

# Music and Imagery Therapy

## part 3

### Music and Neurosciences

Since the dawn of time, men have used music to express and share emotions, Shamans, curators, therapists of every place and time, they have could not ignore the manifestations with which music has always influenced our cultures, our hearts and our minds. The human being is an emotional animal, with some of a divine, some of special, into the conceptual schema of uniqueness that our world has for everything. This is because the range of the emotional nuances, even if neuropsychologists have established a definite number of primary emotions equal to 8, consists, in combinations and intermediate emotional gradations, which deviate from the 8 basic species-specific emotions, and which are innumerate and innumerable. Suffice it to say that the same place with a practically identical situation can express in a person totally different emotions, depending on the particular psychological condition in which that person is in those moments. The emotional effects of music can be obtained, with different mechanisms, from the notes and the rhythm. The effects of rhythm are simple and essentially depends on the speed (the time "tempo") of the music. This is measured in beats per minute. Times of less than 60 beats per minute have a calming effect, which under 30-40 becomes even saddening or depressing, so as to be used for funeral marches. On the contrary, from 80-90 beats per minute or up, the effect is activational. The disco music is typically set at 120 beats or up, with a "low band", from 107 to 120, for a "quiet" disco music. Why these values, and not others? Generally, because the normal human

cardiac activity, when awake at rest, is between 60 and 80 beats per minute, typically 70-72. A mother's heart rate affects the mood of the child she holds in her chest and that feels her heart. The child is reassured by normal, or slightly slower, frequencies that tell him that the mother is well and is quiet, or even sleeps. Higher frequencies indicate that the mother is alert, or anxious, then the child responds with similar activation. This emotional response to the frequency of rhythmic sounds, particularly like remember the sound of heartbeats similar to drums, bass and electric bass, probably, follow us all the way through life. Neurosciences have shown that the use of music as a neuronal stimulus can have a serotonergic and dopaminergic action. From a research carried out at the Neurological Hospital Institute of McGill University in Montreal and at the Center for Interdisciplinary Research in Music Media and Technology it has been shown that to produce dopamine is sufficient to even imagine a song theme, thus, just feeling the melodic trend, even before listening to it (Imagery). Through diversified techniques of Brain Imaging, suitable to visualize the structures of the brain (PET / MRI) it was found that, in cases where there was a greater emotional involvement, and therefore a satisfaction, the production of dopamine underwent a significant increase. Moreover, it has always been seen through Brain Imaging techniques, that the brain responds to the tension-dimensional mechanisms typical of tonal music, respectively in the cognitive and motor areas (stress phase-cerebral areas responsible to the configuration and prediction of an event-Gestalt projection-, movement and/or intellectual activity), and in the emotional areas (distension phase of brain areas affecting the limbic system, emotional tension, cognitive activities).

The use of tomographic magnetic resonance imaging (MRI) and of positron emission tomography (PET) allowed researchers of the Canadian University McGill in Montreal to visualize the brain regions activated while listening to some songs. Thus they observed a high blood flow in the nucleus accumbens of the mesolimbic system, ie the region dedicated to the development of pleasure. This is the area involved in biologically important functions, such as nutrition or reproduction, but also in the satisfaction of drug use. In fact, the

volunteers presented in these areas of the brain a consistent release of dopamine, the molecule that triggers the so-named "reward circuit", while they were listening to their favorite songs. The subjects felt "a shiver" in correspondence of the most exciting harmonic steps within a song, which coincided with the peak of neuronal activity. From the same study it was found that the dopamine levels increased in the caudate during the anticipatory phase, that is when the individual "expected" (Imagery), a certain melody immediately before listening to it, and that the waiting and anticipatory phases, and those with a more intense emotional response are mediated by anatomically distinct pathways. In the anticipation phase dominates the activity of the caudate nucleus neurons (one of the brain centers involved in reward mechanisms, important in the control of both voluntary and non voluntary movements, and of some cognitive functions), while during the emotional and neurovegetative response ( the point of maximum pleasure induced by listening), the activation of the cells of the nucleus accumbens (a neurons system responsible for the feelings of pleasure and fear, involved in the mechanisms of dependence) prevails. Music - heard and created - therefore, is good for the heart, the mind, and fatigue. Our body and our psyche react positively to pain and effort (sports, work and emotional) if this is accompanied by musical creation. Singing while working, playing the drum, creating musical motifs with sports equipment, helps to avoid pain (Max Planck Institute, Gant, Belgium). An experiment on 18 infants a few days old led by neuroscientist Daniela Perani, San Raffaele University of Milan, would show that music is already written in neurons. Perani with his study, working with babies 1-3 days old, children not exposed to music during the pre-birth months in the womb, using both classical music and rock-pop music, and also, functional magnetic resonance imaging to "see" the brain areas that were into activity while babies were listening to music, Perani claimed «That at birth our brain is already predisposed to receive and interpret music, distinguishing it from other sounds». Already Kandel, believing that the mechanisms of memory are phylogenetically conserved, explored the molecular dimension of

synaptic plasticity that had already been demonstrated by Bliss and Lomo, observing that in the process of memory, a painful sensory stimulus, sent repeatedly, causes the production of serotonin that allows cells to communicate with each other, thus to induce a series of chain processes that ultimately translate into an enhancement of the nervous signal propagation. In this way the process of short-term memory can be explained. If the stimulus is repeated, the memory trace is consolidated: the repeated link between serotonin and receptors has as consequence the modification of the PKA molecule, the phosphokinaseA which, unlike what happens in the mechanism of short-term memory, acts in the neuron's nucleus, in particular, in the expression of specific genes. At this stage there is a crucial passage in the molecular mechanism of long-term memory: the expression of some specific genes activates a chain reaction process in the cell that leads to the strengthening of the synapses and the formation of new synaptic connections.

*The power of singing*

*"When I start singing,  
to throw a few words,  
I turn the sea into mountains,  
I make shields from the rocks,  
I make a predella by the soil.*

*The songs, these never fail  
when I give myself free rein;  
they do not really turn off in the flower  
at the end of their noon.*

*Dry all the lilies,  
the junipers are lost,  
all the maples disappear,  
before my voice dries up,  
before my songs end. "*  
*/"The songs of the shamans"/*

## Music, Imagery and Therapy

Since the dawn of time music has been considered, and still is, an essential component of traditional healing practices in many of the tribal and indigenous cultures around the world. This belief is supported by the literature on ethnomusicotherapy, in particular in the text "Music of Many Cultures" (1993), which refers to 19 cultures that use music in the healing and ritual process. Music in shamanic healing practices is used as an integration in the induction of hypnotic trance, to allow the shaman to get closer, more easily with the spirit of the world and to establish the connection that can give a better benefit to the patient.

The use of repetitive musical rhythms emphasized by an altered state of consciousness is typical and characteristic of much shamanic music. The Siberian Shamans describe the role of music in healing rituals with this metaphor "The Shaman's drum is like a horse that carries the shaman up to heaven to allow him to meet the spirit of the world" (Eliade 1974). The rhythmic connection between the shaman and the patient can be seen as the universal principle of rhythmic displacement referring to its conclusive phase that occurs when two or more objects that are beating almost at the same rate tend to get stuck starting to beat both at the same rhythm (Moreno 1988).

Both are connected in order to help us to better understand how the shaman can influence the physiological and psychological state of the patients. The music presented rhythmically in a shamanic ritual force the healer and the patient to maximize the patient's faith in the prevailing belief system (a psychological dimension) and this positively affects the possibility of psychological change. In many shamanic traditions, there is little difference between mind and body, as it is characteristic of the biomedical approach, and this more unified view of the disease provides a positive alternative to the compartmentalisation of the treatment that is associated with the Western model. In another perspective, the music in a shamanic

ritual can be considered a stimulus that relaxes and distracts the left hemisphere of the brain of the healer in an immediate temporal distraction so as to allow the right hemisphere to meet the "conceptualized world of spirits" (Moreno 1988).

Unlike Western music, shamanic music is not always music to attend an event, but often, it is music that helps us to stop and to let go. In rituals involving the possession by the spirits, a medium becomes possessed by the spirit of a deity in response to precise musical stimuli. As in shamanic practice, music serves as a support for the trance induction process. During the trance, the medium enters in possession of the power of the state of a deity and is also able to provide a direct conversation with the entity for the other participants in the ritual. For the medium the trance state can be seen as the means of transcendence and escape from the Self in a socially recognized and esteemed therapeutic way. Unfortunately, music has been reduced to a secondary role compared to Western medicine and psychotherapy.

The growth of Holistic awareness within the health professions has led to a renewed interest in the integration of music and other creative arts into medical interventions and a renewed approach of psychiatry to the future. The traditional medical approach centered around a diagnosis of a specific physical symptomatology with direct treatment towards the causative factors seen from a neuropsychological perspective. Medical treatments are performed without fully addressing to the factors that predispose the disease in the social and interpersonal circumstances of the patients and the potential that we have of altering them in a manner favorable to healing. The approach of the medical model, quite rarely, gives adequate attention to reinforcing the beliefs of patients in their ability to actively participate in their well-being, in conjunction with medical prescriptions.

Focusing our attention to the approach centered on Music and Imagery (a type of contemporary music therapy commonly used) we can see interesting parallels between shamanic music and healing practice (Moreno 1988). The usual approach of Music and Imagery in

music therapy and clinical practice involves the work of individuals or groups in which a period of progressive relaxation is followed by listening to a selection of recorded instrumental music. There are many approaches to Music and Imagery that may or may not use a doctor's voice guidance, but the essential principle is that music must induce an altered state of consciousness to support mental Imagery.

This music-induced Imagery will typically be a reflection of the emotional meaning of the problems that can be repressed in ordinariness, which will be verbally addressed later with the doctor. With respect to shamanic practice, in Music and Guided Imagery, is the patient rather than the physician, who enters an altered state of consciousness that is sustained through the deep relationship and concentration by the musical support. The music assists the patient on the journey to his unconscious to discover and come to terms with an important inner material.

### **EthnoMusicTherapy\***

For a long time, in the field of medical anthropology, traditional music and healing practices have been considered above all as musical and anthropological rather than a medical interest. Is a fact highlighted how we are really late in seriously considering these musical traditions with the explicit intention to utilize their application potential within the modern social health system. A collaborative research between computational psychiatrists, ethnomusicologists, medical anthropologists and medical personnel can lead to the development of a new and important discipline like as Ethnomusicotherapy (J. Moreno). Ethnomusicotherapy as the multidisciplinary study of ancient music and patient-centred healing practices.

It considers the impact of music on a ritual performance and on the measured progress made by patients/participants with

psychopathological problems and with known aetiology. The psychological and physiological effects of music and ritual practices on the participants need to be monitored during treatment and related to patient responses, with procedures for the patients in treatment and for those who have already completed treatment for a post-treatment evaluation. All this require a research focused on an ethnomedical approach, ie the study of a particular group of people who perceives and deals with health and diseases. This approach includes the study of medical beliefs, healing techniques and medical practice as that phenomenon related to the culture and society that they have found.

Following these guidelines, Ethnomusicotherapy needs to focus on those aspects of music and healing traditions that are produced by the development of ancient and indigenous culture with clear implications for clinical practice as well as for research. The theories of Music with Imagery Therapy would be further confirmed by the inclusion of references derived from data obtained from interdisciplinary research on Ethnomusictherapy.

All this would mean directing the creation of new music therapy techniques into medical practice by involving the medicals to give more attention to the specific effects of music and healing rituals on patients. "The best medicine for the future will be practiced by those who take the best from the shamans and scientists" (Achterberg 1975), the research on Ethnomusictherapy will certainly help to achieve this integration of the levels of both fields, theory and practice.

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