many ways as a symbol with an structuring function (BYINGTON, 2002). So, our entire body is symbolic, i.e., it is a natural way by which our symbols gain access to our consciousness.

In Jungian psychology, the “shadow” is a psychic instance. The symbols that for some reason overloaded the Ego-Self axis go to the shadow; either due to the Ego fragility for the strength of a

particular symbol or due to defences. When these symbols contained in the shadow, try to move towards the consciousness, they generate the symptoms by the presence of defences. Thus, every symptom is also symbolic. Hence Jung have stated that the symptom also points out a path to their symbolic understanding.

We are animals with a symbolic functioning. The gregarious characteristics of our species make us interdependent throughout life. We count with a varied repertoire of terms to name this “I-Other” binding, according to different authors.

Nobody in our species is born with an established self-image. This self-image will be formed upon the mirroring and the exchange with our primary caregivers. Thus, these first experiences, so fundamental to the formation of a base, a safe and healthy emotional foundation, the type of mother/caregiver-baby interaction occupies a prominent place.

This mother is an archetype, a relational matrix, present in all primary caregivers. Freud will draw attention to what occurs, describing the formation of primary narcissism. Bowlby (1969) des-

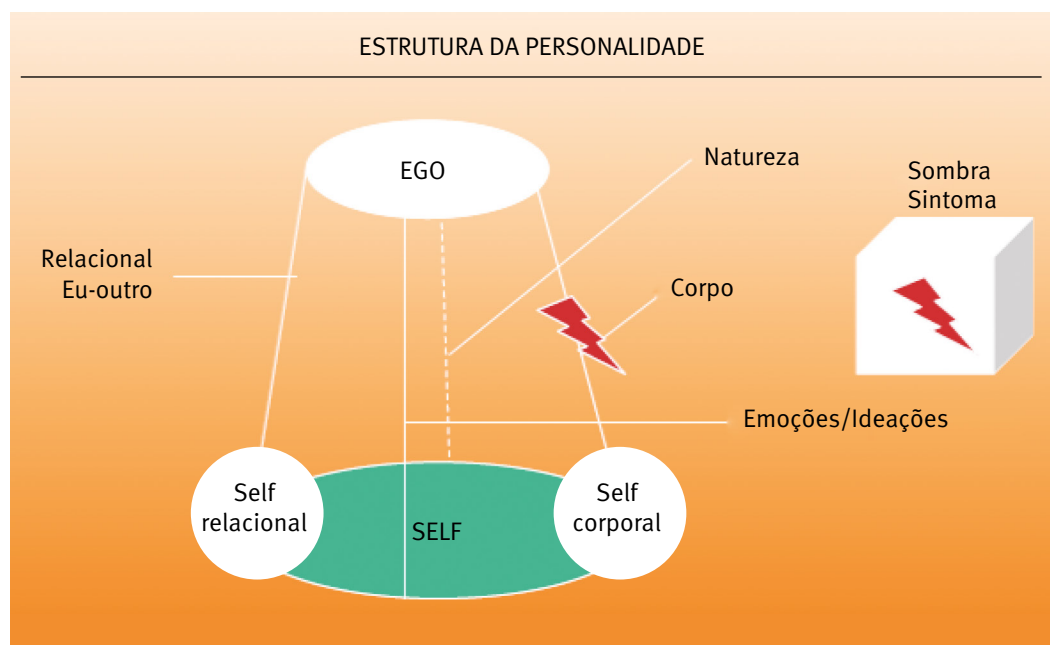


Figure 2 – “Integrated Psychocutaneous Functional Model”

cribes the formation of this type of bond with the “Attachment Theory”. Neumann (1973) speaks of the importance of the primal relationship between the baby and the mother. To our understanding, this is the link I-Other governed by the archetype of the great mother, as termed by Jung.

This bond I-Other, in the relational matrix of the Great Mother, will depend on the structure of our healthy primary narcissism as described by Freud, on the formation of a secure attachment as described by Bowlby, or on a good primal relationship according to Neumann.

The formation of a good self-image is dependent on a successful experience in this stage of life, colored of positive values, the matrix of a secure self-confidence. In this phase of life the body is the major via of the symbols for the structuring of our consciousness. The skin is the organ of utmost importance for this exchange between infant and the primary caregiver, through the touch.

The communication between the infant and the caregiver is based on the body, vision and touch are the main routes for this interaction. The similar and different, trying to find a new group, this time by choice, is when seeking what we call the psychological family. Structuring of consciousness at that stage, governed by the archetype of the Great Mother, requires physical closeness, affection, and protection in order to be well succeeded. This body contact will be mostly through the skin, the look and the affective tone of speech of the caregiver. Thus, activities such as baths, massages, comforting and proximity are fundamental. It is through this positive mirroring and emotional nourishment that the baby can build a positive self-image.

The next step in the structuring of consciousness is governed by the archetype of the Father. The symbolic enabled is the world of limits, the separation of opposites (BYINGTON, 1987). It is associated to what Freud called Oedipus phase. The body recognizes limits, the body starts to differentiate its own skin from someone else’s skin. There is an important role of the skin in this

structure, since it is what defines the body. In other words, it is the skin that will separate the inner and the outer, the I and the other.

During the alterity, structured by the archetypes of *animus* and *anima*, the I and the Other seek the symmetrical encounter. It is in the alterity that the search of ones profound identity and creativity occurs. And again, the skin plays a strong symbolic role. It is when you put yourself in the place of another, it is when we feel attracted by another partner. We use the term “it is a matter of skin” to speak of this type of attraction.

In old age, when the consciousness is structured by the archetype of wisdom, again the skin reflects its symbols. The wrinkles, the reduction of the tonus, the sensitive skin bring scars pointing to the final stage of our existence, preparing ourselves to death, an important and denied stage of life.

The pruritus, itching sensation, can be present in physiological conditions, like when we are bitten by an insect, signaling a lesion. It is also present in the allergies, in sensitive skin and eczema, quite frequent in children with atopic dermatitis.

Atopic dermatitis alters the child’s immune functioning with the onset of cutaneous lesions (atopic eczema) and respiratory symptoms (asthma and bronchitis). These children have a lower threshold to the pruritus, i.e., it is easily triggered, intense and also occurs at night.

With the act of scratching, the lesions worsen even further, causing much anguish to caregivers, who feel powerless in the face of the suffering and the fragility of the child. The act of scratching worsens existing lesions and generates new pruritic lesions; thus perpetuating the cycle “itching-scratch-itching”, generating more pruritus in a vicious cycle that is extremely stressful

The severity and progression of atopic dermatitis in the child has a close connection with the way the parents are capable of taking care of the child. Sometimes, the excess of concern leads to an anguish that disables them to help the child to calm down. Even with powerful an-

ti-inflammatory drugs, such as steroids, chronic and intermittent crisis brings limitations to the contact and the development of the child with other children and at school. On the other hand, well oriented families, capable of dealing with such anguish, are able to calm the children. They become more secure if touched, and massaged with oils in a way that soothes, moisturizes the skin, strengthen the immune system, minimize the itching and thus decrease the number and intensity of the crises. They become more adapted to everyday life along with other children, and do not stay in a “bubble” of overprotection.

Feldman (2001) an american psychologist, Jungian analyst, studied atopic children and their families in different cultural contexts. He compared the clinical outcome of children with atopic disease in countries of North America and Latin America. In the countries of Latin America, people touch each other more frequently in comparison with North America. There is more physical contact between children and adults in the latin families, when compared to the habits of north americans. In the United States, families “communicate the affection” more by words than by petting, they keep a greater distance between themselves, with less physical contact. These studies show that in the Latin countries, despite the worst financial conditions, fewer resources for health and education, the atopic children have less severe atopic dermatites and a better evolution of the disease after childhood.

Another example of the “nourishing touch” is in India, a country of extreme poverty: massages as the Shantala, practiced in babies seem to be of great value in the nutrition derived from contact with the intention to caress, soothe and relax.

Another study compared the weight gain of preterm infants hospitalized in the ICU (FIELD, 2010). The researchers separated the preterm infants into two groups: one group of babies that were handled for the technical care “routine” (changing diapers, cleaning, bathing and feeding) and a second group which, in addition to

receive the same care from the first, also received a massage, petting and “extra” attention.

Despite having the same food nutrition and being in the same ICU, the weight gain of caressed babies was higher and faster than those who did not receive the “extra” care.

4. Skin: feel and touch

Caenorhabditis elegans and *Drosophila melanogaster* are living beings which have a relatively simple nervous system. Given the possibility of manipulating some of their genetic characteristics correlated to their behavior, the neurobiology often uses them as a model for *in vivo* research (MAGUIRE, 2011; TINBERGEN, 1963; CROLL, 1975). In these organisms molecules required for the sensation of touch were identified and mechanisms by which these molecules control the sensitivity to mechanical stimuli, converting strength into cell signalling (mecanotransduction) was described (LUMPKIN, 2010). This system involves mecanoceptores, neurons sensitive to forces that constantly bombard the surface of the body. These signals were required for their movement, survival and reproduction, therefore, for the maintenance of the species.

Studies on the mechanisms involving the tact and touch in mammals have demonstrated that keratinocytes, main cells on the surface of the epidermis, produce neurotransmitters which have the potential to tune the sensitivity of the touch by afferent pathways. Although the keratinocytes and sensory afferent fibers do not form synapses, its proximity may allow rapid paracrine signalling (capacity of communication with neighboring cells through the secretion of bioactive compounds).

4.1 Touch and Type C Fibers

The touch is defined as the direct contact between two physical bodies. In the neurosciences, “touch” describes a special feeling by which the contact with the body of an organism is perceived by the conscious mind. Some types of touching involve an active behaviour – caress, touch or press – by which a part of the body is moved on

another surface. Sensory and motor components of touching are connected and integrated in the brain. They are functionally important for deflagrating or to induce a behaviour, such as locomotion. Be a shift to depart from some potentially harmful stimulus (e.g. a predator), to move in search of food, or to get closer to another living being in order to reproduce, it is extremely important for the maintenance of life and the species preservation. The sensory modalities of touch are classically divided into four: tactile, thermal, itchy and painful. The presence of free nervous endings in the skin surface (DELMAS et al, 2011) and the transmission of stimuli in specific ways suggested the existence of a fifth modality, the affective touch. The touch that creates a pleasant sensation, also called “positive touch” is transmitted through a specific type of touch C fiber.

C fibers are divided into two types: C1 – those which work as low threshold mecanoceptors, and the C2 – which, in contrast, have a high threshold for outbreak of stimulus (depolarization via ionic channels). Type C2 fibres correlate with stimuli of pain or “harmful effects” (nociceptors). This second group is also related to the itching and the pleasant sensation of touch, the affective aspect of a caress (BOWLBY, 1969).

The various subtypes of C fibers provide the substrate for a possible reinterpretation of the human somatosensory processing. The family of C fibers participates in neuronal pathways of various sensations, including pain, temperature, pruritus and the affective touch (DELMAS et al, 2011).

5. Conclusions and perspectives

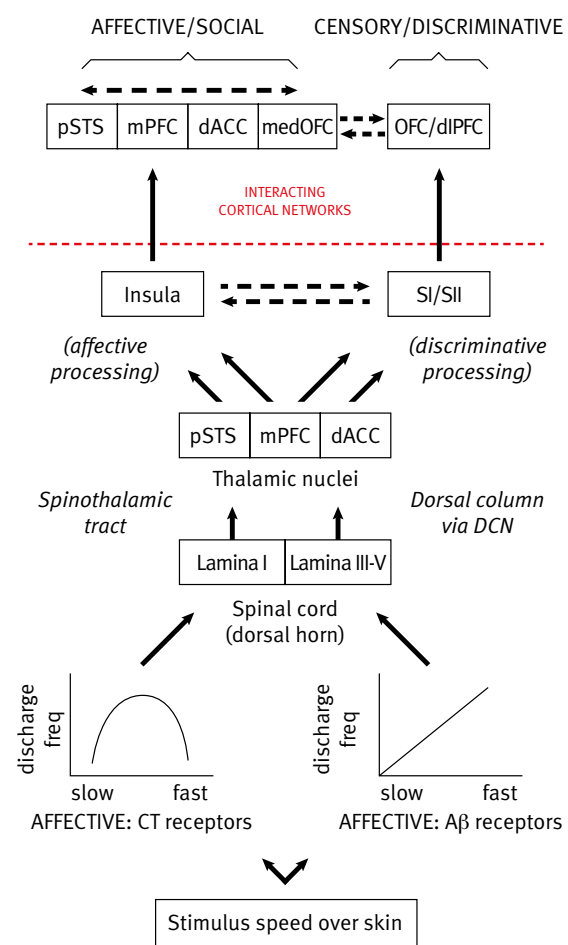
5.1 Beyond the skin

The dissection of the tact, one of our senses, leads us to reflect on the importance of the skin in the evolution of our species. Our skin is beyond the touch skin, integrates our “somato/emotional I”, where skin is psyche and psyche is skin.

Jung, in his first conference, “Fundamentals Of Psychology”, makes the following observations:

“The conscience is above all the product of perception and orientation in the external world, which probably is located in the brain and its origin would be ectodermal.” “At the time of our ancestors, this same consciousness would derive from a skin sensory relationship with the outside world. It is quite possible that the awareness derived from this of brain localization retain qualities such as sensation and orientation”.(JUNG, 2008).

It becomes evident that the skin occupies an important role in the formation of conscience. It is worth noting the embryology, the ectodermal origin of the skin as well as the nervous system.



Source: Adapted from McGLONE et al (2014).

Figure 3 – Schematic Diagram of Affective and Discriminative Pathways for Touch.

Craig (2003) conducted studies with convergent data, indicating that primates have a distinct cortical area, the interoceptive cortex, whose afferent activity reflects all aspects of the homeostatic physiological *status* of all tissues of the body.

As illustrated in Figure 3, this route of interoception (affective/social aspect of cutaneous stimulus) includes (McGLONE et al, 2014), C afferent fibers, tactile receptors (CT) lamina I, spinothalamic tract, thalamic nuclei, insula and specific areas of the cerebral cortex

The interoceptive cortical representation generates body sensations extremely different, which include: pain, temperature, pruritus (symptom/symbol), sensual touch, muscular and visceral sensations, vasomotor activity, hunger, thirst, and “lack of air”. In hu-

mans, a meta-representation of the interoceptive activity produced in the right anterior insula seems to constitute the basis for the subjective image of the “I”, “material body/emotional”.

These findings in the context of what C. G. Jung postulated on the “location of consciousness”, gives us a different perspective to the reading of the skin. The skin that makes us aware of who “we are”, the skin that translates what we “feel”. The awareness of the sensations produced by various stimuli captured by the skin, both extero- and interoceptive, arises from all the cells of our body; it gives rise to how we feel within ourselves. Our deepest feelings are rooted in the vast surface of our body. The body which gives us identity. ■

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Resumo

A pele que somos e a pele que sentimos. Pele – símbolo – consciência

O sistema somatosensorial humano funciona de forma dinâmica. Nossos órgãos recebem e produzem estímulos que são convertidos em informação biológica, necessária para a formação, maturação e funcionamento global do nosso corpo, mente e espírito. O "sentir-se bem, sen-

tir-se com saúde" é uma consequência de vários fenômenos biológicos que envolvem o sistema nervoso central. Neste contexto, serão abordados os papéis da pele, do tato e do toque no desenvolvimento e estruturação da consciência e do que se chama "pele simbólica" ou "pele psíquica". ■

Palavras-chave: pele simbólica, toque, psicologia analítica, psicodermatologia, fibras tipo C

Resumen

La piel que somos y la piel que sentimos. Piel – símbolo – conciencia

El sistema somatosensorial humano funciona de forma dinámica. Nuestros órganos reciben y producen estímulos que se convierten en información biológica, necesaria para la formación, maduración y funcionamiento global de nuestro cuerpo, mente y espíritu. El "sentirse bien, sen-

tirse con salud" es una consecuencia de varios fenómenos biológicos que involucran el sistema nervioso central. En este contexto, se abordarán el papel de la piel, del tacto y del toque en el desarrollo y estructuración de la conciencia y de lo que se llama "piel simbólica" o "piel psíquica". ■

Palabras clave: piel simbólica, toque, psicologia anítica, psicodermatologia, fibras tipo C

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