

THE HEALING POWER OF MUSIC



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Sample Chapter

Scientific Research into the Effects of Music p82

Scientific Research into the Effects of Music

Geetanjali Vaidya says one great problem that arises in trying to study music's emotional power is that the emotional content of music is very subjective. A piece of music may be emotionally powerful but is experienced in very different ways by each person who hears it.

The emotion created by a piece of music may be affected by: –

1. The memories associated with the piece
2. The environment it is being played in
3. The mood of the person listening and their personality
4. The culture they were brought up in
5. Any number of factors both impossible to control and impossible to quantify.

Under such circumstances, it is extremely difficult to deduce what intrinsic quality of the music, if any created a specific emotional response in the listener. Even when such seemingly intrinsic qualities are found, they are often found to be at least partially culturally dependent.

(Geetanjali Vaidya (2002) - Music, Emotion and the Brain)

Musical Tempo

According to studies published in the 'The Economist' and 'The Scientific American' major keys and rapid tempos cause happiness, whereas minor keys and slow tempos cause sadness, and rapid tempos together with dissonance cause fear.

("Exploring the Musical Brain" - Kristin Leutwyler, January 22, 2001 Scientific American)
("The Biology of Music", February 12th - 18th 2000, The Economist)

Dissonance

Most people find dissonant music unpleasant. Dissonance is to a certain degree culture-dependent, but also appears to be partly intrinsic to the music. Studies have shown that infants as young as 4 months old show negative reactions to dissonance.

(Cromie, William J. (2001) - "Music on the brain: Researchers explore biology of music" - Harvard Gazette Archives)

(Tramo, Mark Jude "Biology and music: Enhanced: Music of the Hemispheres" (2001) - Science Vol. 291, Sique 5501, 54-56)

A recent experiment measured responses to dissonance. Dissonance can consistently create feelings of unpleasantness in a subject, even if the subject has never heard the music before. Music of varying dissonance was played for the subjects, while their cerebral blood flow was measured. Increased blood flow in a specific area of the brain corresponded with increased activity. It was found that the varying degrees of dissonance caused increased activity in the paralimbic regions of the brain, which are associated with processing emotions.

(Blood, A.J., Zatorre, R.J., Bermudez, P., and Evans, A.C. (1999) - "Emotional responses to pleasant and unpleasant music correlate with activity in paralimbic brain regions" - Nature Neuroscience, 2, 382-387)

Pleasure

Another recent experiment measured the activity in the brain while subjects were played previously chosen musical pieces that created feelings of intense pleasure for them. The musical pieces had an intrinsic emotional value for the subjects, and no memories or other associations were attached to them. Activity was seen in the reward, motivation, emotion, and arousal areas of the brain. This result was interesting because these areas are associated with the pleasure induced by food, sex, and

recreational drugs, which would imply a connection between such pleasure and the pleasure induced by music.

(Blood, A.J. & Zatorre, R.J. (2001) "Intensely pleasurable responses to music correlate with activity in brain regions implicated with reward and emotion - Proceedings of the National Academy of Sciences, 98, 11818-11823)

Hormones

There are particular biochemical responses in the human body to music. Research shows that college students, when listening to music, have more galvanic skin response peaks, as opposed to when they were not listening to music. This research also indicates a significant decrease of norepinephrine levels in students while they listen to "preferred" music. Norepinephrine is a neurotransmitter that arbitrates chemical communication in the sympathetic nervous system of the human body.

The release of this neurotransmitter, as a consequence of a function of the brain, results in an increased heart rate and raised blood pressure. Therefore, the decrease of norepinephrine in these college students results in a more "relaxed" state. This could suggest that favoured music somehow affects the mind, resulting in the relaxing of the body.

(Vanderark, Sherman D., and Daniel Ely. (1993) - "Cortisol, Biochemical, and Galvanic Skin Responses to Music Stimuli of Different Preference Values by College Students in Biology and Music." - *Perceptual Motor Skills*, 77, pp. 227-234)

Another research project, undertaken at the Tokyo Institute of Psychiatry, focused on the effects of music on the mind using electroencephalograms (EEG). An electroencephalograph is a medical instrument that is capable of showing the electrical activity of the brain by measuring electrical potentials on the scalp. In this experiment, volunteers were exposed to silence, music, white noise (simulated hiss), and then silence. The result of this experiment coincides with the previous findings. The volunteers all reported feeling a calming sensation. However, the researches did not attribute the lowered tension to reduced neurotransmitter levels.

While listening to music, "many of the subjects reported that they felt pleasantly relaxed or comfortable. Music may evoke more organised mental activities which result in subjectively comfortable feelings." The white noise in the experiment produced an even greater effect; the volunteers were so relaxed that many felt drowsy and soporific. The monotonous characteristics of white noise, in contrast to the variations in tone and melody of normal music can explain this sleepy effect.

Furthermore, the researchers found based on the EEGs, that while listening to music, the volunteers maintained a higher consciousness than when they were exposed to silence or white noise. What this experiment shows is that there is a change in the mental state of people while listening to music.

(Ogata, Shigeki. (1995) - "Human EEG Responses to Classical Music and Simulated White Noise: Effects of a Musical Loudness Component on Consciousness" - *Perceptual Motor Skills*, 80, pp. 779-790)

Memory

In one experiment, words were presented to test subjects, while classical music, jazz music, or no music played in the background. When the test subjects were asked to repeat the words a few days later, either the same music or a different background was present. The researcher noticed a "facilitative effect of providing the same [musical] context."

(Sogin, David W. (1988) - "Effects of Three Different Musical Styles of Background Music on Coding by College-Age Students" - *Perceptual Motor Skills*, 67, pp. 275-280)

Similar research has been done on CDM. CDM stands for context-dependent memory, which is the principle that "changing the context or environment in which material was originally learned causes some of that material to be forgotten."

(Smith, S. M. (1985) - "Background Music and Context Dependent Memory" - American Journal of Psychology, 6, pp. 591-603)

A group of scientists tested college undergraduates by asking the students to rate the pleasantness of a sequence of words, while they listened to a certain type of music. Afterwards, they were asked to recall these words. The results indicate that the students were able to recall the sequence more successfully if the same musical piece was playing. Furthermore, the researchers found that if the music played during the recall had a different tempo than the original music, then there was a lowered ability to recall the words.

(Wallace, Wanda T. (1994) - "Memory for Music: Effect of Melody on Recall of Text" - Journal of Experimental Psychology, 20, pp. 1471-1485)

These results are also supported by a supplementary investigation, where it was shown that a musical piece can facilitate learning and recall.

(Balch, William R., Kelley Bowman, and Lauri A. Mohler (1992) - "Music-dependent Memory in Immediate and Delayed Word Recall" - Memory and Cognition, 20, pp. 21- 28)

A common manifestation of this phenomenon is when you remember the jingles in commercials. A test conducted at the University of Washington demonstrated that brand names were more easily recalled when they were presented in the form of a musical tune, instead of just spoken. Hence, this is a consistent example of one relationship between music and memory.

(Yalch, Richard F. (1991) - "Memory in a Jingle Jungle: Music as a Mnemonic Device in Communicating Advertising Slogans" - Journal of Applied Psychology, 76, pp.268-275)

(Russel, P. A. (1987) - "Memory for Music: A Study of Musical and Listener Factors" - The British Journal of Psychology, 78, pp. 335-347)

Communication

A group of specialists at the University of Connecticut studied how people communicate with each other while background music was present. A hundred and four students were paired off and put into rooms with either different types of background music playing, or no music playing. In the rooms, these students were asked to perform some problem solving tasks that required conversation between them. After five minutes, the subjects were asked to rate their conversations.

Of the students who heard background music, almost all reported "significantly higher satisfaction [with communication] than those in the no-music condition." The different types of music also affected the students. The researchers noted that the students who listened to fast music had differently paced conversations than those who listened to slow music. The volunteers who listened to music in a major mode performed notably better than those who listened to music of minor mode.

(Blood, Deborah J., and Stephen J. Ferriss (1993) - "Effects of Background Music on Anxiety, Satisfaction with Communication, and Productivity" - Psychological Reports, 72, pp. 171-177)

Walking

A recent investigation into the effects of music on walking distance was performed at Ursinus College. Volunteers were asked to walk for ninety seconds. The study showed that, "music significantly influenced distance walked." The conclusion reached by the scientists in this instance contradicts the previous results. Instead of "raising the consciousness" of the mind, the researchers hypothesised that the music interfered with or distracted the minds of the test subjects. A related study concurs with this finding.

In this case, college students were asked to complete two hundred and twenty hand-eye coordination problems while listening to different types of music. It was found that the rhythm and loudness of the background music interfered with the attention span of the students. These last two studies seem to refute the findings of the other research; but in a sense, all the studies correlate a modification of behaviour caused by the presence of music.

(Becker, Nancy, Catherine Chambliss, Cathy Marsh, and Roberta Monetmayor (1995) - "Effects of Mellow and Frenetic Music and Stimulating and Relaxing Scents on Walking by Seniors" - Perceptual Motor Skills, 80, pp. 411-415)

Academic Performance

Research carried out at Glassboro State College indicated that when music was played in a psychology class it improved academic performance. Music was played for twenty minutes each day. The researchers reported that the music "stimulated the human alpha and beta brain waves," resulting in the attainment of "significantly higher mean scores on examinations than those who were not exposed to the music."

In addition, music can also be used to aid in the education of mentally handicapped students. In a school district in Prescott, Arizona, music was added to the academic environment of special education students. This resulted in an increase in performance, especially in the area of mathematics.

(Schreiber, Elliott H. (1988) - "Influence of Music on College Students' Achievement" - Perceptual Motor Skills, 66, p. 3380)

(McLaughlin, T. F., and J. L. Helm. (1993) - "Use of Contingent Music to Increase Academic Performance of Middle-School Students" - Psychological Reports, 72, p.658).

Information from the web site 'The Mind, Music, and Behavior' -

<http://www.dreamessays.com/customessays/World%20Literature/2328.htm>

Order in Music

Laurence O'Donnell says that key component of music that makes it beneficial is order. The order of the music from the baroque and classical periods causes the brain to respond in special ways. This order includes repetition and changes, certain patterns of rhythm, and pitch and mood contrasts. Music from the baroque and classical periods is mathematically precise. According to O'Donnell this is realised by the body and the human mind performs better when listening to this ordered music. (O'Donnell 1999)

The brain works by looking at different pieces of information and deciding if they are different or the same. This is done in music of the baroque and classical periods by playing a theme and then repeating or changing the theme. The repetition is only done once. More than one repetition causes the music to become displeasing, and also causes a person to either enter a state of sub-conscious thinking or a state of boredom.

Dr. Ballam goes on to say that, "The human mind shuts down after three or four repetitions of a rhythm, or a melody, or a harmonic progression." Furthermore, excessive repetition causes people to release control of their thoughts. (Ballam, Michael - Music and the Mind pp 1-8)

Laurence O'Donnell is a musician from Perth, Scotland.

His web site is - <http://www.cerebromente.org.br/n15/mente/musica.html>

About the Author

Simon Heather is a qualified acupuncturist, healer and body worker. He has made an extensive study of sound healing and in 1996 founded the UK Sound Healers Association.

Simon is also the founder of the College of Sound Healing. The College of Sound Healing is a non-profit making organisation dedicated to teaching and promoting sound healing in the UK.

For the last twenty years Simon has been involved in teaching many different approaches to healing and through his work he has discovered the tremendous power of sound and music for healing.

Simon has taught sound healing workshops in Australia, Canada, Ireland, Russia, South Africa, New Zealand, Zimbabwe, UK, and in the USA. Simon has written seven books: -

"Reclaiming Your Sacred Spirit - The Essential Guide to Healing the Chakras"

"The Healing of Emotion - Reconnecting with the Positive"

"God Am I -The Journey to Self Realisation"

"The Healing Power of Musical Intervals"

"The Healing Power of Sound"

"The Healing Power of Music"

"Articles on Sound Healing"

"Sound Healing Practice"

At present Simon is teaching workshops for those who wish to reconnect with their true voice, for those who wish to experience the healing power of sound, and training courses for healers and therapists who wish to use sound as part of their healing practice.

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