

Neuroscience, Unconscious and Music

Neuromusicologic therapy in cognitive disabilities and mental diseases

Content and Goals

A plan for health and psychophysical well-being that promotes Neuromusicologic therapy as rehabilitation care in patients with cognitive disabilities, existential distress, mental diseases and severe disorders of consciousness (DOCs) including Vegetative State (VS) and Minimal Conscious State (MCS).

In this context, Neuromusicology concerns the study of emotional effects of listening to music both from the neurophysiological side (neuroscientific objectivity) and from the psychological side (unconscious experience).

According to the recent neuroscientific acquisitions and thanks to neuroimaging techniques, singing, playing, and listening to music act on mirror neurons and increase brain plasticity. Moreover, music has a dopaminergic power because dopamine – the so-called feel-good neurotransmitter – marks the pleasure of listening that activates the reward circuit: in this process the pleasure of listening to music works like an abstract reward. At the same time, dopamine activates the motor system and marks the interhuman bond too. Thanks to the role of oxytocin hormone (known also as the love hormone that have roles in pregnancy, nursing, and mother-infant attachment) the dopamine release is amplified and it activates also the emotional bond (Bowlby's Attachment theory). In addition to that, the neuroscientist Zatorre (Montral McGill University) has even recently discovered that dopamine production is bigger during the listening to the *preferred song or to the favourite music*.

At this point in the research, the scientific level allows to relate the subject of the emotional bond to that of the existential and affective patient history. In other words, it means that listening to the *favourite song* awakens the affections and their relationship with unconscious emotions and helps the patient for a deep self-exploration getting in touch with its “oceanic feeling” and its “affective tone”. According to Freudian theory, working on the “oceanic feeling” and on the “affective tone” while listening to music, allows to recover memories of the original sound in pre-natal life that concerns the ancestral relationship between mother and child.

On the premise that unconscious information can influence conscious experience and that emotional content is important in amplifying this effect, music can be used as a suitable complex stimulus in order to study responses in patients with severe impairment of consciousness, for which most of the ‘communication channels’ with external environment are strongly impaired. At the same time working on “*listening to favourite music*” allows unique paths of vital importance for self exploration and the conquest of a relational style rich, personalised and modulated even in presence of affective fragility or severe mental, relational and social impairments.

The work must be done in developing and validating a unique methodology: a) it will lead to *affirm the rehabilitative power* of music in listening work and the durability of the results obtained in terms of intersubjectivity, self identification and self-esteem, limit handling, modulation of personal traits and relational skills (results that have to be reinvested in different dimensions of personal life); b) it will *lead to important theoretical considerations* dealing with the relationship between the awakensness of memory and the removal of contents of conscience; the development of refined behaviour responses, the development of new personal and relational skills, and the access to complex mental processes.

The plan will present the protocols of observation and interpretation of the musical listening, the results obtained in terms of its development, their durability and their reinvestment in terms of harmonization and modulation of the self .

Tools

– **Organization of international conferences, and research seminars** that promote Neuromusicology Therapy as rehabilitation care in cognitive disabilities and mental diseases. The research will consider and discuss some possible extension of interdisciplinary scientific paradigms related to the neurocognitive science, the psychology of music, and the neuropsychology of music. Protocols, results and reflections will be finally discussed in light of current lines of research in the neuropsychology of music.

– **Creations of workshops:** Specific group sessions that work on listening to the *preferred song or to the favourite music* permit the construction of environments

where emotions, relationships and affections can be exercised and developed in an original and unique way. Self-exposure, listening, self- listening, and polyphonic dialogues can be practised in contexts that are felt at the same time, 'real' and 'projective': the work of listening to music guarantees an imaginary 'distance' from the real world dynamic processes 'hint' and made available as music emotion. In this contest, particularly interesting is the possibility to use external stimuli (auditory, visual, tactile), able to engage an emotional response. Among stimulus paradigms used to explore emotion perception, music is a complex stimulus able to induce a powerful effect on emotions, feelings, and mood states; in fact, music masterpieces usually evoke defined affective states, and consequently are appropriate to analyze the neural correlates of the emotion perception.

Realisation times: six months