

The Effect of Music on Human Brain in Developing Learning Skills and Physical Health

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Abstract

This paper focuses on music which definitely will be helpful to us in so many ways in different aspects of our lives. It acts as a stress reliever, helps in learning, medicine during our sickness, and encourages in personal development and well being. There are different experiments made to prove that heavy rock music destroys living things whereas orchestral music helps in growth and development. Different kinds of music have different effects on the listeners. An organ music played in a church, jazz music played in a bar, trance music played in a discotheque etc. This paper deals with the power of music and the numerous effects they have on people.

Keywords: Music; Learning skills; motor skills; rhythmic performance; rock music; classical music;

1. Introduction

Music is the arrangement of systematized sound made by vocal sound or instruments in a manner that is pleasant or rousing to the organ of hearing. It is composed and performed for various purposes, for aesthetic desire, devotional or traditional purposes, or as a showbiz product for the market. Music plays an important role in an individual's life irrespective of his or her culture. Generally, an individual can see music in different perspectives as he crosses different stages of life. For instance, for children, music can be used for fun and to make them sleep. Youngsters hear music for entertainment and adults give heed to solemn music which is pleasant. Music is essential for all and it cannot be restricted to age levels. There are few genres in music for example: heavy metal which is considered bad for environment and human beings. There are classical masterpieces which instigate growth and serenity in living beings and human body. Recent developments in the education of the brain have enriched greater understanding of the way that vigorous engagement with music may inspire other activities. The cerebral cortex self-arranges itself as we involve with diverse musical activities (Pantev et al., 2003). This paper focuses on the wonders which music makes through developing learning skills, writing skills, mathematical skills, creativity, physical fitness and also brings out the healing power and impact it has on living beings and human beings.

2. Literature Review

Music has extensively been argued to deliver effective skills for children to cultivate listening skills in mainstream schools and those for children with learning problems (Hirt-Mannheimer, 1995; Wolf, 1992). Research is currently able to deal with descriptions as to why this might arise. When we take heed to music or communication we process a huge quantity of information swiftly without our knowledge (Blakemore and Frith, 2000). The comfort with which we pursue this relies on our former musical and linguistic involvements. This awareness is inherent, acquired through experience to specific atmospheres, and applies automatically when we attend to music or speech. Language and melody share some processing systems. Musical proficiencies which boost processing can consequently influence on the perception of language which in turn shows it on reading. Musical training hones the brain's primary encoding of sound which results to enriched performance (Tallal and Gaab, 2006; Patel and Iverson, 2007) cultivating the skill to discriminate between quickly varying sounds (Gaab et al. 2005), and improving aural discernment (Schlaug et al., 2005). This has an influence on the cortical processing of linguistic tonal forms. (Magne et al, 2006).

Playing a musical instrument initiates variations in the brainstem not the cortex alone (Musacchia et al., 2007).

Instrumentalists have been discovered to possess earlier brainstem reactions to the commencement of a syllable compared to the non-musicians and those who play from the age of 5 have rapid responses and improved action of neurons in the brain to both melody and verbal sounds. Musicians also possess extraordinary functioning of the peripheral auditory systems. The excellence of sensory encoding is interrelated to the extent of musical exercise (Wong et al., 2007).

Current studies have established that possessing musical abilities foretells the aptitude to observe and produce refined phonetic differences in a second language (Slevc and Miyake, 2006) and the reading skills of school children in their primary language (Anvari et al., 2002). It also develops the capacity to construe affective speech rhythms (Thompson et al. 2004). Communication makes wide usage of structural auditory forms not founded on pitch but timbre based variances amid phonemes. Musical training appears to enhance these skills. Nevertheless, in Philip (2010) Marketing 3.0 model a novel dimension moves into the literature of advertising: the divine, where music has a vital part in methods of talent management and cultural task.

The indications propose that music shows a chief role in evolving perceptual processing systems which expedite the encoding and ID of speech sounds and forms. The earlier the introduction to vigorous music involvement the superior the impact. Transmission of these skills is involuntary and bestows not only to language improvement but also to literacy.

3. Objective of the Study

As said by Plato, "Music is a moral law. It gives soul to the universe, wings to the mind, flight to the imagination, and charm and gaiety to life and to everything" In our every stage of life music appeals to us in different ways as mentioned in this paper. People are exposed to music everyday but not all are aware that music can do wonders in their lives if they make music as part and parcel. So this study proves that music does not only pertain to youngsters but to everyone at every stages and can be used for learning skills, for well being, healing to the body and soul.

4. Music and Learning Skills

The role of music in aiding language skills contribute to the progress of reading skills. An early study where music education was explicitly designed to enhance, visual and motor skills in 7-8 year old pupils over a period of 6 months, discovered that the mean evaluation of comprehension scores of the participating group improved while pupils of the control group showed no improvement (Douglas and Willatts, 1994). In the same way, Gardiner et al (1996) offered children with 7 months of Kodaly training together with visual arts coaching. Their reading scores were paralleled with controls and were noticed to have revealed finer development.

More or less studies have fixated on children who are undergoing problems with reading. Nicholson (1972) studied children aged between 6 - 8 considered as slow learners, after music training the investigational group showed considerably higher reading scores scoring in the 88th percentage versus the 72 percentage. After another year of musical training the reading scores of the trial group were still higher to the control group's scores. Movsesian (1967) found analogous results with children in standards one, two, and three.

Rhythmic performance appears to be an imperative aspect in reading improvement. Atterbury (1985) found out that disabled children in reading aged 7-9 were able to distinguish rhythm patterns and also controls but stood inferior in rhythm performance and tonal retention than ordinary succeeding readers. Long (2007) discovered that very short-term training (10 minutes in a week and so for 6 weeks) in clapping, stamping, and singing in time to a section of music while succeeding simple musical representation had a significant impression on reading comprehension in children undergoing problems in reading. There are also signs from a variety of sources that rhythmic training helps children suffering with dyslexia (Overy, 2000, 2003; Thomson, 1993). Overy (2003) discovered that children suffering from dyslexia struggle with rhythmic skills (not pitch) and that coaching concentrating on rhythm had an optimistic outcome on both phonological and spelling skills in adding to musical talents.

One method in which music teaching may help reading skills in addition to people relating to additional, timing, general perception and language skills is that it enhances verbal memory. Chan et al. (1998) proved that learning to possess the skill of playing a musical instrument improved the skill to bear words in mind. Matured musicians had enlarged left cranial temporal regions in the brain, the region indulged in dealing with heard information. Those partakers in the study with musical training were able to keep in mind 17% additional verbal information than people void of musical training. Ho et al. (2003) gave hand to these findings in a study of 90 boys who were 6-15 year old. Children with music training had considerably superior verbal learning and retention abilities, further, the extended the period of music training the superior the verbal memory. A follow up study inferred that the outcome was causal. There were neuro-anatomical

variations in the brains of kids who were occupied in making music.

Musical rhymes and singing as part of the syllabus at schools can be found only in kindergarten classrooms. As they learn new words and sentences in the form of tunes, they're not able to forget it even after they become adults. So, music and singing shouldn't be stopped after children go to higher classes, instead, children should be exposed to learning through music and singing which also helps them cultivate their learning skills. It was observed at elementary schools at Vellore, India, that children are able to grasp English words so quick when it follows a tune rather than talking or monotonous repetitions. It is essential for children to carry music along with them even though they go to higher classes.

5. Music and Mathematics

Researches investigating the affiliation between mathematics and vigorous engagement to music had assorted results. For example, Mitchelmore and Geoghegan (1996) examined the influence of a music course on the mathematics attainment of nursery children. The set of children indulged in musical programs gained high on a mathematics ability test than the control group, even though home musical background may have been a penetrable factor. Gardiner et al. (1996) investigating the influence of an arts programme also inferred that participating children fared well in mathematics than those who did not. Those participating for a long time had the maximum scores on the whole. A study by using a national US data as the base also brought affirmative effects for exposure to music. Catterall et al. (1999) using the NELS:88 information compared little socio-economic positioned students who could show high math proficiency in the twelfth grade and also proved that 33% were exposed to instrumental music compared to 15% who were not exposed. Focusing on kids learning to master an instrument, Haley (2001) inferred that the kids who had learnt an instrument prior to fourth grade had top scores in mathematics than those who were in the other groups. On the other hand, Rafferty (2003) found no outcome in the Music Spatial-Temporal Math Program of second graders who wanted mathematics achievement. The conflicting results of the study might be explained by the kinds of musical activities indulged in and the duration of time spent.

One of the initial studies to reflect on the position of music in children's intellectual development was done by Hurwitz et al. (1975). First-grade children were allotted to one of the two groups out of which one group underwent Kodaly music coaching for five days each week for seven months, another group did not. At the end of the research study, the experimental group attained scores appreciably superior to the control group on three of five consequent tasks and four of five spatial tasks. No statistically considerable variation was noticed for verbal measures, even though the children in the experimental group possessed good reading skill scores than those in the control group which were kept the same even after two academic years.

Normally students find mathematics difficult to work out, but learning music helps them acquire mathematical skills as well. As technology develops, man's work for the brain decreases. Calculations made in mind before the development of technology has now subsided and people tend to use calculators for even simple calculations as calculators are found mostly in everyone's pocket either in their mobile phones or in their watches. As parents give importance for their children to learn mathematics well in order to get a good course or a job in future, they send them for tuitions to develop their mathematical skills. But researches have proved that learning music, freely provides them mathematical skills.

6. Music and Creativity

Researchers have shown less concentration on the influence of music on creativity than other types of learning. Simpson (1969) did a study using 173 high school music and 45 non-music students and inferred that the music students scored high on numerous elements of the Guilford's assessments of creativity. Wolff (1979) did a research study on the power of 30 minutes of daily music teaching for a whole year on first graders. Those partaking displayed significant rises in creativity and in perceptual motor skills when compared to the controls. Kalmar (1982) made a research study on the effects of vocal singing and musical group play twice in a week for three years on kindergarten children of 3-4 years of age and established that these kids scored higher than controls on creativity, had greater levels of abstraction, and exhibited more creativity in improvised puppet play. They also demonstrated enhanced motor development. High school and college music students scored well on exams on creativity than none music majors, this being predominantly noted in those with more than 10 years of music education (Hamann et al., 1990). An additional study compared music students with those who were experienced in theatrical and visual arts. The music students displayed better creativity than controls but no response was found from the visual arts students. The more the number of units of music classes the better the creativity (Hamann et al., 1991). Other chief national reports on the arts have highlighted their importance in developing a

range of transferable skills as well as those associated to creativity and critical thinking (NACCCE, 1999).

In youngsters, music contributes to the improvement of self-identity. Young people listen to a great deal of music (Hodges and Haack, 1996). They do this for pass time, relieve tension, alleviate boredom, and divert themselves from worries (Zillman and Gan, 1997; North et al., 2000; Tolfree and Hallam,). Music is seen as a basis of support when youngsters are feeling disturbed or isolated, performing as a mood controller, helping to preserve a sense of belonging and community (Zillman and Gan, 1997). Its impact on tempers at this time can be intense (Goldstein, 1980). It is similarly used in relation to impression management requirements. By indulging in social contrasts youngsters are able to represent their own noble groups as more optimistic than other groups in their network and are thus able to hold out positive self-evaluations. Music facilitates this development (Tarrant et al., 2000).

In addition to enhancing personal and social skills, music may likewise have the ability to upsurge emotional sensitivity. Resnisow et al. (2004) concluded that there was a connection between the ability to identify emotions in concerts of classical piano music and a portion of emotional intelligence which requisite individuals to recognize, reason, understand and cope up with emotions using hypothetical scenarios.

Any company which offers job today to people does not recruit them by only considering their marks at school or college; instead they're interviewed and tested for their creativity skills. A person exposed to music also has the ability of being creative in his activities.

7. Music and Physical Fitness

Current worries about health and well-being in people have directed to a growth in research, discovering the effect of the arts and music. Some works have focused particularly on physical improvement in children, some on extracommon issues concerned with well-being. Research has established that using musical accompaniment to provide physical education programmes develop performances. Anshel and Marisi (1978) observed optimistic results in performance precision and durability when music was musically coordinated with motor performance and Painter (1966) also observed similar results. Beisman (1967) discovered that catching, throwing, leaping and jumping developed when children took part in a programme comprising rhythm, while Brown et al. (1981) also established that an integrated music and PE programme enriched preschoolers' motor skills more than movement exploration. Derri et al. (2001) examined the outcome of a 10 week music and movement programme on the excellence of loco motor performance in children of 4-6 years and inferred that the experimental group developed on leaping, galloping, skipping and horizontal jumping. An additional study disclosed that the programme matched favorably with free play activities (Deli et al., 2006). There is also proof that learning to master an instrument enhances fine motor skills (Schlaug et al., 2005). Music not only aids in acquiring physical fitness it also acts as a panacea during physical ailment.

8. Music Therapy

The potential of music when fixated and used therapeutically are countless. Critical to preserving eminence of life for those with Alzheimer's is enhancement of emotions and conserving the relationship with others. Music is favorable in keeping those connections strong as much as possible while assisting the partaker to pay attention, intensify awareness and orientate to the environment. A sum of research studies have regarded music therapy as an essential adjunct to medical treatment and results recommend a probable link between the use of music and decelerating the progress of dementia.

Socrates once said, "when the soul hears music, it drops its' best guard." One of the finest explanations of the influence that music has is this. With music it is probable to open a door in the heart of the hearer. Once inside, the instrumentalist can either smarten the interior of that soul, or defile those most holy places. If you can catch somebody to sing, you can certainly make them believe it. Music has been used both for good as well as for evil throughout history. All this is to declare that music is a powerful key.

9. Impact of Music on Plants and Human Beings

The All science fair project has found out that the impact of music on plant growth is still a contentious subject between scientists and experts. Several experiments have been carried out by both scientists and students to establish that plants can grow well and more fast when they are offered with musical stimulation. Music actually comprises of sound waves that journey through the air at differing frequencies and eventually reaches our ear drums to be identified as resonance and music. When the plant is being exposed to the same music, it also is exposed to the same sound waves and possibly

will be getting some type of stimuli that is yet to be understood. The experimental studies done by scientists have revealed that a few plants grew faster after being shown to musical stimulation. Majority of scientists have agreed that seeds which are exposed to music will be able to sprout faster. There are few scientists who are with the view that plants that are exposed to music may eventually be getting better concern and consideration, and so grow up more quickly. When someone talks or sings to plants, they may perhaps be supplying the plant with added carbon dioxide that the plants will require to grow sooner.

There was yet another experiment tried on three different plants in three different rooms. In one room classical music was played in another room rock music was played and in the other room there was no music. After a week it was observed that plant in the room with classical music grew well, and the plant inside the room without music ranked second and the third plant did not do so good.

The key factor of music that turns it beneficial is the order. The order of the music from the baroque and classical periods makes the brain to react in extraordinary ways. This order contains recurrence and changes, pitch and mood contrasts and particular patterns of rhythm. One key component to the order of music from the baroque and classical periods is math. This is recognized by the body and the mind of human beings performs better when paying attention to these kinds of orderly music. An Australian medical doctor and psychiatric specialist, Dr. John Diamond, has inferred a straight connection between muscle power strength/weakness and music. He has found out that all of the muscles in the whole body go feeble when yielded to the music from hard rock musicians called as "stopped anapestic beat".

From these experiments it is clearly inferred that classical music has positive effects on human beings and other living things. Rock music is popularly heard amongst youngsters just for entertainment but the negative effects through that is understood, so youngsters and rock music lovers should tune their ears to classical music which appeals the soul and has positive effects on the body.

Tansen, a great Indian composer of the sixteenth century, was a court musician for Emperor Akbar. He composed and sang the "Megha Raga" (raga of the clouds), consisting of mainly guttural sounds. While he was singing, the heavens opened with torrential rains to drive away the drought and famine. (Tiwari, maya., 2002)

10. Conclusion

Music plays a foremost role in enhancing perceptual processing systems which aid the encoding and recognition of speech sounds and forms. Music develops learning skills in children and the experiments show that the students showed it when experimented. It is essential for every individual to adopt music as a part of their life and not only hear it for entertainment sake but to focus on the song. Classical music which is considered as music with positive effects must be heard by youngsters who are caught up in the hype of rock music which actually has bad effects on the brain as pointed out by the researches. Students must be exposed to music and learning even they reach higher classes. Music which has the power to heal the sick and also to cause shower should be given importance for the effect to be experienced by all.

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