



The Interaction between our Brains and Music



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Short Communication

Why do children dance when they hear music? Do you notice yourself involuntarily tapping with your fingers, nodding with your head or shaking your legs when there is music in the background, even when not consciously paying attention to it? How actually does music affect the brain? Music is the nourishment of our souls. There is an evidenced association between perception of music and movement. Many researchers have been done to investigate centres of the brain affected by music. Mapping the mental activity of the brain shows that music stimulates certain areas of it just as food, drugs and sex do. Moreover, music has the power to alter emotions and mood in the majority of people. Listening to music activates several areas of the cerebral cortex. The auditory cortex in the temporal lobe which is concerned with hearing has also the ability to figure out the rhythm, speed, melody, volume and pitch of heard music. The inferior frontal gyrus is concerned with recalling memories associated with the heard music [1].

The dorsolateral frontal cortex is activated to keep the heard music or song in working memory and bring up images that are associated with the sounds. Meanwhile, the motor cortex responds to control body movements. The cerebellum works in harmony with the motor cortex to create smooth, flowing and integrated movements when moving in response to the music. Interaction of music with the limbic system of the brain releases different feelings like joyfulness, sadness, excitement, pleasure etc.... There is evidence that the ventral tegmental area of the limbic system is the structure that is primarily stimulated by music. However, the amygdala is normally inhibited when listening to music as it is the area typically concerned with negative emotions such as fear. During passive listening to unfamiliar although liked music, activations were also observed in the subcallosal cingulate gyrus, prefrontal anterior cingulate, retrosplenial cortex, hippocampus, anterior insula, and nucleus accumbens [2].

Music is a nonverbal method of communication between people. A mother sings to her baby as a way of communication. People from different nations can express the same feelings of

sadness or joyfulness on hearing music. Drums were beaten in ancient days to address the beginning of wars. The national anthem of a country is used in ceremonies, meetings and conferences to denote participation of that country [3].

Music has been used as a therapeutic tool for thousands of years in many ancient civilisations. Historic writings from old Egypt, China, India, Greece and Rome were found indicating the use of music therapy. The first modern use of music in clinical settings was during World Wars I and II. Music was used to relieve pain and alleviate agitation in injured soldiers. It has been reported that music has the potential to alter a person's state of consciousness. With music therapy, it is possible to shift a person's perception of time from virtual time, perceived in the left brain, to experimental time perceived through the memory. Music has the ability to activate the flow of stored memory across the corpus callosum, thus allows the right and left brain hemispheres to work in harmony. A person may experience musical synesthesia so he may see visual images, colors, or shapes, he may experience a certain taste or smell, or feel a change in temperature due to the music he is listening to. Synesthesia occurs when there are increased associations between different cerebral regions [4].

Neuroplasticity is the capacity of the brain to change. Thus, music has the ability to affect the brain's learning centres. As use of music activates brain centres in both hemispheres, music enhances the perception of educational information's. Music researches provide the evidences of improved cognitive development, increased overall intellectual capacity, enhanced language development and positive social interaction in children. It can be concluded that, music is a very influential task in our life. The effects of music on brain centres render it an effective tool in medicine, education and communication between nations [5].

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