

Music has a way of altering a person's mood, bringing up old memories, and turning an introvert into the greatest dancer on the dance floor.

But what is it about music that can invoke physical and emotional response?

The study of music by neuroscientists has increased over the last few decades as the field has become established as a subdiscipline of cognitive neuroscience—which is responsible for researching the neural basis for music perception, cognition, and emotion.

<u>Neuroesthetics</u> is a relatively recent study style of questions like, "why do we like the things we like?" and "why do some people find one thing pleasing, while others find it appalling?". Empirical aesthetics takes a scientific approach of visual perceptions of art, music, or any object that can give rise to artistic judgments.

Various studies have found that music perception and cognition can be compared with language processing and understanding, while music-induced emotions compare to visually induced emotions.

By studying music through neuroesthetics, it will hopefully allow the understanding of the neural activity that occurs when we listen to and evaluate what we hear.

In a recent study supported by the <u>Natural Sciences and Engineering Research Council of</u> <u>Canada</u>, researchers asked the question of why is music pleasurable, when it is just a simple sequence of tones?

Music is among one of the most rewarding experiences for humans, being present in human culture as far back as history can date. What researchers found fascinating, and what they based the study on, was that music really has no functional resemblance to other rewarding stimuli, and hasn't demonstrated any biological value, yet individuals continue to listen to music for simply pleasure.

There have been suggestions that the pleasurable aspects of listening to music could be related to a change in emotional arousal—however, this has not been directly studied.



The researchers for this study used methods of high temporal sensitivity to find out whether there is a systematic relationship between dynamic increases in the pleasure states and physiological indicators of emotional arousal, such as changes in heart rate, respiration, electrodermal activity, body temperature, and blood volume pulse.

The study observed twenty-six participants, who were instructed to provide 3-5 pieces of pleasurable instrumental music to which they would experience "chills". A major exclusion for the selections of music was that it could not be specifically or generally associated with an episodic memory. Which means that if any memory or specific life event is associated to the song, the participant could not use it. The study did this so that it could decrease extramusical associations and ensure that the music was pleasurable in itself and not acting as a trigger for emotional memories.

During the first half of each individual's session, they listened to one-minute clips of al musical pieces provided by other participants and rated each piece on a subjectively experienced pleasure scale. The second half of the session included participants being fitted with psychophysiological equipment to record heart rate, BVP amplitude, respiration rate, electrodermal activity, and body temperature. The recordings compared the differences in physiological activity collected over a 5-minute silent relaxation period for each participant and how they responded to each clip of music.

From this data, the researchers found clear evidence for a direct link between emotions and the rewarding aspects of music listening by demonstrating a robust dynamic relationship between the increase of emotional pleasure.

However, a dissociation was found as individuals who did not experience pleasure also showed no significant increases in emotional arousal. These results revealed broader implications by demonstrating that strongly felt emotions could be rewarding in themselves in the absence of a physically tangible reward or a specific functional goal.

Music can be a highly rewarding experience, you can even find peace and harmony within by listening to it, maybe even <u>Zen!</u>

Looking for more musical Zen? Check out www.phenomenex.com/FindZen. And don't



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Summary



Article Name Neuroesthetics of Music - Find Zen in the Lab Today Description

What is it about music that is so pleasing for human kind? Studies explore this idea in studies focusing on the neuroesthetics of music.