

## **The emotional tunes and the role of mirror neurons: From primary relationship mother-child relation to rehabilitation and therapeutic music therapy**

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**Abstract:** This article mainly intended as a tribute to one of the fathers of Infant Research, Daniel Stern, who with his studies on the development of the sense of self in children, has expanded the field of observation of the mother-child relationship, from a simple vision drives a real relationship, characterized by sensory elements global.

His research has been forming the basis of the theoretical and methodological focus of music therapy to psychodynamic. The ability to reproduce the relational process characterized by affective attunements in a rehabilitation setting - music therapy where there are dis-evolution, as in the case of patients with Alzheimer's disease, you can reactivate capacity affective and relational residual strengthening in the subject 'personal and social identity mortified by the disease.

Role within that path is done by a very peculiar type of neurons, mirror neurons, the subject of study in recent years by the neurosciences, whose characteristic would be to get excited is when a person performs a certain action, both when it is another to do it before his eyes.

**Keywords:** Emotions; Mirror neurons; Therapeutic music Therapy.

### **Brief report**

Daniel Stern, an expert psychotherapist and psychoanalyst in recent decades has contributed in an excellent way to pursue "The Infant Research", which is the line of research on mental child, he dedicated himself to construct a theory that would take account of the experience subjective child, trying to describe the emergency and normal development of the Sense of Self as the organizing principle of the experience infant and child.

Stern argues that the direct observation of the child and its interactions with the mother allows us to understand the emergence (from birth) of the first senses existential self. The assumption is that since the early days, and perhaps even before birth, long before then the development of self-awareness and language, exists in some form of newborn sense of self and the other: a primitive self and innate.

Specifically Stern describes four senses of the Self: the emerging sense of self that is formed between birth and two months, the sense of core self that is formed between two and six months, the sense of a subjective self that is formed between the seven to fifteen months, the sense of a self written report which is the formation of emotional tunes and then a sense of self narrative which to develop between three and four years.

Each of these senses of the self defines a field of subjective experience and social relationship, it remains fully functioning and active, and continues to grow throughout life.

The following article will emphasize the importance of evolutionary theory put forth by Daniel Stern, whose concepts are foundational focus of the theory and methodology of music therapy to psychodynamic orientation.

The therapeutic goal of psychodynamic music therapy has to do with a process of harmonization / integration regarding the development of the inter-relationship through the tunes. The path towards greater harmony and organization of mental life, is characterized by the ability to work on emotions and feel his emotional feeling towards a capacity to decode and adjust the full range of emotional feelings, from simple experiences body to the highest degree of symbolization. In this path the music,

better yet the elements and sound parameters, seem intrinsically linked to the process of psycho-affective development of the human being; even these elements are absolutely the first perceptual experiences of the individual in the fetal stage. From here the valence strongly therapeutic assumes that music, understood as lived sound, in therapeutic / rehabilitation and the importance within such a process a specific type of neurons defined mirror neurons, for the peculiar characteristic according to which all the living beings perceive an action done before their eyes by other beings, like simulating it themselves.

Daniel Stern defines the very first organization sensory perception of the child as perception amodal: primary affective universe of the child, the development of perceptions and feelings takes place first in a style that involves cross-sensory perception archaic, so, every sensation tends to globalize involving more areas of the body through synaesthesias, or two distinct senses they are activated by a stimulation which concerns only one of them.

When born, the baby is therefore already able to use such primitive forms of perception amodal; then the perception will specialize becoming modal. Since his infancy to his 7-8 months, the child's self a structure within the relationship with the mother through forms of self increasingly complex. Is around 7-9 months that determines the field of inter-subjective relationship whose apex corresponds to the affective tuning affections: that the phenomenon of mirroring of affects, for of transfer events from a channel of expression to another.

In this period, there are three types of partnerships:

- a) Sharing of attention: the baby is able to focus its attention on an object and perceives that the other (the mother) has the same capacity;
- b) Sharing of intentions: the child makes a request and understands that the mother can satisfy her;
- c) Sharing of affective states: the ability to assign affective states also to another person.

The ability to assign affective states shared its interlocutors is the pivot of the report. But this implies a coincidence of the levels of intensity emotional / affective synchrony in trade affective, an analogy in the form of affection between mother and child. During development, whenever the child experiences a danger of loss of one base, then the emotional reference point, resorts to a production of pure rhythm-voice, engines etc, which will act as an antidote to anxiety separation, working in times as substitutes of the missing. It is interesting to note that in

certain pathological occur repetition of rhythms that give life to stereotypes: rhythmic sequences missing accents and duration.

Rhythmicity is therefore unintentionally and purpose. And 'as if it constituted only the memory of a pulse archaic instinctual used as a container / reference. But in the course of developing this rate it has to be transformed with the introduction of accents and duration, the sign of a gradual building of thoughts, actions and behavior. So where the rhythmic base of the container becomes the content, we are witnessing an inability to think thoughts and an absolute lack of planning. The pace that takes these features become stereo or something saturating, totalizing, suffocating.

In a context of music therapy you can reflect these ritmic sounds creating Tunings inaccurate: that slight variations in temporal and formal compared to the stimulus presented by the child or by the patient. The introduction of small variations thus provides a pulse to both the mental processes of comparison and for those creative. The tunes inaccurate, combined with tunes synesthetic, ie translations transmodal that capture the quality of affective behavior, if properly harmonized, in favor of an "evolutionary" process, the construction of personal identity of the subject.

In the evolutionary process tunes Affective, are placed in a pre-verbal and pre-symbolic, in which mental processes present form a bridge between memory, imitation and production of a symbolic gesture of recognition emotional and cognitive development of the surrounding reality. This is an intermediate step toward building a stable ability to represent external objects like those in his inner world.

Even the music, understood in the broadest sense of sound universe, is therefore to be seen in the middle of the subjective Self, making it evocative, sensory and design of the maternal object.

These modes of expression and archaic relational fact, persist throughout the individual's life, regardless of the subsequent capacity symbolic abstraction and culturally learned, however these distances just sinking in with the advent of language, even if they return to be present in other capacities in the case of blocks evolutionary, physiological deterioration and dis-evolution.

The context of music therapy rehabilitation is often characterized by a dis-evolution with the latter term means a loss of skills acquired evolutionarily loss that occurs in a confusing (the Latin prefix dis is precisely to mean separation, loss, proceed in reverse , leakage), which

determines a clinical picture characterized by the presence, on the one hand of appropriate behaviors by age and, secondly from behavior totally deficient and inadequate.

This framework is easily found in dementias, in particular in that of Alzheimer's disease. The tunes synesthetic therefore allow the patient in a matter of personal recovery and residual powers.

Focus of the work of music therapy is the ability to engage in these pre-verbal archaic elements, sound-relational.

The rhythmic element and sound / music allows the music therapist contact in person, depending on age and condition, the sensory, motor or kinesthetic, perceptive or representative that is proper, however, it characterized by level of expression and communication skills locked and / or distorted.

The sound becomes symbolic tool in the process but at the same time the means by which a relationship can be established.

But because the techniques of music therapy receptive and productive you are as a carrier engagement before and after amplification of emotional and sensory mnemonic content?

This is done with a particular type of neurons, mirror neurons, a class of specific neurons that are activated both when it performs an action and when it is observed while it is performed by others (especially conspecific), and that explain the behavior empathetic as a bio-social behavior that precedes language communication, which characterizes and guides the inter-individual relations, which are at the basis of the entire social behavior. It is a very special species of neurons, whose characteristic would be to get excited is when a person performs a certain action, and when it is another to do it before his eyes (Rizzolatti, 2006).

It is seen that various mirror neurons are allocated mainly in particular brain areas, deputies to the transmission of sound (limbic structures, diencephalic and cortical); This explains how a sound stimulus becomes capable of activating complex responses at several levels.

Music is, therefore, an extremely rich language because it speaks to man as a whole, namely:

- at his body through sensory stimulation;
- at his affective world because it evokes feelings, memories, emotions;
- at his intellectual world as active memory, attention, judgment;
- at his relational world.

Using techniques of music therapy receptive and productive, according to the latest thinking regarding neuroscience, it is desirable to act on symptoms through cognitive strategies directed at non-cognitive behavioral symptoms, as this strategy allows more easily to reach levels that concern the sphere of personality, affect, and vegetative functions.

The new neuroscientific findings have allowed to explain the phenomenon of empathy by connecting it to a biological basis.

The "empathic participation" is a bio-social behavior that precedes language communication, which characterizes and guides the inter-individual relations, which are at the basis of the entire social behavior. The neural structures involved when we experience certain feelings and emotions seem to be the same that are activated when we give someone else the "same" feelings and emotions, allowing us to capture the experiences of others only from a distance, so to speak, and yet in a immediacy and vibrancy that make the experience something totally different from empathic reasoning by analogy.

The human brain is able to take action due to the perception of other people's emotions expressed by movements of the face, gestures and sounds.

According to neuroscientists, the reaction of mirror neurons, which occurs when a human observes a man or an animal take a specific action, depends on whether such action is part of what Rizzolatti and Welsh call "vocabulary of documents" or " heritage motor "of which would be equipped with one who supports you, so the more the observed action is part of this repertoire, the more intense and extensive is the reaction neuronal (Rizzolatti, 2004). In other words, the reaction of the neuronal mechanism seems to be closely related to the ability of the individual looking to play in turn the action that is being observed.

In light of the above, it clarifies the importance that the techniques music therapy have taken part but also therapeutic-rehabilitative rehabilitation.

The use of instruments and sound parameters allows the patient with a dis-evolving testing of concrete actions, communicating and rewarding experience of well-being and thus contributing to the maintenance of self-esteem, a good mood, a sense of self-efficacy and satisfaction.

These are aspects which the disease progresses canceled, threatening to plunge the patient into a dramatic isolation, depriving it of its dignity.

The component evocative and practical involvement in the contemporary world of sounds are thus the background in which

processes of restarting the patient's relationship with his ego through its autobiographical memory, and patient with each other.

Techniques music therapy can be inserted as part of the expressive therapies, that is, the set of interventions are essentially nonverbal using mediators "artistic" in order to promote and expand the methods of communication and expression of patients. These are interventions that have not only to facilitate free expression, as is commonly understood, but above all seeking to develop the potential of communication and relationship skills, starting from residual capacity of the patient.

In conclusion, we can certainly say that the trace in the rehabilitation setting the different stages leading music therapist and patient to a full affective attunement, promotes the progressive development and evolution between your inner and outer world, while easing, harmonization of relational experiences sensory, perceptual and emotional a subject.

All that constitutes the potential therapeutic intervention of music therapy, within which the report will be audible at the same time means and end of the intervention itself which therefore does not need specific verbal skills.

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