

Integrative Neuro-Conceptions about the Emotional Brain's Development

Abstract:

This paper tries to achieve an articulated synthesis on how to conceptualize on neuro-psycho-biological trends over the **Brain's Emotionality** issue, supported by numerous and recent papers and books from different research areas, such as, the **Cognitive Neurosciences, Affective Neurosciences, Developmental Neuro-Psychology** and also providing some leads on evaluation of the **Emotions** and how to do the basic management in the context of therapeutic relationships.

Key-Words:

Attachment Affective Neurosciences, Cognitive Neurosciences, Emotions, Sentiments

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Introduction

The theme of emotionality in the brain enhances the existence of different emotional and affective states and it has been a topic of an enormous explosion of scientific data occurring during the last two decades, providing some clarification on **the neuro-dynamic substrata of affects, emotions and sentiments**.

The **human brain** is an organ with fundamental functions linked to the emotional bio-regulation and the development of superimposed levels of conscience, from the automatic conscience to the several levels of the reflexive conscience on the bio-psycho states of our body. The brain processes all the information that arrives to it, from the internal senses, as well as from the external ones, by complex processes of evaluation, organization and interpretation of the obtained data. This information is organized, in neuronal networks, located in different sub-cortical and cortical areas, that generate automatic reactions under the configuration of **reflexes, instincts, motivations** for the action (decisions) or reflexive replies under the shape of **thoughts** which are organized through knowledge about ours **"Si" or "Self"** and the involving

environment, generating the narratives and the imaginary spaces for our creativity.

The area of the brain which we will designate by **Mind** is attributed to two fundamental activities: **to feel and to think**; the first is linked to **emotionality** and the second interlinked to the supposed **rationality**.

We all know that the fundamental function of emotionality is to signalize in a particular way all types of information that participate in the construction of the thoughts and behaviours and that the **emotions** are the processes that inform our brain on the most important subjects for our survival and also, they are decisive determinants of the human conduct, because they regulate the **thinking** as much the **action**.

Furthermore, António Damásio wrote, in his book: "The Feeling of What Happens": *"The emotions are linked to ideas, to values, to principles and to complex judgements in a very characteristic way so for it exists a very legitimate idea that the human emotion is special"* (Damásio, 1999) and for the so-call emotion theorists, they have two fundamental characteristics: a) they involve fast evaluations of the events that are important for the individual (Fridja, 1986) and b) they represent the reactions to fundamental relational meanings that have adaptative significance (Lazarus, 1986).

According to this last author N.H. Fridja (1986), they establish the priorities over the objectives and they organize us for certain actions, such as, for example: the fear that guides us for the "flight", the rage that sets the objectives for us to overcome the obstacles and getting us ready for the "fight" position; even then the happiness and the love, provide us with cooperative desire and the sadness prepares us for the abandonment of the relational objects relate of "love - hate" or then for the search of assistance and protection. The **emotions** determine the desired final objective, while the cognition and the learning provide the means through which the objective is or not satisfied. We know also, that the **emotions** are activated by a variety of unconscious and conscious sources: neuro-chemical, physiological, bio-psychological and cognitive (Izard, 1991; 1993

New Clarifications over the Concept of Affect

In regard to the concept of **Affect**, it still continues much linked up to Freud's ideas (1915a, 1915b), that placed it in between the psychic level and the somatic level of the brain. The **Affect** would derive from the **Drive**, a theoretical construct to designate, the basic propulsive force of the mental apparatus that results from the internal physics excitements unchained by the internal needs, being the affect no more than the perception of the drive's discharge by secretory or vaso-motorice means inside of the body and accompanied by pleasure or displeasure sensations. This discussion gave ground to a complex explanation elaborated by the author and already published (David, 2007) so we will do a time leap, explaining the same subject, referring to recent neuro-scientific data with the following authors:

A) For Jaak Panksepp (1998) certain **brain's affective processes**, in which are included, the so-called **motivational systems** (for example: the

thirst, the hunger, the thermoregulation) and some other **sensorial systems** that are associated with the regulation of the body balances, which have a particular main principal of functioning: while the **body states** diverge from the homeostatic balance a generation of negative body states (displeasure/pain) will be unchained, when the organisms self-indulge on activities that restore such body balances, this will unchain several ways of pleasure. These affective sensations are partly guided by the liberation of endogenous opióides (Panksepp, 1998; Van Ree et. al., 2000). For the same author, **a primitive affect's dynamic** exist, which will operate substantially through a primary neuronal representation primary of an virtual body schemata created by neuro-dynamics - the "Nuclear Self", which would be concentrated in para-medium areas of the cerebral stem, such as, the peri-aqueductal gray area (PAG), and those areas would be highly inter-connected with the limbic superior areas (Panksepp, 1998).

B) Another author that have been studying this subject, is António Damásio (1995; 2000; 2003) for whom the **affects** would be in restricted sense, phenomena close to the **basic emotions** ("feelings") and that are "*as composite manifestations of homeostatic regulation reactions of the Brain and from sub-cortical origins that actives each one, a specific "cluster" of cerebral areas*", (Damásio, 1999/2000), it means, they are the basic body sensations, which appear starting from cerebral mechanisms that codifies in value's terms (pleasure/aversion) the internal and external incentives. In result of this activation, replies are unchained under the form of reflexes, drives and instincts. So for him, the affects would be the self-conscience of the internal discharges corresponding to the basic sensations of pleasure and displeasure and that they would be linked to the implacable effort of self-preservation, within a quite close to the Psycho-Analytic conceptualization (Damásio, 2003).

C) Finally, we will make a reference to a classification proposal by Mortimer Ostow (2004) in which the **affect is associated to the instinctive behaviour**.

This author divided this concept in 5 different categories:

- 1) The **Sensation** that accompanies the consummation of an instinctive action.
- 2) The **emotion** that precedes a specific instinctive gratification.
- 3) The **sensation of relief, relaxation and of satiation** that follows the instinctive gratification.
- 4) The **temptation experience or of threat** that begins the instinctive activity.
- 5) The **humor** that motivates the persecution of any instinctive gratification.

Regarding this subject in theoretical terms, on how the **affects** are generated two fundamental conceptualizations exist:

- 1) One faces a **sub-cortical and automatic origin** (Panksepp, 1989).
- 2) Other conceptualizations, we enhance the position of Joseph Ledoux about the contribution of the superior cerebral areas that mediates the **working-memory** (LeDoux, 1996); or Edward T. Rolls' position over cerebral areas that allow us the **re-symbolization of the events in language terms** (Rolls, 1999) or even the **hypothesis of "somatic marker"** of António Damásio (1995/2003), this last one derived from the James-Lange's classic view, which the **emotional**

experience emerges from "inputs" to the somato-sensorial processing areas of the cortex.

How Do We Understand in Neuro-biological Terms the Affective States, the Emotions and the Sentiments?

It is currently known that in the sub-cortical areas (cerebral stem) of the mammalian brain exist a variety of circuits genetically programmed that mediates the basic or instinctive emotional behaviours and we have a lot of reasons to believe that the basic affective experiences are dependent on the activities of such neuronal systems.

This new knowledge has come from scientific methodologies so different as, the **study of the focal cerebral lesion** associated with enormous developments of immuno-histo-chemical and imagiology techniques, that are supported by positron emissions computed tomography (PET) Technology and functional magnetic resonance imaging, (fMRI), allowing the observation of both human and animal brains (mice) and how they process all the emotional information (Liotti and Panksepp, 2004).

Although much of the **neuro-biologic nature of the affective experience**, is mysterious, there has been substantial progress in the visualization of key cerebral areas and it has been helpfull to the understanding on how the emotions are processed in humans, as well as which neuro-chemical and neuro-anatomic circuits mediate the basic emotional answers in animals.

Investigators are now learning how to match the information from both sources. For instance, many of the studies with human cerebral images provide anatomic correlations which can or can't reflect the causal processes and on the other hand, the scientific investigations in animal brains, have been helpfull to decipher the details of such subjects under aspects that the ethics over the human research, would never made possible, however, the possibility of making translations of these knowledge among the species exists, depending only on the degree of evolutionary homology of the underlying neurological substrata.

The great innovation is the acceptance on the existence of central cerebral mechanisms in the nuclear modulation of the emotional processes, in spite of, a still given importance, to the autonomous nervous system (sympathetic or parasympathetic) on the modulation of the emotional intensity and of some certain types of body sensations that go with the emotions.

There are also reasons to believe that the cerebral emotional processes are able to modulate the outputs of peripheral organs of the skeletal-muscular and visceral systems, by way of the direct neural action through circuits that concentrates on the area of the mid brain line: the Papez's circuit (Papez, 1937) and the limbic system (MacLean, 1990), among others; as well as, through out the hormonal pathways, which it includes certain direct secretions coming from the brain through the blood sanguine flow (Kastin et al., 1999).

In neuro-scientific terms, it is considered that an **emotional state or emotion** presents two components: an evident characteristic physical sensation and another (psychic) conscious sensation, for instance, we feel our heart beat and consciously we are afraid, in order to maintain a distinction between these components, we will consider that the concept of **emotion**, only refers to the **body state** and the concept of **sentiment** is used for **the conscious**

sensation. So, the **sentiment** will be **the perceptive side**, while the **emotion** will be **the action**, being both mental processes mediated by different neuronal circuits.

The sentiment (conscious) will be mediated partly by the cingulate cortex and by the frontal lobes, while the emotions will be mediated by a set of autonomic, endocrine and skeleton-motorize peripheral outputs. These outputs involve sub-cortical structures: the amygdala, the hypothalamus and brain-stem. Both processes participate from the homeostasia - the innate and automatic equipment that governs and enhancing this difference, António Damásio (2003) wrote that: *"the emotions are emerged at the theatre of the body. The feelings are emerged at the theatre of the mind."*

As for the **emotions**, this author distributes them among 3 categories: **the feelings, the primary emotions and the social emotions.**

1) **The feelings** would not be especially prominent, although they are important. The appreciation of this type of emotions, it would depend on subtle manifestations, such as, the profile of the limbs' movements or from the whole body - the strength of those movements, their precision, their frequency and amplitude - or the facial expressions or even through the verbalization linked not to the meanings, but to the voice's music, to the speech's cadences, it means, to the speech's prosody.

The **feelings** differentiate oneself from the **Humour**, the latter stays during long periods, measured in hours or days, while the former are *"composite manifestations of the regulatory reactions, as they unfold and intercept instant by instant"* (Damásio, 2003).

2) The **primary (or basic) emotions** are what come us to our idea when we pronounce the word **emotion** and, for instance: *the fear, the anger or cholera, the aversion or disgust, the surprise, the sadness and the happiness.*

3) The **social emotions** include, for instance: *the sympathy, the compassion, the embarrassment, the shame, the guilt, the pride, the jealousy, the envy, the gratitude, the admiration and the amazement, the indignation and the contempt.*

Otherwise, this author introduces us to this in his book: *"Looking for Espinoza. Joy, Sorrow and the Feeling"* (Damásio, 2003), as a working hypothesis about what he considers to be an emotion and the existence of modulation's mechanisms for the emotions, which are created by the socialization' processes or by a cultural learning already mentioned in a previous paper (David, 2007).

Concerning the **sentiments**, António Damásio moves forward with another hypothesis where the consequences of the emotions are mapped in the superior cortex and the result is the feeling itself. On this second device, on the **sentiments** he considers to be a mental alert for the good or bad circumstances and it allows the prolongation of the impact of the emotions influencing the attention and the memory in a sustaining way. The sentiments start to allow the volunteer control of it that was previously automatic leading to the induction of the anticipation capacity to the problems' forecast and the possibility of creating new and non stereotyped solutions. They are ideas or thoughts or perceptions of the body in the Mind, working in a certain way. Finally, the **sentiments** would be the peculiar states' representations of the body, leaning in state-body's cerebral maps stimulated by objects—emotionally-qualified and those are accompanied by the perception of consonants themes

with that state of ideas and by the perception of certain way of thinking, therefore to António Damásio, the **sentiments** translated the "*state of Life in the language of the Spirit*". "*We say that we felt happy and we didn't think about happiness*" Damásio (2003).

In conclusion, we can asseverate that the **sentiments are linked to the conscience of certain states of the body**, while the **emotions are signs related to certain mechanisms of homeostatic output**.

The Neuro-Bio-Psychological Development and Mechanisms of the Emotional Regulatory System

The most recent integrative theoretical models on the **biology of human psychological development** always include the issue of the social and emotional information processing and the psycho-biological transaction's discussion, meaning that the organization of the cerebral systems is a product of interaction between the genetics and the environment.

These models refers to a "*social construction of the human brain*" (Eisenberg, 1995), and that the influences of the social milieu are imprinted in the biological structures who are maturing during the initial phases of the cerebral growth being their psychological effects enduring.

It is common knowledge that the ADN production in the cortex increases dramatically during the course of the first year of life and that the interactive experiences impact directly on the genetic systems that program the cerebral growth (Schore, 1994, 2003a, 2003b), due to the incomplete genetic specification of the neuronal structures that are still not enough for an optimal operation of the nervous system as well the social milieu still has a powerful effect on the human brain's structures.

These early affective interpersonal experiences have "*a critical effect on the early limbic system's organization and on specialized cerebral areas, not only on the emotion's processing, but also on the learning's organization and on the abilities for adaptation in a constant changing environment*". (Mesulam, 1998)

For Allan N. Schore (1994, 2003a, 2003b), the experiences required for the maturation of the neuronal systems and for those that regulate the cerebral organization in the first two years of life are essentially the socio-emotional communications wrapped up in an emotional regulatory attachment relationship between the child and his mother and the result is the emergence of more and more complex capacities for emotional regulation and for the change of external regulation system into an internal regulation system. In fact, extensive experimental and clinical research shows that:

"A) *The maturation of affects and the emergence of communication, they become more and more complex representing the essential objectives of the first years in human life.*

B) *The greatest accomplishment of the (mental) development is the attainment of an essentially adapted capacity for affects' self-regulation*" (Schore, 1994, 2003a, 2003b).

Recent neuro-biological studies reveal that the **órbito-frontal cortex** **plays** *"at the highest level of behaviour control, specifically, in relation to the emotion"* (Price et al., 1996) and this plays *"a particularly prominent role in the emotional modulation of the experience"* (Mesulam, 1998).

However, *"these órbito-frontal areas are not functional at birth and it is during the course of the 1st year of life, that the limbic circuits emerge in a sequential progression, starting from the amygdala, to the anterior cingulate lobe, to the Ínsula and the last, for the órbito-frontal cortex"* (Shore, 2003b) starting this last structure in operation, on the that last quarter of the 1^o year of life.

This **pre-frontal-orbital cortex**, which is positioned in a convergence area, through where the cortex and the sub-cortex meet, is the only cortical structure with direct connection to the hypothalamus, the amygdala and the reticular formation of the brain stem, which regulates in general cerebral excitement.

The **pre-frontal-orbital cortex** is considered to be *"involved in critical human functions, such as, the social adaptation, the control of the humour, the drives, and the responsibility, traits that are crucial for the definition of an individual's "personality"* (Cavada and Schultz, 2000) and it is positioned at the top of the hierarchy of the "anterior pre-frontal limbic network" interconnecting the medium pre-frontal cortex and the orbital, the temporary pole of the cingulate and the amygdala.

This **orbital-frontal system** is mostly expanded in the right hemi-cortex, controlling the executive function of the entire right hemisphere, the latter being dominant for the unconscious processes and executioner of a *"labelling function"*, in which the perceptions receive a positive or negative charge, accordingly with S. Freud's speculation, because another body of scientific evidences exist demonstrating that: *"the right hemisphere matures before the left one, and that his growth is more intense, in the first and a half year of the baby's life and it is dominant for the first 3 years"* (of life) (Chiron et. al., 1997) and that **this right hemisphere** is *"faster than the left hemisphere on the automatic labelling performance and on the pre-attentable evaluations of the facial emotional expressions"* (Pizzagalli et. al., 1999). Furthermore *"the right hemisphere also contains a "non-verbal affective lexicon", a vocabulary for non-verbal affective signs, such as, facial expressions, gestures and vocal tonality or prosody"* (Bowers et al., 1993; Snow, 2000).

The **right hemisphere**, more than the left one, is deeply connected not only with the limbic system, but also, with the sympathetic and the parasympathetic branches of the neuro-vegetative nervous system and for this reason, that is *that "the representation of the somatic, visceral states and the processing of the "Self-related material" will be primarily under control of the "non dominant" hemisphere"* (Keenan et al., 1999) and for António Damásio, the right hemisphere contains *"the most understanding and integrated map of the available corporal states for the brain"* (Damásio, 1995).

This **right hemisphere** plays a superior role in the fundamental regulation of the physiologic and endocrine functions whose primary centers are located in the sub-cortical areas where the pituitary-hypothalamic and adreno-cortical axis and the sympathetic-adreno-medular one, both are under the main control of this right hemisphere's cortex, as well as, *"the adaptation functions that mediate the human answer to the stress"* (Wittling, 1997).

The **right hemisphere** contributes to the development of the reciprocal interactions inside of the mother – child's regulatory system and it mediates the capacity for the biological synchronism and the attachment regulatory mechanism. According to Allan Schore the activity of this right hemisphere is "*instrumental for the emphatic perception of the other human beings' emotional states given that this interactive regulation can be the neuronal substratum of the empathy*" (Allan Schore, 2003).

It speculates that it would be in **the right hemisphere**, where a internal operative model of the attachment relationship is stored, which it codifies the strategies of the affective regulation that maintains the basic regulation and the positive affect even before the involving changes (Schore, 1994), because this same **right hemisphere** is centrally involved in the unconscious processes and in the "*implicit learning*", (Hugdahl, 1995) and that "*this unconscious model will be kept in the procedural implicit memories of the right brain who are part of the affective charged substratum of the autobiographical memory*" (Fink et. al., 1996).

This **órbito-frontal area** is responsible "*for the cognitive-emotional interactions*" (Barbas, 1995), where the **internal work models** are generated which are the representations that contain affective components, as well as, the cognitive ones and they guide the experience's estimations. Accordingly to very recent data, it is suggested that the **orbital-frontal cortex** "*generates non-conscious lines that guides the behaviour before the conscious and reflexive knowledge does it*" (Bechara et. al., 1997); "*codifying the possible significance of the future behaviour options*" (Dolan, 1999) or "*representing an important contact place between emotional information and selection mechanisms of the action*" (Rolls, 1996) which is consonant with John Bowlby's assumptions (1981) about the unconscious internal operative models being used, as guides for the future action.

In another reference Brothers described a limbic circuit of the órbito-frontal cortex, with the anterior cingulated circumvolution, the amygdale and the cingulate's temporal pole, whose functions are of one specialized social "editor" "*for processing the other's social intentions*" through the evaluation of the "*meaning of the gestures and of the expressions*" and that "*encourages the rest of the brain to tell on events of the social atmosphere*" (Brothers, 1995, 1997). This editor would act as a "*specialized unitary system to answer to any type social signs, a system that would build mental representations on the higher level*" (Brothers, 1995, 1997).

So we can conclude that this **órbito-frontal control system** plays an essential role in the emotion's regulation and that it provides a high level of codification, coordinating, in a flexible way, as much as the external perceptive functions and domains, as the internal perceptive ones.

Neuro-Biology and Psycho-Biology Of Human Attachment

Allan N. Schore, in his book "*Affect Regulation and the Origin of the Self*" (1994), described a number of neurobiological mechanisms through which the

attachment experiences have a specific impact over the neuro-biological maturation of the brain, being one of the essential tasks in the 1st year of human brain's life, this is, the emergence of a safe and assurance connection between the child and his primary caretaker (mother) and since the moment of his birth, the newly born, it uses his sensorial capacities, in particular, the smell, the taste and the touch, to interact with the social environment.

It is known that by the second month of age, a beginning of a maturational critical period of the cortex occipital occurs (Yamada et. al., 2000), which is linked to the vision, that will allow the unchaining of a dramatic increase in the social and emotional interactions. From this starting developmental moment, the mother's emotional and expressive face turns to be the most potent visual incentive for the baby, who begins to reveal an intense interest for the face and, in particular, to the mother's eyes, following them constantly, in the space, being both wrapped in periods of intense mutual gaze.

In this beginning of the affective synchronization, *"the intuitive mother begins by tuning in and by reverberate with the child's psycho-physical state which is dynamically altered by the mother who is correcting the intensity and the duration of her affective stimulation with the purpose of maintaining a stable and positive child's affective situation"* (Schore, 1994). Indeed this coordination of replies is so fast that it suggests the existence of a bond or a link of unconscious communication.

Besides, Lester, Hoffman and Brazelton declared about this synchronicity that: *"the synchrony grows as a consequence of each partner's learning, of the other's rhythmic structure and modifying he's behaviour in an adjusting direction to that structure"* (Lester, Hoffman and Brazelton, 1985).

So, the primary caretaker would facilitate the processing of the child's information through an adjustment in the way, the amount, the variability and of the stimulation's the rhythm to their present temperamental and physiologic capacities. These mutual interactions and tuned by synchronicity, they would be fundamental for the uncoiling of the child's affective development and for the main interactive matrix which it promotes the expression of the internal affects.

The regulatory stimulation from primary caretaker, participates on the interactive re-establishment of the regulation of tension states induced in the child, being defined tension as, a-synchronicity within an interactions' sequence, which follows a period of synchrony re-establishment, which will allow the recovery from the tension. It deals with a correspondence pattern of "disruption and reparation" from the "good enough" caretaker, in response to the negative affective states that the child unchained.

These regulatory processes are the precursors of the psychological attachment and the associated emotions. In fact, the psycho-biological syntony, the interactive resonance, the mutual synchronization and embracing of the psycho-biological rhythms, they are physiologic processes that mediates the formation of the attachment bonds and the attachment can be defined as a interactive regulation of the biological synchronism among organisms (Schore, 1994, 2003a, 2003c). The mother synchronizes and she reverberates with the internal state's rhythms of the child and then she regulates the level of stimulation of these positive and negative states.

The **Attachment** *"is therefore the (interactive) dyadic's regulation of the emotion"*, (Stroufe, 1996), it means that *"it is not only the minimization of the negative affects, but also the maximization of the opportunities for the positive*

affect" (Stroufe, 1996). For instance, in the playing situations, the regulation of interactions with a primary caretaker, it doesn't only allow the creation of a **sensation of safety**, but also a positively loaded **curiosity** which feeds the will for exploration over the novelties that emerge from the physical and socio-emotional environments.

Accordingly to Peter Fonagy and Mary Target (1997) "*an important result of a safe attachment, it is the **reflexive function**, the mental operation that allows the perception of the emotional state of the other*".

At a recent paper about the maternal-infantile proto-conversations, C. Trevarthen (1990) noticed that "*the intrinsic regulators of the growing infantile human brain are specifically adapted to match, through the emotional communication, to the regulators of the adult brains*" and that "*in these mother-son transactions, the dyadic's resonance allows it, ultimately, the inter-coordination of the positive cerebral affective states*" (Trevarthen, 1990, p.357).

The **attachment** learning's mechanism is the "imprinting", defined as the "*synchrony between the sequences of maternal-infantile incentives and the behaviour*", (Petrovich & Gewirtz, 1985) while to Allan Schore (2003b) he suggests that "*these face-to-face affective interactions are synchronized and tuned in psycho-biologically, in the right hemisphere, which is dominant for the child's recognition of the maternal face and for the stimulation's perception of the affective facial expressions, for the emotional visual information and for the prosody of the mother's voice*" (Schore, 2003b, p.18).

The **regulatory theory** from Allan N. Schore (2003b) suggests that **attachment** is, in essence, the right brain's regulation of biological synchronism among organisms, specifically the orbital cortex, which is matured, during the middle of the 2nd years' life and where is believed that initiation of the consolidation of a Self's unconscious and non-verbal nucleus which is leaned on these affective regulatory patterns. This structural development allows such internal safety sensation and a sensation of resilience coming from the intuitive knowledge that each one of us has about how we can regulate our changes on the emotional states based in our body

On the other hand, if the psychological growth elapses in adverse atmospheres, for a safe attachment, it will occurs negative impacts in the ontogeny of these self-regulators pre-frontal systems and in the personality's formation, the basic mechanisms for much of the psycho-pathology's transmission.

The individuals with poor attachments personal histories almost always present with empathy's disturbances, limited capacities for perception to the other's emotional states, this is an inaptitude for facial expressions' reading which lead to a fault on the emotional states' attribution and to a fault over the interpretation of the others intentions.

To Peter Fonagy and Mary Target (1997) these people present a poor **mentalization capacity** (Fonagy & Target, 1997) this is, a low capacity for reflect on their emotional states.

In addition to these social cognition's deficits, another obvious deficit in the Self's regulation exist, which is the limited capacity to modulate the intensity and the duration of the affects, especially, from the primary affects, such as, *shame, rage, excitement, elation, displeasure, panic-terror and discouragement-despair*. Such individuals, under stressful significant situations, don't experience discreet or differentiated affects, but, chaotic, non-

differentiated diffuse states accompanied by overwhelming visceral and somatic sensations.

To resume this revision on the **integrative neuro-conceptions about the human brain's emotional development**, we can asseverate that it is a complex neuronal system supported by an efficient and continuous affects' transaction, entirely non-verbal and in which all the **emotions exist as a sign (information) about the quality of a relationship, (pleasure versus displeasure) that are linked to memoirs over previous relationships, in particular, to the attachment's primary figures.**

How to Access Emotional States?

As for the assessment of their patients' **emotional states**, the therapists can use, accordingly to A. Bohart and L.S. Greenberg (1997), **six different sources of information**:

1) The first source is through the "*empathic attuned of the feelings and sentiments involving an imaginary entrance into the psychic world of the Other and the tacit apprehension of a pattern of subsidiary information*".

2) The second source of information is through "*the non verbal suggestions or insinuations fundamentally linked to the facial mimic, to the verbal tone, to the body posture, to the type and rhythm breathing, among other body expressions*".

3) The third source is through the "*knowledge about the universal human answers to prototype situations, coming from the knowledge about his own life, his own previous professional experience or even over the culture where the therapist is inserted because those vary in function of the cultural context*".

4) The fourth source goes through the "*knowledge obtained in the elapsing of the psychotherapeutic process, from the defensive operation's style and how the patient self express himself all a long through his personal story facing his life circumstances*".

5) Still another source is the "*self-knowledge over our own emotional answers, which were obtained during our involvement in an (individual or in group) analytical therapy or still through the insights obtained in the clinical supervision's work with a more experienced therapist*" (Bohart & Greenberg, 1997), because these knowledge will play important role in our understanding over the Other's emotional operations.

6) Finally, the last evaluation source elapses from the "*appreciation of the patient's personality style or the type of psycho-pathological disorder*" with whom we came across, therefore the way and meaning of the emotional expressions, they depend on the psychological type or the psycho-pathological disorder, in question. So, the **emotion of rage** in a person with a **border-line personality disorder**, can happen when the therapist is felt, as negligent or helpless, because this **emotion of rage** is urged by the fear or by the panic that the therapist is not interested sufficiently in the patient, being sometimes, expressed instrumentally with the purpose of forcing the therapist to provide such attention. Inside a person with **personality's histrionic style** can exhibit an instrumental or secondary rage to obtain praise and admiration for his person, while another with **personality's antisocial characteristics**, will use

this instrumental rage, to obtain a desired control and an affective distance from the therapist. A person bearer of a **narcissistic style of personality** functioning will express a secondary rage, if the needs aren't satisfied automatically. Therefore facing a same emotion, the therapists has to accesses the same emotion, accordingly, with the understanding about its function in each patient's psychic world operation.

Thinking Over Emotions and Feelings

Reflecting further more over the emotions' nature and its functions, a very pertinent question comes up: **Will the emotions always be and totally trustful?**

The answer will be possibly positive, depending on the way and what for what we needed them; if it is for us to blindly trust them, concerning their determination on our actions, we will say no; but if it is for us to trust them, as primary sources of information on our reactions and about what we experienced, we will say yes, absolutely, because they supply us with a lot of pertinent information, that can help us on the ideas and thoughts' associative activity.

Finally, the **emotions** are essential to our reflection capacity over possible ways to follow our courses for performances; but we shouldn't submit or subdue to their direct influences, but integrate them between Intelligence and Desire, in a holistic answer from the **Persona's Self**.

The **emotions** "*aren't opposite to reason, given that they guide us and determine the thinking complementing the reasoning's deficiencies; giving clues for the decision making because we can't be totally rational due to our limited knowledge, conflitual objectives and personal limitations*" (Oatley, 1992).

To deal with them, we need to be bearers of special intelligence capacities, described by Salovey, Hsee and Mayer (1993), under the name of **emotional intelligence**, which presupposes:

- 1) *Recognition of the emotions as soon as they appear;*
- 2) *To be able to manage the emotions for our own purposes;*
- 3) *To be always conscious on them;*
- 4) *This Emotional Intelligence, also involves, the capacity of recognition of the emotions in Others, in order to deal appropriately with our relationships and to be able to control our impulses.*

When trying to understand the patients' emotional reactions, the therapists should make a fundamental distinction between the **nature of the emotion** and its decisive need, this is, if they are related with the external environment or with the **Persona's Self** and what type of information's they provide us: if about the **external objects** meanings or about the **Self's experiences**.

These two types of emotional reactions request different types of intervention:

A) If they are reactions to the external world, they need to be appraised as sources of information and for a certain adaptative action's tendencies;

B) When the emotions are in reference to the Self, these need to be explored by their meaning and by the nature of the internal relationships that they generate them.

All the purpose from a therapeutic intervention is, one of helping our patients, when they aren't in conditions to deal with their emotionality, because it is functioning at an excessive levels (exaltation) or inhibited (anergia), so that they don't overcome their appropriate regulation.

Another crucial aspect of any personal developmental therapy, it is the promotion in each client, of his emotional and affective experience's integration within a pre-existent organization of their experiences, because, the basic affect's integration in the Self's organization, involves several therapeutic tasks of differentiation, symbolization, belonging and emotional experience's articulation of the Self's conscience and the body-conscience, as well as, to allow them to accept their own emotions, teaching how to use them, as signs and getting them to synthesize different and contradictory emotions, in the same living experience, just as, Leslie Greenberg and collaborators, wrote: "*The therapists should help their clients to develop an open attitude and of acceptance of their sensations (affects), emotions and sentiments and about their mutative nature: they come and go, they emerge and go through, in constant mutation. This helps teach the people to integrate the "undesired" sensations and not to be fastened in none of them or else we go through the pathology*" (Greenberg et. al., 1993).

To conclude, **we should enhance the extreme importance of the existence in psychological analysis processes, of an attentive and open approach, on the side from the psychotherapists and group-analysts, of the patient's emotional dimension of the interaction patient - therapist through the establishment from the first working session of an empathic focused dialogue and whenever possible attuned with the needs and emotional manifestations of their patients.**

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