
Assessment of the Impact of Music on Human Brain

BY

Monday I. TITUS, *Ph.D*
Department of Music
Faculty of Arts
University of Sheffield
Sheffield, South Yorkshire, England
United Kingdom

ABSTRACT

The study revealed the impact of music on human brain. In normal individuals as well as in patients with focal neurological lesions, reveal that music can change the state of large-scale neural systems of the human brain. The changes are not confined to brain sectors related to auditory and motor processing; they also occur in regions related to the regulation of life processes. Music is often thought of a nonverbal language, capable of communicating emotional messages. Areas of the brain have been identified that, when damaged, impact only musical skills. At the same time, while the initial sensation of the sounds that make up music is a predominantly auditory experience, the neural basis of music perception lies in several different areas of the brain and overlaps with those used in language, emotion, and motor tasks. Thus music is a complex experience that utilizes seemingly divergent abilities of the brain. The study concluded that relationship between music and human brain has become a frontier field in the study of brain science and music psychology. Music has outstanding impact on human brain development as well as cognitive and memory development. In addition, music also shows significant effect on memory enhancement in a clear molecular level. The study has further depended people's understanding of the value of music and show more in the broader development of human brain and human potential. The review of the literature warrants the conclusion that music positively impacts on human brain. One of the recommendation was that every individual, be it a child or adolescent or adult should make music part of his life.in order to enhance his brain functionality.

KEYWORDS: Music, Benefits of Music and Human Brain

Introduction

Music has played an important part in every human culture, both past and present. People around the world respond to music in a universal way. (Deane 2019) and now, advances in neuroscience enable researchers to measure just how music impact on human brain. The interest in the impact of music on the brain has led to a new branch of research called neuromusicology which explores how the nervous system reacts to music. And the evidence of music activates every known part of the brain. (Alban, 2017). Playing, and even just listening to, music can make you smarter, happier, healthier, and more productive at all stages of life. Let's take a closer look at some of the latest findings about the ways music can enhance the health and function of your brain. Music improves brain health and function in many ways. It makes you more productive at any age.

The rapid development of cognitive neuroscience and neuroimaging technology, there are more and more researches focused on exploring the relationship between music and its impact on the human brain. (Zhang 2018) Since music is fundamentally transmitted in the form of sound waves, its interaction with the brain waves has always been the center of many research fields. Research shows that the influence of music on people is not only emotional; it has a positive impact on brain development and cognitive development. Different states of the brain understand music in different ways, stimulating specific areas of the brain, causing corresponding physiological impact. As a result, many researchers see music as a potential therapeutic tool than a mere entertainment, for example, the potential impact of music therapy on Alzheimer's Disease, anxiety, and people with concentration deficiency. With more understanding of this research concentration, more therapeutic options could benefit a broader patient community by providing a higher living quality. Previous research shows that music can stimulate the areas relating to motor, language, and cognitive functions simultaneously, and effectively improve patients' cognitive and working memory. There's also evidence showing that music is closely connected to the stimulation of neurons and executive function of the prefrontal cortex. As a result, we seek to find out whether music could effectively improve the participants' memory function.

Since 2006, two UCF professors' neuroscientist Kiminobu Sugaya and world-renowned violinist Ayako Yonetani have been teaching one of the most popular courses in The Burnett Honors College. "Music and the Brain" explores how music impacts brain function and human behavior, including by reducing stress, pain and symptoms of depression as well as improving cognitive and motor skills, spatial-temporal learning and neurogenesis, which is the brain's ability to produce neurons. Sugaya and Yonetani teach how people with neurodegenerative diseases such as Alzheimer's and Parkinson's also respond positively to music. "Usually in the late stages, Alzheimer's patients are unresponsive," Sugaya says. "But once you put in the headphones that play [their favorite] music, their eyes light up. They start moving and sometimes singing. The effect lasts maybe 10 minutes or so even after you turn off the music." This can be seen on an MRI, where "lots of different parts of the brain light up," he says. We sat down with the professors, who are also husband and wife, and asked them to explain which parts of the brain are activated by music, (PEGASUS 2008).

Concept of Music

Music, according to Alan (2009), is "the art by which a composer through a performer as an intermediary communicates to a listener, certain ideas, feelings or state of mind. It is an art of expression in sound, rhythm, melody and harmony which is pleasant to the ear. It may take the form of singing with or without an accompaniment in choral music, instrumentation or a combination of singing and playing instruments. Which has become an integral part of human emotion and could be used in advertising political campaign, radio/television, jingles and has a great influence on the lives of people". Onyeji (2012), has it that "music being a social art, it is intentionally structured to affect the people in certain ways hence, its contribution to the construction of human social and cultural integrity". Music is a creative activity which stems from "human abilities whose raw materials of rhythm and tone awaken the sense of political awareness, religious, psychological and socio-cultural feelings" (Nwagboniwe, 2013).

Thesaurus dictionary (2019) stated that music is an art of sound in time that expresses ideas and emotions in significant forms through the elements of rhythm, melody, harmony, and color. Music is the tones or sounds employed, occurring in single line (melody) or multiple lines (harmony), and sounded or to be sounded by one or more voices or instruments, or both. musical work or compositions for singing or playing. the written or printed score of a musical composition. such scores collectively. any sweet, pleasing, or harmonious sounds or sound: the music of the waves. Music is the art of arranging sounds in time to produce a composition through the elements of melody, harmony, rhythm, and timbre. (Houghton Mifflin 2019). It is one of the cultural universal aspects of all human societies. General definitions of music include common elements such as pitch (which governs melody and harmony), rhythm (and its associated concepts tempo, meter, and articulation), dynamics (loudness and softness), and the sonic qualities of timbre and texture (which are sometimes termed the "color" of a musical sound

Concept of Human Brain

The human brain is the central organ of the human nervous system, and with the spinal cord makes up the central nervous system. The brain consists of the cerebrum, the brainstem and the cerebellum. It controls most of the activities of the body, processing, integrating, and coordinating the information it receives from the sense organs, and making decisions as to the instructions sent to the rest of the body. The brain is contained in, and protected by, the skull bones of the head. (Wikipedia 2009). The brain is an amazing three-pound organ that controls all functions of the body, interprets information from the outside world, and embodies the essence of the mind and soul. Intelligence, creativity, emotion, and memory are a few of the many things governed by the brain. Protected within the skull, the brain is composed of the cerebrum, cerebellum, and brainstem.

The brain receives information through our five senses: sight, smell, touch, taste, and hearing often many at one time. It assembles the messages in a way that has meaning for us, and can store that information in our memory. The brain controls our thoughts, memory and speech, movement of the arms and legs, and the function of many organs within our body. The central nervous system (CNS) is composed of the brain and spinal cord. The peripheral nervous system (PNS) is composed of spinal nerves that branch from the spinal cord and cranial nerves that branch from the brain. (Mayfield Brain & Spine 2008). The brain directs our body's internal functions. It also integrates sensory impulses and information to form perceptions, thoughts, and memories. The brain gives us self-awareness and the ability to speak and move in the world. Its four major regions make this possible: The cerebrum, with its cerebral cortex, gives us conscious control of our actions. (Visible body 2018). The diencephalon mediates sensations, manages emotions, and commands whole internal systems. The cerebellum adjusts body movements, speech coordination, and balance, while the brain stem relays signals from the spinal cord and directs basic internal functions and reflexes.

Benefit of Music for the Brain

The power of music reflects the ability to activate the emotional and reward benefit of the brain, its influence extends beyond its capacity to integrate multiple brain systems in the unified act of music making. This integrative role may endow music with unique

benefits not inherent in other activities, underscoring its evolutionary significance. Powerful amongst these is the ability of music to prime the brain for future learning, whilst more broadly promoting our individual and social wellbeing. Music benefits us by integrating the brain in unique ways, promoting our personal and social wellbeing. (Sarah 2013).

Rock and Roll Daycare (2018) Music has a power that's practically immeasurable. It transcends time and language, expresses and influences our emotions, educates and entertains, and so much more. Scientists are also beginning to understand the impact music has on our brains. Essentially, the effect is massive and it has a particularly strong influence on the brains of children.

Enhanced Memory: Links between music and memory are nothing new. It's been found that singing helps people learn a foreign language and that music can help bring back memories from those suffering with Alzheimer's and traumatic brain injuries; there are many more studies with similar findings. Recently, scientists have been looking at the effects of music on the brains of infants and children. Studies have found that even a year or two of musical training, such as learning to play an instrument, can improve both memory and focus in children.

Playing music with other people might be particularly influential, according to Laurel Trainor, who directs the Institute for Music and the Mind at McMaster University in Ontario, Canada. Her research indicates that musical training seems to modify the brain's auditory cortex. She suggests that playing music in concert with others requires a particularly high level of attention and memory, perhaps leading to greater effects.

Improved Literacy: The way that humans process sound is the same way that we process speech. Children who take music lessons can enhance their listening skills, which can then improve the way they process language. Studies have found that when children learn to play an instrument, they can gain the ability to hear and process sounds that they wouldn't hear without this training. This helps them develop "neurophysiological distinction" between certain sounds. Because the mechanisms for processing sound and speech are similar, this can lead to improve literacy as well.

Better Spatial Reasoning Skills: Research by psychologist Dr. Frances Rauscher and neuroscientist Gordon Shaw showed that preschoolers who took music lessons performed better on spatial and temporal reasoning tasks than preschoolers who took computer lessons instead. Similar research done by Brigham Young University indicates that engaging infants with music can have similar results. Classical music has been found to be particularly beneficial for special reasoning, in children and adults alike. For example, after listening to classical music adults can do a spatial reasoning task, such as putting a puzzle together, more quickly. This kind of effect is thought to be possible because classical music is mathematical and has a more complex structure than other types of music.

The pathways we use for classical music are the same pathways we use for spatial reasoning. However, simply listening to music—not playing it—only has temporary effects. Learning to actually play an instrument, on the other hand, has longer-lasting effects. It's been found that children who took piano lessons for six months improved their ability to complete puzzles and do other spatial tasks by as much as 30%. It is

believed that musical instruction creates new pathways in the brain.

Increased Language Skills: Some scientists believe that musical training can also help children learn a second language. One study suggested that music instruction could help extend the period of time that the brain is developing and processing complex auditory input. Moreover, it's known that music training enhances language-related networks in the brain and improves children's ability to detect subtle differences between sounds, which can help facilitate accurate pronunciation. Amazingly, this enhanced ability to learn another language isn't restricted to childhood; studies have found that adults who had musical training when they were children are able to learn foreign languages quicker and more easily than those who didn't have musical training in childhood.

Higher IQs: According to a 2006 study published in the Journal of Educational Psychology, music lessons appear to improve children's IQ and academic performance. What's more, the longer children study music, the larger the effect. This is not the first time this link has been found; it was also found that six year olds who had a year of voice or piano lessons had a larger increase in their IQ than another group who waited a year for music lessons.

The 2006 study found that for children, music lessons were positively correlated with higher school grades and higher scores on achievement tests. It also found that musical instruction was a predictor of higher IQs in young adulthood as well as higher high school grades. Music has a power that's practically immeasurable. It transcends time and language, expresses and influences our emotions, educates and entertains, and so much more. Scientists are also beginning to understand the impact music has on our brains. Essentially, the effect is massive and it has a particularly strong influence on the brains of children.

Baedeker (2013) recent research underscores how playing an instrument (sooner than later) bolsters kids' academic, social, and emotional lives. Such cuts to music education are particularly ironic given the growing body of research that underscores how music engages many of same areas of the brain involved in language processing, memory, and other critical thinking skills essential for academic success. Music also appears to benefit kids socially and emotionally.

Language processing: Multiple studies indicate that the brain processes music and language in similar ways, and that music training benefits the development of a variety of language-related skills, from vocabulary building to phoneme processing. The Neurosciences Institute reports that its research has "revealed a significant degree of overlap between music and language processing," and in a 2005 study, researchers at Stanford University found that mastering a musical instrument improves the way the human brain processes parts of spoken language. The findings suggested that students who are struggling with language and reading skills could especially benefit from musical training.

Memory: The benefits of music training appear to extend to memory, too. A study by researchers at The Chinese University of Hong Kong found that children with musical training showed better verbal memory than their peers. "When these children were followed up after a year," the study's authors wrote, "those who had begun or continued music training demonstrated significant verbal memory

improvement.” In other words, memorizing music pieces correlated with improvements in non-musical memory, too. The enhancement of working memory in young adults via music training was further validated in a 2018 study by researchers at York University.

The correlation may stem from particular ways that music “challenges” young minds. Takako Fujioka, a scientist at the Rotman Research Institute in Toronto, Ontario, Canada, and co-author of a study that found musically trained children showed greater improvement on memory tests throughout the course of a year than their non-musically trained peers, explains that playing music “requires the brain to solve the problems of how to allocate attention and memory toward complex tasks.”

Self-Awareness: Dr. Frank Wilson, a neurologist and an authority on the relationship of hand use to human cognitive development, explains that the study of music teaches children to “self-assess,” rather than to rely on external rewards. While much of our schooling focuses on grades and prizes, music can foster an internal motivation. The precision and attention required to play an instrument — the instant feedback loop that requires you to adjust your own performance — encourages an “ongoing surveillance of yourself,” Wilson says. “It leads you to become a critic of your own work, to not be satisfied with anything less than achieving what it was you intended to do.”

Academic success: With all the benefits that music brings to kids’ language, math, memory and self-assessment, it’s little surprise that there is a strong correlation between music and general academic success. Studies have shown that students in music programs scored higher in English and math than students who had no music at all, and high school students with music training scored higher than their non-musical peers on the SAT, according to the College Board. A 1994 survey even found that music majors, as a group, had the highest acceptance rate to medical school.

Long-term success: Students with music training tend to rank higher in common measures of long-term success such as educational attainment and income: a 2007 poll by Harris Interactive found that nearly nine out of ten people with post -graduate education had participated in music while in school, and 83 percent of those with incomes of \$150,000 or more had had music education. The College Board’s 2006 study also found that high school students who participated in band or orchestra reported the lowest lifetime and current use of drugs and alcohol.

Impact of Music on Human Brain

Music is considered as a popular source of enjoyment as well as a powerful motivation for the human brain waves. Nowadays, music can be easily accessed using the internet with the help of smart phones and other devices. Music features vary with type and genre of music and therefore produce different effect on the brain signals; for example, slow and quiet classical music can be used for relaxation (Labbé, Schmidt, Babin, & Pharr, 2007). With the help of advanced techniques developed for neuro imaging, it is easy to understand the behavior of brain and the effect of music on the brain.

The brain is a special structure developed by human beings to adapt to the needs of survival. Its main task is to collect information about the internal and external environment of the body, and to process the information specifically to make decisions

and responses that are suitable for the environment and for survival (Ferreri, & Rodriguez-Fornells, 2017). Music can enhance the interrelationship between EEG signals in each channel and build a network of brain functions, which can significantly improve the activity of the brain.

Music of varied kinds consistently triggers a large range of drives and emotions, which, in turn, induce a particular class of mental experiences known as feelings. The feelings are often pleasurable, though not necessarily. Neuroimaging and electrophysiological studies, in normal individuals as well as in patients with focal neurological lesions, reveal that music can change the state of large-scale neural systems of the human brain. The changes are not confined to brain sectors related to auditory and motor processing. The ease with which music leads to feelings, the predictability with which it does so, the fact that human beings of many cultures actively seek and consume music, and the evidence that early humans engaged in music practices lead us to hypothesize that music has long had a consistent relation to the neural devices of human life regulation. (Habibi, & Damasio, 2014).

Tabernacle Choir Blog (2018) stated that music has been scientifically proven to have a powerful impact on the brain. Recent research shows that music can help in many aspects of the brain, including pain reduction, stress relief, memory, and brain injuries. Scientists have found that music stimulates more parts of the brain than any other human function also music can aid in the healing and stimulation of the human brain. Music is a fundamental attribute of the human brain. Virtually all cultures, from the most primitive to the most advanced, make music. It's been true through history, and it's true throughout an individual's lifespan. In tune or not, we humans sing and hum; in time or not, we clap and sway; in step or not, we dance and bounce. The human brain and nervous system are hard-wired to distinguish music from noise and to respond to rhythm and repetition, tones and tunes. Is this a biologic accident? a varied group of studies suggests that music may enhance human brain and performance.

Conclusion

The study concluded that relationship between music and human brain has become a frontier field in the study of brain science and music psychology. Music has outstanding impact on human brain development as well as cognitive and memory development. In addition, music shows significant effect on memory enhancement in a clear molecular level. The study has further presented people's understanding of the value of music and show more in the broader development of human brain and human potential. The study has also warranted the conclusion that music positively impacts on human brain.

Recommendations

1. Every individual, be it child or adolescent or adult should make music part of his life.in order to enhance his brain functionality.
2. There should be application of music in every class especially the when teaching children.
3. There should be regular presentation of melody to the elderly in order to help prolong their health and lives.

REFERENCES

- Alan, M. (2009). *The anthropology of music*. Evanston, Ill.: Northwestern University Press.
- Alban, P. (2017). *Be Brain Fit Better Mine and Better Life*.
- Baedeker, R. (2013). *Ways music benefits your child's brain*. Great Schools.Org.
- Deane A. (2019). *How Music Impact the Brain*. Available at: <https://bebrainfit.com/music-brain/>
- Ferreri, L. and Rodriguez-Fornells, A. (2017) Music-Related Reward Responses Predict Episodic Memory Performance. *Experimental Brain Research*, 235, 3721-3731.
- Habibi, A. & Damasio, A. (2014). Music, Feelings, and the Human Brain. *American psychological Association*. 1-12
- Houghton Mifflin Harcourt Publishing. Company, (2019). *The American Heritage Dictionary entry: Music*. ahdictionary.com.
- Labbé, E., Schmidt, N., Babin, J. & Pharr, M. (2007). "Coping with stress: The effectiveness of different types of music", *Appl. Psychophysiol. Biofeedback*. 32(4). 163-168.
- Mayfield Brain & Spine (2008). *Anatomy of the Brain*. Available at: <https://mayfieldclinic.com/pe-anatbrain.htm>
- Nwagboniwe.C.K. (2013). *Biography of Nigerian art composers: A case study of Ekwueme Edward Nnanyelu Lazarus*, (Unpublished Undergraduate project) Department University of Nigeria Nsukka.
- Onyeji, C. (2012). Towards Nigerian Social and Cultural Integrity: The contributions of the Nigerian indigenous musicians (with particular reference to Abigbo music of Mbaise), *Nsukka journal of Musical Arts Research* .1. P, 52.
- PEGASUS (2008). *Your Brain on Music: A popular class breaks down how our brains respond to music*.
- Rock and Roll Daycare (2018). *Ways Music Helps Your Child's Brain Development*. Available at: <https://rockandrolldaycare.com/5-ways-music-helps-childs-brain-development/>
- Sarah J. W. (2013). *The benefits of music for the brain*. From the Proceedings of the 2013 Research Conference: How the Brain Learns Australian Council for Education Research, Melbourne, Australia.
- Tabernacle Choir Blog (2018). *The Powerful impact of Music on the Brain*. Available at: <https://www.thetabernaclechoir.org/articles/the-powerful-effect-of-music-on-the-brain.html>

Thesaurus Dictionary (2019). *Music definition*. Available at: <https://www.dictionary.com/browse/music>

Visible body (2018). *The Human Brain: Anatomy and Function*. Available at: <https://www.visiblebody.com/learn/nervous/brain>

Wikipedia (2009). *Human brain*. In Wikipedia, The Free Encyclopedia. Available at: https://en.wikipedia.org/wiki/Human_brain

Zhang, S. (2018). The Positive Influence of Music on the Human Brain. *Journal of Behavioral and Brain Science*, 95-104.

A Critical Analysis of Music Lessons and Improvement of Aging Brain

BY

Pius N. NELSON, *Ph.D*
Department of Music
Faculty of Arts
Golden Gate University
San Francisco, CA 94105
California
The United States of America

ABSTRACT

This study was to critically analyze the music lessons and its resultant impact on aging brain. Playing music could be associated with cognitive benefits and exercise session for the brain. Music is one of the most effective sources of stimulation in the hearing cortex and other brain areas. Music has also a well-known impact on the emotional state, while it can be a motivating activity. For those reasons, music lesson has become a useful framework to study the of aging brain. Music lesson could help the aging brain in the hope of preventing this advanced disease. The study concluded that the positive improvement of performance of music in the early child intellectual helps in brain development. It also reveals that music influences the brain to work fast as it concerns individual IQ level. Equally music unveils the contributions and effect of music in the child cognitive development. Music lessons seem to create a room for brain neurons cells that can transmit and receive nervous impulses. It also builds new neural bridges that are necessary for good spatial reasoning. One of the recommendations was that government and school authority should make available, music education or lesson to highlight the improvement of aging brain.

KEYWORDS: Critical Analysis, Music, Improvement and Aging Brain

Introduction

Music and the Aging Brain describes brain functioning in aging and addresses the power of music to protect the brain from loss of function and how to cope with the negative effects of the brain diseases that accompany aging. The power of music in aging through the lens of neuroscience, behavioral, and clinical science. Borella, Carretti, & De Beni, (2008) stated that aging is accompanied by changes in cognition and brain health. In general, adults show declines in the performance on cognitive tasks of executive function and memory, and performance decrease are accompanied by decreases in gray and white matter volume. (Allen et al 2005). However, there are individual differences and variability in the trajectory of changes in cognition and brain health with aging. Some individuals maintain cognitive skills and brain structure, while others exhibit decline

Delineating the musical abilities that are specifically linked to an intensive and formal training from those that emerge through mere exposure to music and music is a key issue for music cognition, music education, and all of the disciplines involved in

sound and music computing, particularly for disciplines which deal with content processing of audio signals, machine learning and sound design. Non-musicians do not learn a formal system with which they can describe and think about musical structures (Lalitte, 2008). Indeed, considerable evidence suggests that the brains of older age have the capacity for plasticity. For example, engagement in physical activity (e.g. aerobic and non-aerobic exercise with ballet) and cognitively stimulating leisure activities (e.g., music, dancing and chess) have been shown to benefit the aging brain and cognition, as well as to reduce the risk of dementia. It is important to determine lifestyle factors that benefit the aging brain.

Music is essential in the total growth of a child. It contributes to the physical, intellectual, social and spiritual growth of a child and therefore needs to be supported as an essential part of a child's education. According to Healthy Kids Magazine (2012), just 15 minutes a week with group singing may significantly improve spatial intelligence--the kind needed for high-level math and science. Frances Rauscher, a psychologist at the Center for Neurobiology of Learning and Memory, compared 19 preschoolers enrolled in music programs with 14 classmates who took no music lessons at all. After eight months, the children with musical training experienced a 46 percent boost in spatial IQ scores, while the IQ scores of the children with no music lessons had increased only six percent. Frances Rauscher concluded that music lessons seem to strengthen the links between brain neurons (cells that can transmit and receive nervous impulses) and build new neural bridges that are necessary for good spatial reasoning.

Concept of Music

Adeogun (2012), states that "music is a product of people and societies. Musical knowledge is a transmittable constellation of enduring socio musical traits which codify, articulate and validate the unique practice of human group. Its organization depends largely on the use of society-widely recognized theories of tonality and/or modality, thematic structures, rhythmic patterns, tempo, timbres, use of language and musical instruments in communicating ideas, thoughts, contents and meaning to members of the society". Odili (2008) viewed that music is a central phenomenon which is present in every society and is experienced by every person. It also gives life and identity to the human society. It is a cultural expression which is determined, coloured and moulded by the cultural environment of people (Okafor,2005).

Simon (2013) asserted that music is highly valued in our society. In fact, we could make the argument that it is one of the most valued. The average liberal arts major may not have an extensive knowledge about physics, and vice versa. But both the chemistry student, and the French poetry student are sure to enjoy music to a degree that they themselves find to be very important. Perhaps this speak about humanity's intrinsic recognition and value for beauty. The vast majority of people in the world has music involved with their ways in some way. Of course, not everyone who listens to music could do a harmonic analysis of their favorite songs, but they can still hum their favorite melodies or recognize a popular tune, and this is definitely some kind of knowledge.

Music always involves various components, among others, melody, chord, tempo, rhythm, instrument, even language or lyrics of a nature (Surya, 2018). Levinson (2000) proposes that music is "sounds temporally organized by a person for the purpose of enriching or intensifying experience through active engagement (e.g., listening, dancing,

performing) with the sounds regarded primarily, or in significant measure, as sounds.” Kania (2011) defined music as any event intentionally produced or organized, to be heard and either to have some basic musical features, such as *pitch* or *rhythm* and to be listened to for such features.” Obicheta, (2013) noted that music is the art, science and technology of “creating and making pleasant and organised sound with the human voice or other musical instruments”.

Music captures and stimulates our imagination. The human brain has a number of major regions which are divided into two hemispheres: left and right, the cerebellum and the central cerebral structures: the basal ganglia associated with memory and the limbic system associated with emotion (Motluk, 2000). The left and right hemispheres are joined by a tract of white matter known as the corpus callosum. Rapid, efficient communication between the hemispheres is essential. The development of the corpus callosum has been associated directly with developmental of a person’s ability to understand and process complex information and events.

Concept of Aging Brain

In a society that is getting much older, it becomes important to identify potential mechanisms promoting successful aging to prevent, limit, and rehabilitate cognitive and emotional impairments typical of normal or pathological aging. Music is a powerful stimulus able to modulate widespread brain activations. Recent research has increasingly considered music as a promising, stimulating training and rehabilitation tool for improving cognition and promoting well-being and social connection. It first focuses on the effects of music in normal aging, both in terms of musical expertise and simple musical exposure, with an additional section being devoted to the underlying brain processes. The principal of music-based on therapeutic approaches used in pathological aging. (Ferreri, et al. 2019).

Music arises as a particularly promising stimulus and able to stimulate the whole brain, thus modulating cerebral activity in brain areas involved in cognitive, motor, and emotional processes (Zatorre, 2005), music is increasingly considered as a powerful tool to improve cognition while promoting well-being and social connection. Furthermore, the use of music for aging brain stimulation seems to be particularly appropriate in adults, who can perform similarly to younger adults in music perception tasks (Johnson et al., 2011), and show well-preserved musical memory, even in cases where episodic memory is impaired (Baird & Samson, 2009; Cuddy, Sikka, & Vanstone, 2015). music and aging brain present the music driven beneficial effect on cognition and well-being. Music in normal aging, both in terms of musical expertise and simple musical exposure. A specific section is then devoted to the underlying brain processes.

Reasons for Music Lesson

Music lessons are a great choice. Not only will enrolling your child in music lessons prepare them to join their school’s marching band or orchestra when the time is right, but music lessons have been proven to help some students perform better on standardized tests. Whether your child is already enrolled in a band class at school or not, private lessons make sense for a variety of reasons. From getting better at their instrument to diving into music theory, here are five reasons why private music lessons work. (Music & Arts 2020)

Getting Better at Their Instrument: If your child is enrolled in a band or orchestra at school and doesn't seem to be improving at their instrument, it might be because they aren't getting the personalized attention they deserve. Just like some students learn better in smaller class sizes or during one-on-one tutoring sessions, the same can be said for learning music. In order to improve at their instrument, your child should surround themselves with players who are better than them. Taking private music lessons is the absolute best way to accomplish this. Your child's private music teacher will help them get better at their instrument through exercises that teach particular techniques, and songs that use those techniques so your child understands how to apply them.

Staying Motivated: In most cases, it's easier for a child to stay motivated when they're enrolled in private music lessons. This benefit is especially applicable to students who have been performing for more than a few years and may be in a "rut", so to speak. Once a child is out of the beginner stage of playing and learning their instrument, they may not know what to do next. Fortunately, private music instructors are knowledgeable about different music styles and genres, and can help your child decide what to pursue next. Sometimes, all the student needs are order and routine in order to remain stimulated and interested in their instrument. At the end of the day, it's always easier to find motivation when you know someone that is holding you accountable.

Diving into Music Theory: Some parents who transfer their child from group lessons to private music lessons notice that their child's new teacher spends more time on music theory. While this is entirely dependent on the teachers you choose, music theory does make up a good portion of most private lessons. In private music lessons, your child will have the opportunity to learn how chords work together, get better at sight reading and, once they become more advanced at their instrument, they may even have the chance to compose music. Plus, just because your child is enrolled in private music lessons doesn't mean they can't still play in a group, many private studios have bands your child can join. If they don't, speak with your child's music teacher about any additional opportunities they may know about.

Minimizing Frustration: Remember how there was a kid in math class, who could never solve the equation on the board, and the rest of the class had to sit around and wait until he or she could figure it out? Sometimes, the same thing can happen in a group lesson setting. While group music lessons have plenty of benefits and will definitely help your child improve their social skills, they aren't the best idea if you want your child to make the most of every single second of their lesson time. Though frustration can make some students more determined, it discourages most. Every child deserves the opportunity to enjoy their instrument and not be frustrated with the learning process, and enrolling your child in private music lessons can help.

Setting Your Child Up for Success: At the end of the day, private music lessons will help set your child up for success in music. With a private music instructor, your child will learn the fundamentals of playing at a much quicker rate. Once that foundation is built, your child can keep learning, playing, and succeeding. Some parents enroll their child in group lessons for the first year or so. Once their child moves past the beginner level, they transfer them into private music lessons. This way, their child can take advantage of the specialized one-on-one attention. Plus, once your child is strong in instrumental skills, he or she can focus more on their ensemble skills and prepare themselves to join

a band or orchestra at school.

Benefits of Music Lesson

Brown (2009) stated that children like to sing solos in the shower, to benefit from some form of music education. Research shows that learning the music can help children excel in ways beyond the basic ABCs. Nearly everyone enjoys music, whether by listening to it, singing, or playing an instrument. But despite this almost universal interest, many schools have do away with their music education programs. This is a mistake, with schools losing not only an enjoyable subject, but a subject that can enrich students' lives and education. Read on to learn why music education is so important, and how it offers benefits even beyond itself

More Than Just Music: Research has found that learning music facilitates learning other subjects and enhances skills that children inevitably use in other areas. "A music-rich experience for children of singing, listening and moving is really bringing a very serious benefit to children as they progress into more formal learning," says Mary Luehrisen, executive director of the National Association of Music Merchants (NAMM) Foundation, a not-for-profit association that promotes the benefits of making music. Making music involves more than the voice or fingers playing an instrument; a child learning about music has to tap into multiple skill sets, often simultaneously.

For instance, people use their ears and eyes, as well as large and small muscles, says Kenneth Guilmartin, cofounder of Music Together, an early childhood music development program for infants through kindergarteners that involves parents or caregivers in the classes. "Music learning supports all learning. Not that Mozart makes you smarter, but it's a very integrating, stimulating pastime or activity,"

Language Development: "When you look at children ages two to nine, one of the breakthroughs in that area is music's benefit for language development, which is so important at that stage," says Luehrisen. While children come into the world ready to decode sounds and words, music education helps enhance those natural abilities. "Growing up in a musically rich environment is often advantageous for children's language development," she says. But Luehrisen adds that those inborn capacities need to be "reinforced, practiced, celebrated," which can be done at home or in a more formal music education setting.

According to the Children's Music Workshop, the effect of music education on language development can be seen in the brain. "Recent studies have clearly indicated that musical training physically develops the part of the left side of the brain known to be involved with processing language, and can actually wire the brain's circuits in specific ways. Linking familiar songs to new information can also help imprint information on young minds," the group claims. This relationship between music and language development is also socially advantageous to young children. "The development of language over time tends to enhance parts of the brain that help process music," says Dr. Kyle Pruett, clinical professor of child psychiatry at Yale School of Medicine and a practicing musician. "Language competence is at the root of social competence. Musical experience strengthens the capacity to be verbally competent."

Increased IQ: A study by E. Glenn Schellenberg at the University of Toronto at Mississauga, as published in a 2004 issue of Psychological Science, found a small

increase in the IQs of six-year-olds who were given weekly voice and piano lessons. Schellenberg provided nine months of piano and voice lessons to a dozen six-year-olds, drama lessons (to see if exposure to arts in general versus just music had an effect) to a second group of six-year-olds, and no lessons to a third group. The children's IQs were tested before entering the first grade, then again before entering the second grade. Surprisingly, the children who were given music lessons over the school year tested on average three IQ points higher than the other groups. The drama group didn't have the same increase in IQ, but did experience increased social behavior benefits not seen in the music-only group.

The Brain Works Harder: Research indicates the brain of a musician, even a young one, works differently than that of a non-musician. "There's some good neuroscience research that children involved in music have larger growth of neural activity than people not in music training. When you're a musician and you're playing an instrument, you have to be using more of your brain," says Dr. Eric Rasmussen, chair of the Early Childhood Music Department at the Peabody Preparatory of the Johns Hopkins University, where he teaches a specialized music curriculum for children aged two months to nine years.

In fact, a study led by Ellen Winner, professor of psychology at Boston College, and Gottfried Schlaug, professor of neurology at Beth Israel Deaconess Medical Center and Harvard Medical School, found changes in the brain images of children who underwent 15 months of weekly music instruction and practice. The students in the study who received music instruction had improved sound discrimination and fine motor tasks, and brain imaging showed changes to the networks in the brain associated with those abilities, according to the Dana Foundation, a private philanthropic organization that supports brain research.

Spatial-Temporal Skills: Research has also found a causal link between music and spatial intelligence, which means that understanding music can help children visualize various elements that should go together, like they would do when solving a math problem. "We have some pretty good data that music instruction does reliably improve spatial-temporal skills in children over time," explains Pruett, who helped found the Performing Arts Medicine Association. These skills come into play in solving multistep problems one would encounter in architecture, engineering, math, art, gaming, and especially working with computers.

Improved Test Scores: A study published in 2007 by Christopher Johnson, professor of music education and music therapy at the University of Kansas, revealed that students in elementary schools with superior music education programs scored around 22 percent higher in English and 20 percent higher in math scores on standardized tests, compared to schools with low-quality music programs, regardless of socioeconomic disparities among the schools or school districts. Johnson compares the concentration that music training requires to the focus needed to perform well on a standardized test. Aside from test score results, Johnson's study highlights the positive effects that a quality music education can have on a young child's success. Luehrisen explains this psychological phenomenon in two sentences: "Schools that have rigorous programs and high-quality music and arts teachers probably have high-quality teachers in other areas. If you have an environment where there are a lot of people doing creative, smart, great things, joyful things, even people who aren't doing that have a tendency to go up and do

better.” And it doesn’t end there: along with better performance results on concentration-based tasks, music training can help with basic memory recall. “Formal training in music is also associated with other cognitive strengths such as verbal recall proficiency,” Pruett says. “People who have had formal musical training tend to be pretty good at remembering verbal information stored in memory.”

Being Musical: Music can improve your child’s abilities in learning and other non-music tasks, but it’s important to understand that music does not make one smarter. As Pruett explains, the many intrinsic benefits to music education include being disciplined, learning a skill, being part of the music world, managing performance, being part of something you can be proud of, and even struggling with a less than perfect teacher. “It’s important not to oversell how smart music can make you,” Pruett says. “Music makes your kid interesting and happy, and smart will come later. It enriches his or her appetite for things that bring you pleasure and for the friends you meet.” While parents may hope that enrolling their child in a music program will make her a better student, the primary reasons to provide your child with a musical education should be to help them become more musical, to appreciate all aspects of music, and to respect the process of learning an instrument or learning to sing, which is valuable on its own merit. “There is a massive benefit from being musical that we don’t understand, but it’s individual. Music is for music’s sake,” Rasmussen says. “The benefit of music education for me is about being musical. It gives you a better understanding of yourself. The horizons are higher when you are involved in music,” he adds. “Your understanding of art and the world, and how you can think and express yourself, are enhanced.”

How Music Lesson Improves Aging Brain

Experiential learning through doing seen in a Kodály based program incorporates the three main learning styles identified by educators: visual, auditory and kinesthetic (Pashler, McDaniel, Rohrer, & Bjork, 2009). A well-structured music program blends and implements these effortlessly. Illustrate this, when learning a new song, the teacher initially models the song and actions, which are continually reinforced and cued until the song is secured, providing aural cues, which are mapped into the temporal lobe and visual reinforcement, which is mapped into the occipital lobe. This also refers to the inclusion and performance of different actions which then maps and encodes the memory traces of the song onto different areas of the cortex, including the parietal lobe and cerebellum, areas responsible for motor memory and physical action (Hodges, 2009).

Several strategies or environmental interventions, in addition to lifestyles, have been investigated mainly to improve cognitive functions and to prevent and/or delay cognitive deficits. Such interventions include learning other languages (Abutalebi et al., 2015), physical activity (Loprinzi et al., 2018), and music (Schneider et al., 2018). In particular, music makes unique demands on our nervous system (Justel and Diaz Abraham, 2012), and therefore, over the last years, music and each of its components have been used as a tool to investigate human cognition and its underlying brain mechanisms, because music affects the cortical and subcortical areas (Pantev and Herholz, 2011; Koelsch et al., 2018). Some studies show that listening to music improves cognitive skills such as fluency (Thompson et al., 2006), working memory (Mammarella et al., 2007), and recognition memory (Ferreri et al., 2013), among others. For example, background music was investigated as a focal and acute strategy that

could improve cognitive skills. This technique refers to any music that is played while the listener's primary attention is focused on another task or activity (Bottiroli et al., 2014). Different studies about the effect of background music have shown some improvements on cognitive abilities. For example, Judde and Rickard (2010) performed a study in which participants listening 3 min of music after the acquisition of information and they had a better recognition memory 1 week later. However, there is some evidence of reduced cognitive performance when music is present (Kämpfe et al., 2010; Rickard et al., 2012).

Among the interventions that involve musical production, musical training is the one that has received the most attention. Training includes learning how to play an instrument, and most studies evaluate the effect of moderate or long-term learning (Barrett et al., 2013), leaving a gap as far as focal interventions are concerned. Another intervention that involves musical production is musical improvisation, which is defined as an example of musically creative behavior, conceived as an original and novel process requiring divergent thinking (Bengtsson et al., 2007; Manzano and Ullén, 2012; Diaz Abrahan and Justel, 2015). Research is scarce in this area, and most studies emphasize the use of improvisation in musicians (Limb and Braun, 2008); assuming that improvising musically implies having some degree of expertise in music. However, it is also used with people without musical training as a technique for the patient population (e.g., neurological music therapy, Thaut et al., 2009). In this perspective, music improvisation is conceived as the combination of sounds created in a specific framework inside an environment of trust, which is established to address the needs of the participant or patient (Wigram, 2004). In this sense, music improvisation is not only performed by musicians, but it is also a real-time ability that every person has (Wigram, 2004). Still, research on the use of the musical improvisation technique in people without a pathology and in non-musicians is infrequent. In addition, older people are unlikely to begin learning an instrument at an advanced age. Therefore, providing the opportunity of a focal intervention where the participants play instruments and create something novel in groups, without long-term demands, could result in low dropout rates.

Conclusion

The study reviewed that the positive improvement performance of music in the early child intellectual brain development. It also reveals that music influence the brain to work fast as it concerns individual IQ level. Equally unveil the contributions and effect of music in the child cognitive development. Music lessons seem to strengthen the links between brain neurons cells that can transmit and receive nervous impulses also build new neural bridges that are necessary for good spatial reasoning.

Recommendations

Based on the findings of this study, the following recommendations were deemed necessary:

1. Government and school authority should make available, music education or lesson to highlight the improvement of aging brain.
2. Education board should make music mandatory in their school so that it can support the high quality and accessible in musical opportunities

throughout the life-course.

3. Music educators should add more effort in teaching music so that it can improve the brain and Individuals that choose music as a discipline should use it to touch lives in positive manner and be a role model to the younger ones.

REFERENCES

- Abutalebi J., Guidi G., Borsa V., Canini M., Della Rosa P., Parris B., et al. (2015). Bilingualism provides a neural reserve for aging populations. *Neuropsychologia* 69, 201–210.
- Adeogun, A O (2012). *Africanization of Music Education in Nigeria within the Context of Globalization: A critical Appraisal* Journal of the Music association of Nigerian Musicologists No. 3, Association of Nigerian musicologist.
- Allen, J. S., Bruss, J., Brown, C. K. & Damasio, H. (2005). Normal neuro anatomical variation due to age: The major lobes and a parcellation of the temporal region. *Neurobiology. Aging*, 26, 1245–1260
- Baird, A., & Samson, S. (2009). Music and dementia. In E. Altenmüller, S. Finger, & F. Boller (Eds.). *Progress in brain research* 217, 207–235.
- Barrett K., Ashley R., Strait D., Kraus N. (2013). Art and science: how musical training shapes the brain. *Front. Psychol.* 16:713
- Bengtsson S., Csikszentmihalyi M., Ullén F. (2007). Cortical regions involved in the generation of musical structures during improvisation in pianists. *J. Cogn. Neurosci.* 19, 830–842.
- Borella, E., Carretti, B. & De Beni, R. (2008). Working memory and inhibition across the adult life-span. *Acta Psychol.*, 128(1), 33–44.
- Bottiroli S., Rosi A., Russo R., Vecchi T., Cavallini E. (2014). The cognitive effects of listening to background music on older adults: processing speed improves with upbeat music, while memory seems to benefit from both upbeat and downbeat music. *Front. Aging Neurosci.* 6:284.
- Brown, L. L. (2009). *The Benefits of Music Education*. Available at: <https://static1.squarespace.com/static/55819b54e4b063452beb22e4/t/5bce4ada53450aaa304c84ed/1540246234815/The+Benefits+of+Music+Education.pdf>
- Cuddy, L. L., Sikka, R., & Vanstone, A. D. (2012). Memory for melodies and lyrics in Alzheimer's disease. *Music Perception*, 29, 479–491.
- Diaz Abrahan V., Justel N. (2015). La improvisación musical. Una mirada compartida entre la musicoterapia y las neurociencias. *Psicogente* 18, 372–384.
- Ferreri L., Aucouturier J.-J., Muthalib M., Bigand E., Bugaiska A. (2013). Music improves verbal memory encoding while decreasing prefrontal cortex activity: an fNIRS study. *Front. Hum. Neurosci.* 7:779.
- Ferreri, L. Bigand, E., Moussard, A. & Tillmann, B. (2019). *Music and the aging brain*. Online: <https://www.researchgate.net/publication/335661289Musicandtheagingbrain>
- Healthy Kids Magazine (2012). *Twelve benefit of music education*. Available at: <https://healthymagazine.com/twelve-benefits-of-music-education/>

- Hodges, D. A. (2009). Can neuroscience help us do a better job of teaching music? *General Music Today*, 23(3), 3-12.
- Johnson J.K., Louhivuori J., Stewart A.L., Tolvanen A., Ross L. and Era P. (2011). Quality of life (QOL) of older adult community choral singers in Finland. *Int. Psychogeriatr.*, 25(1): 1055–64.
- Judde S., Rickard N. (2010). The effect of post-learning presentation of music on long term word list retention. *Neurobiol. Learn. Mem.* 94, 13–20.
- Justel N., Diaz Abrahan V. (2012). Plasticidad cerebral: participación del entrenamiento musical. *Suma Psicol.* 19, 97–108.
- Kämpfe J., Sedlmeier P., Renkewitz F. (2010). The impact of background music on adult listeners: a meta-analysis. *Psychol. Music* 39, 424–448.
- Kania, A. (2011). *Definition*. In the Routledge companion to Philosophy and Music. Edited by T. Gracyk and A. Kania, London: Routledge, 3-13
- Koelsch S., Skouras S., Lohmann G. (2018). The auditory cortex hosts network nodes influential for emotion processing: an fMRI study on music-evoked fear and joy. *PLoS One* 13:22.
- Lalitte, P. (2008). *Learning Music: prospects about implicit knowledge in music, new technologies and music education*
- Levinson, J. (2000) *Music, Art, and Metaphysics*, Ithaca: cornell university press.
- Limb C., Braun A. (2008). *Neural substrates of spontaneous musical performance: An fMRI study of jazz improvisation*. PLoS One.
- Loprinzi P. D., Edwards M. K., Crush E., Ikuta T., Del Arco A. (2018). Dose-response association between physical activity and cognitive function in a national sample of older adults. *Am. J. Health Promot.* 32, 554–560.
- Mammarella N., Fairfield B., Cornoldi C. (2007). Does music enhance cognitive performance in healthy older adults? The Vivaldi effect. *Aging Clin. Exp. Res.* 19, 394–399.
- Manzano O., Ullén F. (2012). Goal-independent mechanisms for free response generation: creative and pseudo-random performance share neural substrates. *NeuroImage* 59, 772–780.
- Motluk, A. (2000). *Grow your own*. New Scientist (2225).
- Music & Arts (2020). *Five Reasons Why Private Music Lessons Work*. Available at: <http://thevault.musicarts.com/five-reasons-private-music-lessons-work/>
- Obicheta, J.C. (2013). *Graded Music for Senior Secondary Schools and Colleges*. Eziowelle/ Onitsha: Jenison Publishing Company.

- Odili. E. I. (2008). *Music as an instrument of communication in Igbo communities: A case study of Aniocha North L.G.A of Delta State*. Unpublished undergraduate project University of Nigeria Nsukka.
- Okafor. R.C. (2005). *Music in Nigerian Society*. Enugu, New Generation Books.
- Pantev C., Herholz S. (2011). Plasticity of the human auditory cortex related to musical training. *Neurosci. Biobehav. Rev.* 35, 2140–2154
- Pashler, H., McDaniel, M., Rohrer, D., & Bjork, R. (2009). Learning styles: concepts and evidence. *Psychological Science in the Public Interest*, 9, 105-119.
- Rickard N., Wing Wong W., Velik L. (2012). Relaxing music counters heightened consolidation of emotional memory. *Neurobiol. Learn. Mem.* 97, 220–228.
- Schneider C. E., Hunter E. G., Bardach S. H. (2018). Potential cognitive benefits from playing music among cognitively intact older adults: a scoping review. *J. Appl. Gerontol.* 1: 73
- Simon C. (2013). *Music's in the modern world*. Available at: <https://sites.psu.edu/cantumusicblog/>
- Surya, C. P. (2018). *The concept of music collaboration: a unified cultural harmony*. Available at: https://www.researchgate.net/publication/325283809_THE_CONCEPT_OF_MUSIC_COLLABORATION_A_UNIFIED_CULTURAL_HARMONY
- Thaut M., Gardiner J., Holmberg D., Horwitz J., Kent L., Andrews G., et al. (2009). Neurologic music therapy improves executive function and emotional adjustment in traumatic brain injury rehabilitation. *Ann. N. Y. Acad. Sci.* 1169, 406–416.
- Thompson R. G., Moulin C., Hayre S., Jones R. W. (2006). Music enhances category fluency in healthy older adults and Alzheimer's disease patients. *Exp. Aging Res.* 31, 91–99.
- Wigram T. (2004). *Improvisation: Methods and techniques for music therapy clinicians, educators, and students*. (England: Jessica Kingsley Publishers;).
- Zatorre, R. J (2005). *From perception to pleasure: Music and its neural substrates*. PNAS 110, 10430–10437. doi: 10.1073/pnas.1301228110

**Strategic Assessment of Specific Methods adopted for Teaching of Music Concepts
in Efik/Ibibio Culture**

BY

Ime S. EKPO, Ph.D
Department of Music
University of Uyo
Uyo, Nigeria

ABSTRACT

The sought to assess the strategic assessment of specific methods adopted for teaching of music concepts in Efik/Ibibio culture. The study adopted ethnographic method within the domain of ethnomusicology where primary data was collected from the field through oral interview, observations and the use of structured questionnaire. The study was conducted in Akwa Ibom and Cross River States. The population of the study comprised all the traditional music types in Efik/Ibibio land. Proportionate stratified random sampling technique was used in selecting 10 music types and 100 traditional musicians from the study area. The Instrument used for data collection was a questionnaire titled "Specific Music Concept Teaching Methods Questionnaire (SMCTMQ)." Face and content validation of the instrument was carried out by an expert in test and measurement/evaluation from University of Uyo to ensure that the instrument has the accuracy, appropriateness and completeness for the study. Test-Retest technique was used to determine the level of reliability of the instrument. The reliability coefficient obtained was 0.92 and this was high enough to justify the use of the instrument. The researcher subjected the data generated for this study to appropriate statistical techniques such as descriptive statistics. The test for significance was done at 0.05 alpha levels. the study concluded that music instruction is well organized in the Efik/Ibibio traditional society. The study reveals that the indigenous teaching methods in Nigerian traditional society are good methods which exist for the teaching of certain music concepts in Efik/Ibibio culture and can be adapted for the teaching any music concepts in the formal classroom. One of the recommendations was that music teachers should select the activities and methods to use in executing his/her teaching. To achieve the specified education objectives, they should employ various pedagogical materials such as textual materials, objects, pictures, recorded music, video and television, computer and internet facilities, some of which may appeal to the learners in different dimensions thus making for a meaningful learning.

KEYWORDS: Demographic Variables, Music, Efik/Ibibio, Music Instruction, Traditional/ Indigenous Music, Teaching Method and Culture Area

Introduction

It is dismaying to note that music in Nigeria has been viewed as less central for development than scientific and mathematical knowledge and skills. Faseun (2005) therefore proclaims that music deserves a rightful place at the core of a pre-school through the tertiary education curriculum. He adds that, every Nigerian child has equal rights to knowledge of his/her cultural heritage, the development of his/her aural, artistic, expressive, and musical sensibilities and to familiarity with music beyond the

commercially available and currently popular. Before the intrusion of the European missionary activities into African civilization, there had existed some systematized and generally accepted indigenous educational processes. Okafor (2005) points out that, morals were taught through folktales, folksongs, moonlight activities and exemplary personality of parents and adults in the community. After due thoughts of the functions in the society, these media of instruction were acknowledged to be very effective. Musicologists have acknowledged the functionality of music in the society. For example, Nzewi (1980) affirms that music has the capability of emotional expression, aesthetic enjoyment, entertainment and communication; Idolor (1986) acknowledges the symbolic representation, physical response, enforcing conformity to societal norms and authenticating social institutions as music capability; also, Idamoyibo (1992) points out the role of music in religious rituals, contributing to the continuity and stability of culture and integrating individuals and activities of societies. In Idolor's research on the traditions of Ókpe Disco and the challenges of modernism, he observed that:

The Ókpe have music types for different events and activities that unfold within the traditional year, life cycle, incidental events and scheduled festivals. Music is sometimes core or complementary in the celebration of the events. Music is regarded as an effective means of expressing satisfaction or redress, love or hatred, praise or rebuke, to entertain, educate and keep the community lively (Idolor, 2014: 5).

In modern Nigeria, traditional songs and dances continue especially in rural communities and on ceremonial occasions. Despite these, their central place in the life of the people is threatened by the spread of electronic gadgets such as transistor radios, tape recorders, Video Cassette Recorders (VCRs), Digital Versatile Disc or Digital Video Disc (DVD), Video Compact Disc (VCD), Municipal Planning Provincial Portal (MP3) and other mass-culture media. However, these modern media are much-admired because they allow musicians using traditional instruments and forms to reach a mass audience.

Statement of the Problem

School music programme in Efik/Ibibio and indeed, the Nigerian society is influenced so much that the dominating tendencies of alien cultures at the expense of indigenous ones are apparent. Despite the diverse musical skills from the various communities of Efik/Ibibio, none is formalized; rather, they are studied as exotic culture and materials, coupled with the dislocation in the transmission between the home and the school. As a result, the Efik/Ibibio child is ill-equipped from home to appreciate traditional and Western musical training in the school. The borrowed unfamiliar music diminishes the essentials of the values of traditional music resulting in misplaced cultural values. Moral laxity has taken over the high moral integrity of the Efik/Ibibio people's musical heritage, and the younger generations are unfortunately most ignorant of their local traditions, history, and language and even fail to speak their vernacular or express their local arts.

Objective of the Study

To find out the specific methods which exist for the teaching of certain music concepts in Efik/Ibibio culture.

Research Questions

What are the specific methods which exist for the teaching of certain music concepts in Efik/Ibibio culture?

Theoretical Framework

Robert Gagné's Events of Instruction Theory (EIT)

Robert Gagné, an American educator and psychologist, cited in Campbell and Scott-Kassner (2010), formulated a hierarchical theory of instruction known as 'Events of Instruction Theory (EIT)'. The theorist believes that some types of learning are prerequisites to others. His research has been fruitfully used in determining sequences of instruction. Gagné's theory states that, "learners progress through eight instructional events or steps, from awareness and attention through concept formation and transfer" (Campbell and Scott-Kassner 2010: 33). Gagné recommends ways of gaining attention; his descriptive studies of cognitive processes led to his development of eight events of instruction theory. The events involve a progression of sensory information from perception to concept formation; they embrace the need for preparing children for new information, offering occasions for their responses to and practice of new information, and supporting the transfer of information gained to the greater acquisition of knowledge. The stages of events, as recognized by Robert Gagne, from the lowest to the highest, are arranged as follows:

Event (1): The main purpose of event (1) according to Gagne is to ensure that children gain and maintain attention. Suggested activities for the teacher include (i) asking a probing question to capture attention; (ii) telling a short story; (iii) singing a favourite familiar song with children; (iv) clapping rhythm children can imitate; (v) playing a recording that encourages children's movement responses and (vi) engaging children in immediate participation.

Event (2): The main purpose of event (2) is to prepare learners for instruction. Suggested activities for the teacher include (i) repeating event (1) but must be relevant to the new topic to be learned; (ii) sharing with children the goals and expectations of the lesson or activity; (iii) presenting fragments and phrases of the new topic to be learned and as teasers for children to imitate.

Event (3): The main purpose of event (3) is to present the material of instruction. Suggested activities for the teacher (i) presenting the music lesson in live or recorded form; (ii) presenting small sections or chunks of the new lesson that can be linked together to form the whole.

Event (4): The main purpose of event (4) is to prompt and guide learning. Suggested activities for the teacher include (i) illustrating concepts (melodic or rhythmic phrase) through mnemonics; (ii) calling attention to repeated patterns and unusual musical features; (iii) allowing time to rehearse individually in small or large groups.

Event (5): The main purpose of event (5) is to provide conditions for response. Suggested activities for the teacher include (i) offering occasions for active participation and performing by all; (ii) switching from playing to singing; (iii) moving from singing to rhythmic structure.

Event (6): The main purpose of event (6) is to provide feedback for response. Suggested activities for the teacher include (i) reminding children of learning goals and expectation of the lesson or activity; (ii) offering specific comments when possible; (iii) allowing children opportunities to change and to perfect their performance.

Event (7): The main purpose of event (7) is to promote and measure retention. Suggested activities for the teacher include (i) criticizing children's performance constructively; (ii) allowing children to evaluate their performance; (iii) providing opportunities for children to develop the musical ideas of the piece through; (iv) encouraging children to improvise on available instruments.

Event (8): The main purpose of event (8) is to enhancing transfer of learning to new task or information. Suggested activities for the teacher include (i) transferring concepts and skills to performance of unfamiliar skills; (ii) transferring concepts and skills to learning of unfamiliar piece.

The role of the music teacher in engaging children's interest is an important first step for knowledge acquisition. The role becomes increasingly prominent later when he/she introduces the more complex process of problem solving. More than most theories, Gagné's events of instruction are clear-cut steps that can be readily applied to the teaching and learning of traditional music. These steps may apply to a complete lesson or single activity within a lesson. Gagné, (1993) describes eight sets of conditions that distinguish the eight types of learning which are signal learning, stimulus response learning, chaining, and verbal associate learning. Others are multiple discrimination, concept learning, principle learning and problem solving.

Conceptual Review

Manifestation of Music in Efik/Ibibio

It may not be too imaginary to say that nature designed the first music; that in the first vital hours of creation, there was sound. In the words of Glennon (1980),

We can imagine that insects hummed and birds sang; that the wind sighed from trees and ferns, and the rain made gentle music as it fell upon rocks and thirsting leaves; that there was happy sound as water trickled down mountain creeks, and waves gurgled and splashed on beaches of pebbles and sand. There was also drama in sound as the thunder boomed across the sky (Glennon, 1980: 10).

To discuss when and how ordered sound came into use may of course be pure conjecture. We can assume that when the early man wished to pass his meaning to others, he made use of sound that came from his throat. Gradually, he learned to make up words, and so communication began. Glennon (1980) assumed that, when the early man had to speak to a group of people in the open air, he may have found that he could get his message over more effectively if he altered the pitch of his voice. In this way, speaking may have developed into a kind of singing. As time went on, Glennon adds, the early man discovered that he could make delightful sounds besides those which came from his voice.

The Efik/Ibibio child is also exposed to folktale songs and games performed by children, especially during plays. Blacking's (1967) observation that children begin to participate in music making when they spend less time with their mothers and more with other children is true of the Efik/Ibibio child who engages in serious musical activities at his/her play time when he/she joins the mates for plays and games. At this stage of life, music performed by each child or groups of children constitutes the background to all their social activities.

The Efik/Ibibio child's musical activities do not only help him/her know his/her roles in the society and learn about his/her culture and immediate surroundings, but also prepare him/her to become good musician and to acquire the ability to appreciate good music. These are made possible by the musical foundation laid by the society where the child grows. Agu (1984) points out that most societies provide good musical training for their people; the nature, scope and quality of the training is so efficient that the knowledge it offers is enough to lead the gifted, musically inclined, and hardworking members to create beautiful music with unimaginable ease. Through participation in musical activities, the Efik/Ibibio child gradually discovers relationships between his/her movements and musical beat and tempo. In like manner, as he/she imitates sounds found in his/her environment, he/she begins to make associations of high and low sounds with the sounds of his voice. By the time he/she reaches adolescent age, he/she may have learned to play musical instruments in adult ensembles. Today, every young child is bombarded daily by a world of sound and types of music through the radio, television, MP3 players, performing groups, movies, recordings and in some of the more fortunate situations, the discussion of music by members of the family or community. These and other forms of exposure could be very advantageous in developing children's interest in music if understanding or qualified adults assist in comparing various types of music and discriminating in their choices. All these early exposures have tended to increase children's attention span and interest especially when they have adequate guidance in developing musical attitude, appreciation, understanding, judgment and discrimination.

Evolution of Teaching Methods

About 3000 BC, with the advent of writing, education became more conscious or self-reflecting, with specialized occupations such as scribe and astronomer requiring particular skills and knowledge. Philosophy in ancient Greece led to questions of educational method entering national discourse. In his literary work 'The Republic', Plato described a system of instruction that he felt would lead to an ideal state. In his dialogues, Plato described the Socratic Method as a form of inquiry and debate intended to stimulate critical thinking and illuminate ideas.

It has been the intent of many teachers like the Roman educator Quintilian, to find specific, interesting ways to encourage students to use their intelligence and to help them to learn. Comenius, in Bohemia, wanted all children to learn. In his 'The World in Pictures', he created an illustrated textbook of things children would be familiar with in everyday life and used it to teach children. Much later, Jean-Jacques Rousseau in his 'Emile', presented methodology to teach children the elements of science and other subjects. During Napoleonic warfare, the teaching methodology of Johann Heinrich Pestalozzi of Switzerland enabled refugee children, of a class believed to be unreachable, to learn. He described this in his account of an educational experiment at

Stanz. He felt the key to have children learn is for them to be loved. The Prussian education system, according to Agu (1984), was a system of mandatory education dating to the early 19th century. Parts of the Prussian education system have served as models for the education systems in a number of other countries, including Japan and the United States. The Prussian model required classroom management skills to be incorporated into the teaching process.

Newer teaching methods may incorporate television, radio, internet, multimedia and other modern devices. Some educators like Ibe-Bassey (2004) believe that the use of technology, while facilitating learning to some degree, is not a substitute for educational methods that encourage critical thinking and a desire to learn. Inquiry learning is another modern teaching method. The author adds that, popular teaching method that is being used by a vast majority of teachers is hands on activities. Hands-on activities are activities that require movement, talking, and listening, it activates multiple areas of the brain. Dodge (2009) holds that the more parts of the brain someone uses, the more likely he/she can retain information.

Indigenous Teaching Methods in the Nigerian Traditional Society

Apart from socialization, there may be as many methods or techniques of teaching and learning as there are parents, grandparents and teachers, but certain descriptions conjure up some of the best-known instructional approaches. In Efik/Ibibio, these systems of acquiring knowledge, whether considered as teaching or learning methods, are very essential. The methods are discussed thus:

Apprenticeship Method: General music education makes the average traditional Efik/Ibibio child a competent musician. There are, however, families of musicians in some Efik/Ibibio communities. Children born into such families automatically join the families' trade, and are expected to be competent in the specific music styles the families specialize in. There are specialized musical styles and mother instruments that demand exceptional degrees of performance expertise or technical proficiency. Specialists in such styles and instrumental practice are acclaimed as mother musicians. To attain the proficiency of mother musician may require an apprenticeship method.

Lecture Method: Lecturing, sometimes referred to as explaining, is the process of teaching by giving spoken explanations of the subject that is to be learned. Experts describe lecture as a discourse delivered aloud for instruction or entertainment. It involves the teacher passing information to the learner. The origin of lecture method, according to Akpomede (2011), can be traced back to the Jewish teachers who went to the class fully armed with a mass of facts or information and poured them out, perhaps, pausing at intervals to ask questions and also required students to ask questions on the lesson. When lecture teaching was in progress, the Jewish students were expected to sit and listen attentively and quietly while at some points, took note of important facts by writing them.

Demonstration Method: Demonstration involves showing by reason or proof, explaining or making clear by use of illustrations or experiments. This technique is sometimes referred to as illustration or showing method. Also, demonstration means to clearly show someone how something is done. The approach involves the learner observing as the teacher performs some activities or skills and attempts to perform

such skills him/herself under the teacher's guide. In using demonstration teaching, the student is set up to potentially conceptualize material more effectively.

Discovery Method: The word discovery can refer to locating, finding, detecting, unearthing or sighting. It is described discovery activity as action designed in a way that someone performs a certain mental process such as observing, classifying, measuring, predicting, describing, and inferring. When someone learns through the process of discovery, he/she is said to carry out an inquiry or investigation.

Discussion Method: Discussion implies the participation of learners in the learning process by raising issues of their own, contributing ideas, asking questions and seeking solutions based upon the study; it involves drawing conclusions under the teacher's guidance. Discussion is a democratic approach to teaching whereby every learner is given an opportunity to participate in the process. In this approach, according to Kpeke and Osho (1998), the teacher plays the role of a producer and is expected to stay at a reasonable distance at the background of the learners to have a full chance to be effectively engaged in the discussion; he/she ensures that every learner is actively involved in the learning activities related to topics or contents that are drawn from the curriculum or scheme of work that the class should cover.

Activity Method: The word activity refers to action, movement, motion, bustle or doings. It is described as the state or quality of being active; action; vigorous movement; acute force or operation. Many see it as a teaching-learning through action, movement and motion. Activity teaching method therefore implies the instructional strategy where the learners overtly participate actively, doing a number actions and becoming involved and responsible for their learning. Any method of teaching, therefore, that places the learner at the center of instructional effort is the activity method.

Methodology

The study adopted ethnographic method within the domain of ethnomusicology where primary data was collected from the field through oral interview, observations and the use of structured questionnaire. The study was conducted in South South Nigeria Akwa Ibom and Cross River States. The population of the study comprised all the traditional music types in Efik/Ibibio land. Proportionate stratified random sampling technique was used in selecting 10 music types and 100 traditional musicians from the study area. The Instrument used for data collection was a questionnaire titled "Specific Music Concept Teaching Methods Questionnaire (SMCTMQ)." Face and content validation of the instrument was carried out by an expert in test and measurement/evaluation from University of Uyo to ensure that the instrument has the accuracy, appropriateness and completeness for the study. Test-Retest technique was used to determine the level of reliability of the instrument. The reliability coefficient obtained was 0.92 and this was high enough to justify the use of the instrument. The researcher subjected the data generated for this study to appropriate statistical techniques such as descriptive statistics. The test for significance was done at 0.05 alpha levels.

Results

Research Question: The research question sought to find out the specific methods which exist for the teaching of certain music concepts in Efik/Ibibio culture. To answer the question, descriptive analysis was performed on the data as shown in table 1 below:

• **Specific Teaching Methods in Efik/Ibibio**

Specific Methods Which Exist for the Teaching of Certain Music Concepts in Efik/Ibibio	Arithmetic Mean	Expected Mean	Remarks
The music instructor can cultivate and sustain learner's interest by using appropriate teaching methods such as apprenticeship, lecture, demonstration, discussion, discovery, centre of interest and activity methods	4.04	3.00	H
Standard of traditional music in our society will be determined by the quality of music instructors and the ability to use such teaching methods as apprenticeship, lecture, demonstration, discussion, discovery, centre of interest and activity methods,	3.77	3.00	H
Teaching music in Efik/Ibibio culture area can be applied effectively in the classroom if the teacher is able to apply such methods as apprenticeship, lecture, demonstration, discussion, discovery, centre of interest and activity.	4.13	3.00	H
Elements of Western music that have found their way into Efik/Ibibio music can be taught alongside Western music in the classroom if the teacher can effectively lecture, discuss and demonstrate the lesson in the class.	4.03	3.00	H
The present Nigerian school system has imbibed foreign culture and techniques so much that they fail to encourage the young generation to learn their musical cultures using such indigenous approaches as apprenticeship, lecture, demonstration, discussion, play/games, discovery, centre of interest and memorization.	4.05	3.00	H
WEIGHTED MEAN	4.00		
GRAND MEAN	20.02	15.00	

H = High; L = Low

Figure 4.25: Specific Teaching Methods in Efik/Ibibio Culture Area

Source: Field Study

The above table 1 presents the descriptive analysis of the specific methods which exist for the teaching of certain music concepts in Efik/Ibibio culture area. From the table, it was observed that all the factors with respect to the specific methods which exist for the teaching of certain music concepts in Efik/Ibibio culture as presented by the respondents were high, being that their observed mean value were higher than the expected mean value of (3.00). Factors identified with high mean value are:

- (i) (4.13) indicating the possibility of Efik/Ibibio music teaching to be applied in the classroom using lecture, demonstration, discussion, discovery, activity and centre of interest methods;
- (ii) (4.05) indicating that the present school system in Nigeria have imbibed foreign culture so much that they fail to encourage the young generation to learn their musical cultures using indigenous methods such as lecture, demonstration, discussion, discovery, centre of interest and activity methods;
- (iii) (4.04) indicating that the classroom music instructor or teacher can cultivate and sustain learner's interest by using appropriate teaching methods such as lecture. demonstration, discussion, activity, play/game, discovery and centre of interest methods;
- (iv) (4.03) indicating that elements of Western music have found their way into the indigenous music of the Efik/Ibibio and can be taught alongside Western music in the formal classroom using such indigenous methods as lecture, demonstration, discussion, centre of interest, play/game, discovery and activity methods;
- (v) (3.77) indicating that the standard of traditional music in our society will be determined by the quality of music instructors and the methods they apply in teaching the lesson such as lecture, discussion, demonstration, discovery centre of interest, play and activity methods.

Finally, the (4.00) weighted mean for all the items was higher than the expected (3.00) mean and the (20.02) observed grand mean was also higher than the (15.00) expected grand mean, signifying that apprenticeship, lecture, demonstration, discussion, activity, games/play, discovery and centre of interest methods are good methods which exist for the teaching of certain music concepts in Efik/Ibibio culture and can be adapted for the teaching any music concepts (Western and traditional) in the formal classroom.

Conclusion

The outcome of the study shows that music instruction is well organized in the Efik/Ibibio traditional society. Several indigenous teaching methods in the Nigerian traditional society have been identified in the study which include, among others, lecture method, apprenticeship method, demonstration method, discovery method etc. The study indicated that apprenticeship, lecture, demonstration, discussion and discovery and methods are good methods which exist for the teaching of certain music concepts in Efik/Ibibio culture and can be adapted for the teaching any music concepts (Western and traditional) in the formal classroom.

Recommendations

Based on the findings of this study, the following recommendations were deemed necessary that:

1. Music teachers should select the activities and methods to use in executing his/her teaching. To achieve the specified education objectives, they should employ various pedagogical materials such as textual materials, objects, pictures, recorded music, video and television, computer and internet facilities, some of which may appeal to the learners in different dimensions thus making for a meaningful learning.
2. Musicologists and music educators should write and publish text books on traditional music methods that can serve as reference materials for effective teaching and learning of traditional and Western music in the formal classroom;

REFERENCES

- Agu, D. C. C. (1984). *Indigenous Choral Music in African Christian Worship: An Analytical Study of the Youth Songs in the Niger Diocese of Nigeria*, Ph.D. Thesis, Queen's University, Belfast, U. K.
- Akpomedaye, J. R. O. (2011). *Agricultural Education Instructional Methods. Contemporary Issues in Nigerian Education*. Onitsha: West and Solomon Publishing Coy Ltd.
- Blacking, J. (1967). *Venda Children's Songs: A Study in Ethnomusicological Analysis*. Johannesburg: University of Witwaters and University Press.
- Campbell, P. S. and Scott-Kassner, C. (2006). *Music in Childhood*. U.S.A.: Nelson Education Limited.
- Dodge, A. (2009). Heuristics and NCLB standardized tests: A convenient lie. *International Journal of Progressive Education*. Retrieved from ERIC database.
- Faseun, F. (2005). *Public Perception of Music as a School Subject in Contemporary Nigerian Schools*. African Art Music in Nigeria. Ibadan: Stirling-Horden Publishers. Pp. 135 – 149
- Gagne, R. M. (1993). *The Conditions of Learning: How Children Talk, Write, Dance, Draw, and Sing their Understanding of the World*. New York: Teacher's College Press.
- Glennon, M. T. (1980) *The Roles of Music in child development: A developmental study of the children in nursery schools. An African Traditional Perspective*. Bayreuth: Iwalewa-Hans, University of Bayreuth.
- Ibe-Bassey, G. S. (2004). *Principles and Practice of Instructional Communication*, Uyo Dorand Publishers.
- Idamoyibo, O. I. (1992). *Igoro Music on Okpeland: A Study of its Functions and Compositional Techniques*. Doctoral Dissertation, University of Pretoria, Pretoria, South Africa.
- Idolor, G. E. (1986). *Music Education in Okpe Area Secondary Schools*. An Unpublished B. A. Thesis, University of Nigeria, Nsukka.
- Idolor, G. E. (2014). *The Traditions of Okpe Disco and the Challenges of Modernism*. 37th Inaugural Lecture. Abraka: University Printing Press.
- Kpeke, E. E. and Osho, I. O. (1998). *Approaches, Methods, Strategies and Techniques of Teaching*. Principles and Practice of Teaching for Students in Tertiary Institutions. Warri: Abotu.
- Nzewi, M. (1980). *Musical Practice and Creativity: An African Traditional Perspective*. Bayreuth: Iwalewa-Hans, University of Bayreuth.
- Okafor, R. C. (2005). *Music in Nigerian Society*. Enugu: New Generation Books.

Investigating into Music Instruction and Cognitive Development in Young Children

BY

Cletus A. JOHN, Ph.D
Department of Music
Freie Universität Berlin
Kaiserswerther STR. 16-18
14195 Berlin
Germany

ABSTRACT

Music is a language of learning that eventually involves children in talking, reading, drawing, and writing. Music instruction has repeatedly been claimed to positively impact the cognitive skills development of children. This claim relies on the assumption that engaging in intellectually demanding activities fosters particular domain-general cognitive skills, or even general intelligence. In relation to cognitive development, it is seen as the emergence of the ability to consciously cognize, understand, and articulate understanding in adult terms. And it also seen as the way people perceive, think, and gain understanding of their world through the relations of genetic and learning factor. That is why the study is carried to investigate into Music Instruction and Cognitive Development in Young Children. Thus, the review concluded that music instruction positively impacts the cognitive development of a child either by music exposure, or in-school music education. One of the recommendations was that government should setup a sustainable collaboration between music educators and early childhood professionals in building the successful cognitive development of a young children.

KEYWORDS: Music Instruction, Cognitive Development and Young Children

Introduction

Music can be found in every culture all around the world. It has become such a big part of our lives. Even though the ancient cultures were widely aware of the comprehensive benefits of music, it was only with the emergence of the contemporary neuroscience, that those benefits were ultimately recognized by larger audiences (Zadnik and Habe, 2017). In the last decades, music has become a window for studying higher brain functions' processing and, on the other hand, a means of enhancing optimal brain functioning. And this have moved many researchers to study how music affects people, especially children (Chau and Riforgiate, 2010). Many parents, teachers, scholars, and businesses are interested in learning more about the influence of music on the development of children. Others focus on how formal music training impacts various aspects of cognitive development such as perception, memory, and language skills (Moreno, Marques, Santos, Santos, Castro and Besson, 2009). It has been claimed that music nurtures children's cognitive skills (Sala and Gobet, 2020). Learning to play the violin or the piano, to recognize pitches, and to keep the beat are often presented as effective cognitive enhancement tools (Jaušovec & Pahor, 2017). However, it has been demonstrated, through varied use of music that people benefit from music's impact on both hemispheres of the brain, which make learning easier (Nicolich, 2008).

CONCEPTUAL REVIEW

Concept of Cognitive Development

Cognitive development is a field of study in neuroscience and psychology focusing on a child's development in terms of information processing, conceptual resources, perceptual skill, language learning, and other aspects of the developed adult brain and cognitive psychology (Sellers, Machluf and Bjorklund, 2018). According to Gauvain and Richert (2016), cognitive development is the process by which human beings acquire, organize, and learn to use knowledge. Also, Haddad, Doherty and Purtilo (2019) viewed cognitive development as a way of addressing the way a child learns to think, reason, and use language, which are vital to the child's overall growth and development. A Qualitative difference between how a child processes their waking experience and how an adult processes their waking experience are acknowledged (Such as object permanence, the understanding of logical relations, and cause-effect reasoning in school-age children). Hence, Cognitive development is defined as the emergence of the ability to consciously cognize, understand, and articulate understanding in adult terms. Cognitive development is how a person perceives, thinks, and gains understanding of their world through the relations of genetic and learning factor (Sellers, et. al., 2018). There are four stages to cognitive information development. They are, reasoning, intelligence, language, and memory. These stages start when the baby is about 18 months old, they play with toys, listen to their parents speak, they watch TV, anything that catches their attention helps build their cognitive development (Wikipedia, 2017).

Concept of Music Instruction

Music instruction has repeatedly been claimed to positively impact cognitive skills development of children (Sala and Gobet, 2020). This claim relies on the assumption that engaging in intellectually demanding activities fosters particular domain-general cognitive skills, or even general intelligence. Research on the benefits of music instruction has budded over that past decades. Music instruction is quantity and quality of teacher supply (Wong, 2010). Though parents usually have high expectations of music education for their children, the *status quo* of music teacher education may not satisfy their expectation. Thus, when parents are able to provide their children with private one on one formal lessons, the music instruction can improve children's verbal memory (Ho, Cheung, and Chan, 2003). The availability of music instruction in many public schools, has struggled to remain relevant in today's test-focused curriculum. While 89-97% of elementary students according to Parsad and Spiegelman, (2012) receive some kind of music instruction in school, the type and quality of instruction varies widely. Thus, Folkestad (2006) noted that a highly legitimate motive for the use of informal teaching strategies is to increase students' engagement with and motivation for music instruction in school (Green, 2008).

Music Instruction and Cognitive Development in Young Children

Music instruction appears to accelerate brain development in young children (News Medical Life Sciences, 2016), particularly in the areas of the brain that are responsible for processing sound, language development, speech perception and reading skills. Salmon (2010) looks at how using music instrument can promote thinking and increase literacy skills. "Music is inherent to children's experiences and is related to sounds

heard every day, which facilitate mental imagery. Music is a language of learning that eventually involves children in talking, reading, drawing, and writing” (Salmon, 2010). Studies on intelligence, academic success, and cognitive skills have documented the value of music instruction in the lives of children. Norton, Winner, Cronin, Overy, Lee, and Schlaug (2005) conducted a study to know if there are pre-existing neural, cognitive, or motoric markers for musical ability. Their results showed no correlations between music perceptual skills and any brain or visual-spatial measures. They did find, however, correlations between music perceptual skills and both non-verbal reasoning and phonemic awareness. Another study conducted by Gromko (2005) showed that children who receive musical training will develop aural skills for spoken sounds and spoken words faster than children who did not receive musical instruction. Moreover, Franklin, Moore, Yip, Jonides, Rattray and Moher (2008) found evidence for greater verbal working memory span in musicians than non-musicians.

In recent years, literature reviews have been written to summarize the effects of music instruction on various emergent literacy capacities among preschool children (Bolduc, 2008; O’Herron and Siebenaler, 2007). Bolduc (2008) analyzed five correlational studies and eight quasi-experimental studies in the fields of music therapy and music education. He concluded that music instruction promotes the development of three important components associated with language development: auditory processing, phonological memory, and metacognitive knowledge. O’Herron and Siebenaler (2007), on the other hand, examined the interaction of vocal skill development and early literacy instruction with the goal of providing early childhood teachers practical strategies to enhance auditory processing and quality of speech. They concluded that parallels exist between vocal music instruction and language arts instruction. Specifically, auditory processing, articulation, and prosody might be necessary in the development of phonemic awareness and fluency, as well as music skill development.

Music Instruction Boosts Brain Growth & Academic Results

For a long time, music educators have suggested that music, either in the form of music instruction, music practice, or exposure to music, can have a significant impact on school achievement, school attendance rates and students’ conduct, both in elementary and secondary education (Koopman, 2005; Waller, 2007). Educational scientists have addressed the question of what effects music instruction can have on child development from a research point of view. Some researchers claim to have found effects on cognitive growth, such as the increase of the ability to concentrate and academic achievement. Also effects in the social and emotional domain have been reported (Gardner, 2004). According to Bradley-Kramer (2017), high quality music instruction promotes rapid cognitive development in children. Music instruction raises the IQ level in children by around 7.5 points, or close to 20%, and that musical training is associated with higher scores in both math and language tests. But recent findings in brain scans and neuroscience underline just how profound these benefits are to a child’s rapidly developing neural networks. From a large-scale longitudinal study Bastian (2002) arrived at the conclusion to have identified a significant improvement of social competencies, an increase of motivation to learn, a significant improvement of IQ, and the ability to concentrate as a result of enhanced music instruction, consisting of playing Orff-instruments, recorder lessons, lessons on other musical instruments, and special music projects (Hogenesa, van Oersb and Diekstrac, 2014).

Cognitive, Emotional and Social Functions of Music Perception

Listening to music requires certain perceptual abilities, including pitch discrimination, auditory memory, and selective attention in order to perceive the temporal and harmonic structure of the music as well as its affective components, and engages a distributed network of brain structures (Peretz and Zatorre, 2005). Music, like all sounds, unfolds over time. Thus, the auditory cognitive system must depend on working memory mechanisms that allow a stimulus to be maintained on-line to be able to relate one element in a sequence to another that occurs later. The process of music recognition requires access and selection of potential predictions in a perceptual memory system (Dalla Bella, Peretz and Aronoff, 2003; Peretz and Zatorre, 2005). Additionally, music is also known to have a powerful emotional impact. Neuroimaging studies have shown that musically induced emotions involve very similar brain regions that are also implicated in non-musical basic emotions, such as the reward system, insula, and orbitofrontal cortex, amygdala and hippocampus (Blood and Zatorre, 2001; Koelsch, Fritz, Cramon., Muller and Friederici, 2006; Salimpoor, Benovoy, Larcher, Dagher and Zatorre, 2011; Trost, Ethofer., Zentner and Vuilleumier, 2012). However, music can have a strong influence on the emotion of the listener as well as the performer: musical engagement can be experienced as highly emotional not only as in the case of stage fright (Studer, Gomez, Hildebrandt, Arial and Danuser, 2011) but also as highly rewarding (de Manzano, Theorell, Harmat and Ullen, 2010; Nakahara, Furuya, Masuko, Francis and Kinoshita, 2011).

In a social context, making music in a group has been suggested to increase communication, coordination, cooperation and even empathy between in-group members (Koelsch, 2010). Therefore, it could easily be conceived how musical training could have a positive impact on the well-being and social development of children and adults. Instrumental training is a multisensory motor experience, typically initiated at an early age. Playing an instrument requires a host of skills, including reading a complex symbolic system (musical notation) and translating it into sequential, bimanual motor activity dependent on multisensory feedback; developing fine motor skills coupled with metric precision; memorizing long musical passages; and improvising within given musical parameters. Music performance, unlike most other motor activities, requires precise timing of several hierarchically organized actions and control over pitch interval production (Zatorre, Chen and Penhune, 2007).

Conclusion

The review of the literature warrants the conclusion, that music instruction positively impacts the cognitive development of a child either by music exposure, or in-school music education. Cognitive development is seen as the process by which human beings acquire, organize, and learn to use knowledge. Also, it is a way of addressing how children learn to think, reason, and use language, which are vital to the child's overall growth and development. In other words, music instruction is quantity and quality of teaching supply to a child's development. Music instruction accelerate the brain development in young children and have a positive effect on cognitive growth, such as the increase of the ability to concentrate and academic achievement of a child.

Recommendations

1. Government should setup a sustainable collaboration between music educators and early childhood professionals, to build a successful cognitive development of the young children.
2. Government in collaboration with educational management should create a model of professional's developers that will work in a variety of settings and contexts in improving early musical experience for all young children.

REFERENCES

- Bastian, H. G. (2002). *Musik(erziehung) und ihre Wirkung. Eine Langzeitstudie an Berliner Grundschulen*. [Music education and its effects. A long-term study in elementary schools in Berlin.]. Mainz: Schott.
- Blood, A. J., and Zatorre, R. J. (2001). Intensely pleasurable responses to music correlate with activity in brain regions implicated in reward and emotion. *Proc. Natl. Acad. Sci. U.S.A.* 98(1), 11818–11823.
- Bradley-Kramer, D. (2017). *Music Education: Music and Cognitive Development*. MUSE Academy, Brooklyn, NY, United States.
- Chau, C. and Riforgiate, T. (2010). *The Influence of Music on the Development of Children*. Child Development Senior Project Spring. California Polytechnic State University, San Luis Obispo.
- Dalla Bella, S., Peretz, I., and Aronoff, N. (2003). Time course of melody recognition: a gating paradigm study. *Percept. Psychophys.* 65(1), 1019–1028.
- de Manzano, O., Theorell, T., Harmat, L., and Ullen, F. (2010). The psychophysiology of flow during piano playing. *Emotion* 10(1), 301–311.
- Folkestad, G. (2006). Formal and informal learning situations or practices vs formal and informal ways of learning. *British Journal of Music Education*, 23, 135–145
- Franklin M., Moore, K., Yip, C., Jonides, J., Rattray, K. and Moher, J. (2008). The effects of musical training on verbal memory. *Psychology of Music*, 36(3), 353-365.
- Gardner, H. (2004). *Frames of mind*. The theory of multiple intelligences. New York: Basic Books
- Gauvain, M. and Richert, R. (2016). *Cognitive Development*. Encyclopedia of Mental Health (Second Edition), Pages 317-323.
- Green, L. (2008). *Music, Informal Learning and the School*. A New Classroom Pedagogy. Aldershot: Ashgate.
- Gromko, J. E. (2005). The effect of music instruction on phonemic awareness in beginning readers. *Journal of Research in Music Education*, 53(3), 199-209.
- Haddad, A., Doherty, R. and Purtilo, R. (2019). *Respectful Interaction: Working with Newborns, Infants, and Children in the Early Years*. Health Professional and Patient Interaction (Ninth Edition), Pages 167-180
- Ho, Y., Cheung, M., & Chan, A. (2003). Music training improves verbal but not visual memory: Cross-sectional and longitudinal explorations in children. *Neuropsychology*, 17(3), 439-450.
- Hogenesa, M., van Oersb, B. and Diekstrac, R. F. W. (2014). The impact of music on child functioning. *The European Journal of Social & Behavioural Sciences*, 23(18), 1507-1526

- Jaušovec, N., & Pahor, A. (2017). *Boost your IQ with music*. Retrieved from: [http://scitechconnect.elsevier.com/boost-your-iq-with-music/Return to ref 2017 in article](http://scitechconnect.elsevier.com/boost-your-iq-with-music/Return%20to%20ref%202017%20in%20article)
- Koelsch, S. (2010). Towards a neural basis of music-evoked emotions. *Trends Cogn. Sci.* 14(1), 131–137.
- Koelsch, S., Fritz, T., V. Cramon, D. Y., Muller, K., and Friederici, A. D. (2006). Investigating emotion with music: an fMRI study. *Hum. Brain Mapp.* 27(1), 239–250.
- Koopman, C. (2005). *Muziek maakt slim? Over de rechtvaardiging van muziekonderwijs*. [Music makes smart? About the justification of music education.]. In J. Herfs et al. *Muziek Leren. Handboek voor basis- en speciaal onderwijs*. [Learning Music. Handbook for elementary and special education.]. Assen: Van Gorcum
- Moreno, S., Marques, C., Santos, A., Santos, M., Castro, S., & Besson, M. (2009). Musical training influences linguistic abilities in 8-year-old children: More evidence for brain plasticity. *Cerebral Cortex*, 19(3), 712-723.
- Nakahara, H., Furuya, S., Masuko, T., Francis, P. R., and Kinoshita, H. (2011). Performing music can induce greater modulation of emotion-related psychophysiological responses than listening to music. *Int. J. Psychophysiol.* 81(1), 152–158.
- News Medical Life Sciences (2016). *Music instruction improves cognitive, socio-emotional development in young children*. Available at: <https://www.news-medical.net/>
- Norton, A., Winner, E., Cronin, K., Overy, K., Lee, D. J. and Schlaug, G. (2005). Are there pre-existing neural, cognitive, or motoric markers for musical ability? *Brain Cogn.* 59(1), 124–134.
- Parsad, B. and Spiegelman, M. (2012). *Arts education in public elementary and secondary schools: 1999-2000 and 2009-10* (NCES 2012-014). National Center for Education Statistics, Institute of Education Sciences, U. S., Department of Education, Washington, DC.
- Peretz, I., and Zatorre, R. (2005). Brain organization for music processing. *Annu. Rev. Psychol.* 56(1), 89–114.
- Sala, G and Gobet, F. (2020). Cognitive and academic benefits of music training with children: A multilevel meta-analysis. *Memory & Cognition*, 48(1): 1429–1441
- Sala, G. and Gobet, F. (2020). Cognitive and academic benefits of music training with children: A multilevel meta-analysis. *Memory & Cognition* 48(1), 1429–1441
- Salimpoor, V. N., Benovoy, M., Larcher, K., Dagher, A., and Zatorre, R. J. (2011). Anatomically distinct dopamine release during anticipation and experience of peak emotion to music. *Nat. Neurosci.* 14(1), 257–262.
- Sellers, P. D.; Machluf, K. and Bjorklund, D. F. (2018). *The Development of Evolutionarily Adaptive Individual Differences: Children as Active Participants in Their Current and Future Survival*. The SAGE Handbook of Personality and Individual Differences:

SAGE Publications Ltd, pp. 203–217,

- Studer, R., Gomez, P., Hildebrandt, H., Arial, M. and Danuser, B. (2011). Stage fright: its experience as a problem and coping with it. *Int. Arch. Occup. Environ. Health* 84(1), 761–771
- Trost, W., Ethofer, T., Zentner, M., and Vuilleumier, P. (2012). Mapping aesthetic musical emotions in the brain. *Cereb. Cortex* 22(1), 2769–2783.
- Waller, G.D. (2007). *The impact of music education on academic achievement, attendance rate, and student conduct on the 2006 senior class in one Southeast Virginia Public School division*. Blacksburg: Unpublished doctoral dissertation.
- Wikipedia (2017). *Cognitive development*. In Wikipedia, The Free Encyclopedia. Retrieved from: https://en.wikipedia.org/wiki/Cognitive_development
- Wong, M.W. (2010). *Music Teacher Education*. International Encyclopedia of Education (Third Edition). McGraw Group Pty Ltd, Mont Albert Nth, VIC, Australia
- Zadnik, K. and Habe, K. (2017). The developmental benefits of early music education: An evaluation study of the two Slovenian projects. *Progress in Education*, 13(4), 123-144
- Zatorre, R. J., Chen, J. L., and Penhune, V. B. (2007). When the brain plays music: auditory-motor interactions in music perception and production. *Nat. Rev. Neurosci.* 8, 547–558.

**Music Training and Amendment of the Course of Adolescent Auditory
Development**

BY

Jones C. WILLIAMS, *Ph.D*
Department of Music
University Avenue
Waterloo, Ontario N2L 3G1
Canada
North America

ABSTRACT

The study sought to assess how music training amends the course of adolescent auditory development. Developing a strategy to bring music training to children may as well result in improved brain-behavior and auditory health. The auditory system develops the capacity to receive, interpret, and respond to complex language, as well as the capacity to hear, discern, and respond to music. Hence, music is seen as a therapeutic tool to alter mood and moderate emotion for both infant, adolescent even in adults. It as well helps in auditory processing. Involvement in musical training promotes neural plasticity and helps in the development of auditory skill. Therefore, one of the recommendations of the study was that federal/state governments should allocate funds and help in deploying musical instruments to schools for effective music training of students.

KEYWORDS: Music Training and Adolescent Auditory Development

Introduction

Delineating the musical abilities that are specifically linked to an intensive and formal training from those that emerge through mere exposure to music is a key issue for music cognition, music education, and all of the disciplines involved in sound and music computing (Lalitte, 2008). A number of studies suggest that musical training has benefits for other cognitive domains, such as language and mathematics, and studies of children and adults indicate structural as well as functional differences between the brains of musicians and non-musicians (Trainor, Shahin and Robertsa, 2009). But in the past decades, researchers have examined whether taking musical training has a positive influence on nonmusical cognitive abilities. Such influence would represent a form of transfer. The most common design (i.e., correlational) involves comparing musically trained and untrained individuals, which makes it impossible to determine whether music lessons are the cause rather than consequence of improved cognitive performance (Swaminathan and Schellenberg, 2016). There has been an emerging evidence that music training induces changes in the brain. Indeed, the musician's brain has been used as a model of neuroplasticity (Habib and Besson, 2009; Zatorre and McGill, 2005). Early studies investigated how music training primes the brain for processing musical sounds and examined the extent to which such plasticity is specific to processing musical sounds (Peretz and Zatorre, 2005). These studies revealed that music training induces functional and structural changes in the auditory system (Hannon and Trainor, 2007). For example, compared to non-musicians, pianists show

increased neural activity (measured by magnetic source imaging) in the auditory cortex in response to hearing piano notes (Gaser and Schlaug, 2003). The strength of neuronal activation to piano notes was found to correlate with the age at which piano training began and with the number of years of music training. This suggests that enhanced functional plasticity reflects experience and is not merely a reflection of innate differences between musicians and non-musicians (Kraus and Chandrasekaran, 2010).

Concept of Music Training

Music training is a demanding task that involves active engagement with musical sounds and the connection of 'sound' to 'meaning', a process that is essential for effective communication through music, language and vocal emotion (Kraus and Chandrasekaran, 2010). Music training initiated as late as adolescence can enhance neural processing of sound and confer benefits for language skills. These results establish the potential for experience-driven brain plasticity during adolescence and demonstrate that in-school programs can engender these changes. Music training according to Lmerja (2016) changes the way the brain functions in an adolescent. It improves verbal memory, phonological and reading skills. Many individuals go in music training classes for learning how to play instruments. In the course of musical training, musicians increasingly learn to attend to the fine-grained acoustics of musical sounds. These include pitch, timing and timbre, the three basic components into which any sound that reaches the human ear — including music or speech — can be broken down (Kraus, Skoe, Parbery-Clark and Ashley, 2009). Pitch refers to the organization of sound on an ordered scale (low versus high pitch) and is a subjective percept of the frequency of the sound. Timing refers to specific landmarks in the sound (for example, the onset and offset of the sound) and timbre refers to the quality of the sound — a multidimensional attribute that results from the spectral and temporal features in the acoustic signal. Attention to these components is emphasized during music training (Kraus and Chandrasekaran, 2010). More likely Hudziak, Albaugh, Ducharme and Karama, Spottswood, Crehan, Evans and Botteron, (2014) noted that developing a strategy to bring music training to children may well result in improved brain-behavior and auditory health. However, like many health-promoting activities, it appears that music training in childhood is an activity of those with sufficient wealth. Although the most potent changes in neuroarchitecture correlate with number of hours of practice, the work of Bilhartz, Bruhn, and Olson, (2000) showed that, despite being assigned to experimental groups receiving different levels of intervention, household income influenced the actual music training that the children received; children in higher-income households ultimately received greater exposure to music training, despite random group assignment (Bilhartz, et.al., 2000).

Concept of Auditory Development

The human auditory system is unique and far different from animal's auditory system (Graven and Browne, 2008). It differs from all others because it develops the capacity to receive, interpret, and respond to complex language. It also develops the capacity to hear, discern, and respond to music. The auditory system supports development of language as well as musical skills. Unlike the visual system where actual visual experience begins after birth at term, the auditory system requires auditory experience with voice and language, music, and meaningful environmental sounds (Hall, 2000). The auditory system in the human fetus and infant has its own developmental sequences.

The anatomical or structural parts of the system develop early. The structural parts of the cochlea in the middle ear are well formed by 15 weeks' gestational age and are anatomically functional by 20 weeks' gestation (Pujol and Lavigne-Rebillard cited in Graven and Browne, 2008). The somaesthetic (touch), kinesthetic (movement), proprioceptive (position), vestibular (motion-head), and chemosensory (smell and touch) systems all are both structurally and functionally operative before 20 weeks' gestation. The auditory system follows those systems in the sequence of development (Ronca, Alberts and Lecanuet, 2005). The study of auditory development in human infants, children and adult is relatively young and have been emerged by many researchers (Streeter, 1906; Streeter, 1917; McKinnis, 1936; Hall, 1964; Bredberg, 1968) cited in Werner, (2007), for example studies of anatomical, physiological and behavioral or psychophysiological development had been published prior to 1970. It was, however, only in the 1970s that interest in assessing auditory in adolescent became serious, with the appearance of visual reinforcement audiometry and the auditory brainstem response (Trainor, Samuel, Desjardins and Sonnadara, 2001). Hence, it can be noted that auditory development and the potential for interference with auditory development are critical issues for the care of postterm infants in day care or home environments (Graven and Browne, 2008).

The Structure of the Auditory System

The auditory system is the sensory system for the sense of hearing. It includes both the sensory organs (the ears) and the auditory parts of the sensory system (Wikipedia, 2014). The external ear canal leads to the tympanic membrane (eardrum). The outer ear funnels sound vibrations to the eardrum, increasing the sound pressure in the middle frequency range. The middle ear contains a chain of three bones that connect the tympanic membrane to the cochlea. The middle-ear ossicles further amplify the vibration pressure roughly 20 times. The base of the stapes couple's vibrations into the cochlea via the oval window, which vibrates the perilymph liquid (present throughout the inner ear) and causes the round window to bulb out as the oval window bulges in (Tillotson and McCann, 2013; Ashwell, 2016). Vibrations of the tympanic membrane according to Graven and Browne, (2008) are transmitted to the cochlea. The cochlea contains three parallel fluid chambers. The vibration of the tympanic membrane creates fluid waves in the cochlea. Within the cochlea, between the fluid chambers, is the organ of Corti. The organ of Corti contains the hair cells that have a hair-like projection from their apex (stereocilia). It is the physical movement of the stereocilia that is converted into a nerve signal that is then transmitted through the spiral ganglion and the relay nuclei in the pons and midbrain to the auditory cortex in the temporal lobe (Kandel, Schwartz and Jessell, 2000). The neurons of the temporal lobe connect to the brainstem that stimulate a physiologic response (Graven and Browne, 2008). The structure of the external and middle ear is shown in Figure 1.

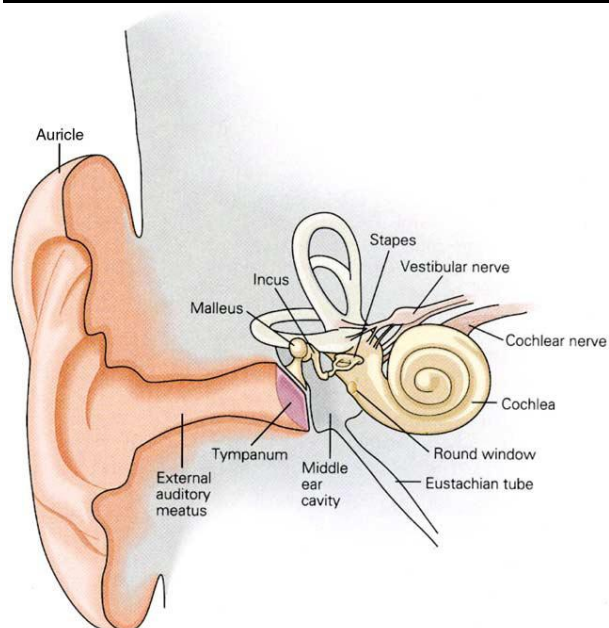


Figure 1: The structure of the human ear. The external ear, especially the prominent auricle, focuses sound into the external auditory meatus. Kandel, Schwartz and Jessell (2000) cited in Graven and Browne, (2008).

A Brain Wired the Regularities

An adaptive auditory system is primed to extract sound regularities in a predictive manner (Winkler, Denham and Nelken, 2009). The ability to extract statistical regularities in soundscapes probably underlies the well-described statistical learning processes that the brain uses to segment linguistic and non-linguistic inputs (Chandrasekaran, Hornickel, Skoe, Nicol and Kraus, 2009). The typical auditory system is capable of extracting regularities in the signal implicitly, even without the need for conscious attention. Subcortical enhancement of stimulus regularities accompanies success with linguistic tasks, such as reading and hearing speech in noise (Winkler, et. al., 2009; Chandrasekaran, et. al., 2009). For example, to track a friend's voice (a predictable regularity) in a noisy cafeteria that have amply competing voices. Adaptive sensory processing is especially beneficial in challenging listening conditions, when the incoming auditory information is noisy or unreliable (Luo, Wang, Kashani, and Yan, 2008). Through musical training, an individual may learn to pick out sound objects from a complex soundscape, and this improves the ability to track regularities in the environment. Selective enhancement of the sound stimulus in the brain may result from a superior ability to encode predictable, relevant events in the incoming sensory stream (Münste, Altenmüller and Jäncke, 2002; Parbery-Clark, Skoe and Kraus, 2009).

Music Training and Adolescent Auditory Development

Music has long been used as a therapeutic tool to alter mood and moderate emotion for both children and adults, but it is only recently that scientists have started to explore the physiological benefits that listening to and playing music can provide, and specifically how music helps auditory processing, a fundamental learning skill (Chalnick, 2016). Research has shown music therapy to be useful for all kinds of medical interventions — everything from pain attenuation to reducing blood pressure. More

recently, it was reported in Neuroscience News (2010) that music is not only healing, but it can improve cognitive and auditory processing as well. Lmerja (2016) noted that scientists have discovered that many individual undergoing musical training show enhancements in the auditory system and brain structure and function. Adolescents between the age of 12-18 years throughout their three years in high school undergoing musical training showed enhancements in the auditory system and neurodevelopment. They showed earlier adulthood mental responses, which means plasticity was happening faster. Thus, music has a great importance in the mental and auditory enrichment of adolescents (Lmerja, 2016). In a likely manner, music helps to make the auditory system more sensitive towards sounds and the experience in being a good listener helps the learning process. Adolescents in music training are good listeners because music improves their listening skills. In addition, there is evidence that short-term music training in early childhood correlates with musically relevant motor and auditory cortical changes (Hyde, Lerch and Norton, 2009). Studies that compare musicians and non-musicians have identified four determinants of music training related plasticity: age of training onset, number of years of continuous training (Wong, Skoe, Russo, Dees and Kraus, 2007), amount of practice (Musacchia, Strait and Kraus, 2008) and aptitude (Schneider, 2002). The cognitive-sensory aspects of music training promote neural plasticity and this improves auditory processing of music as well as of other sounds, such as speech (Kraus and Chandrasekaran, 2010). Plasticity is influenced by the extent to which a person actively engages in music training relatively early in their life (Trainor, 2005). The importance of the age of onset of music training can be gleaned from a study that controlled the number of years an individual engages in music training and practice to help in auditory development (Watanabe, Savion-Lemieux and Penhune, 2007).

Conclusion

The human auditory system is a unique system that is far different from mammal's auditory system. It develops the capacity to receive, interpret, and respond to complex language, as well as the capacity to hear, discern, and respond to music. The auditory system supports development of language as well as musical skills. Music training is a demanding task that involves active engagement with musical sounds and the connection of 'sound' to 'meaning', a process that is essential for effective communication through music, language and vocal emotion. Music has long been used as a therapeutic tool to alter mood and moderate emotion for both children and adults, and also music helps auditory processing, which is seen as a fundamental learning skill. Involvement in musical training promotes neural plasticity and helps in the development of auditory skill.

Recommendations

1. Seeing the beneficial impacts of music training on auditory development, these should be discussed in both government and musical institution to improve the quality and quantity of music training in schools.
2. Federal/State governments should allocate funds and help in deploying musical instruments to schools for effective music training of students.

REFERENCES

- Ashwell, K. (2016). *Barron's anatomy flash cards*. Barron's Educational Series
- Bilhartz, T. D., Bruhn, R. A. and Olson, J. E. (2000). The effect of early musical training on child cognitive development. *J Applied Dev Psychol.*, 20:615-636.
- Chalnick, J. (2016). How Music Helps Auditory Processing Disorder. Gemm Learning. Available at: <https://www.gemmlearning.com/>
- Chandrasekaran, B., Hornickel, J. M., Skoe, E., Nicol, T. and Kraus, N. (2009). Context-dependent encoding in the human auditory brainstem relates to hearing speech in noise: implications for developmental dyslexia. *Neuron* 64(1), 311–319.
- Gaser, C. and Schlaug, G. (2003). Brain structures differ between musicians and non-musicians. *J. Neurosci.* 23(1), 9240–9245.
- Graven, S. N. and Browne, J. (2008). Auditory Development in the Fetus and Infant. *Newborn and Infant Nursing Reviews*, 8(4):187-193.
- Habib, M. and Besson, M. (2009). What do music training and musical experience teach us about brain plasticity? *Music Percept.* 26(1), 279–285.
- Hall III JW. (2000). Development of the ear and hearing. *J Perinatol.*, 20(8 Pt 2): S12-S20.
- Hannon, E. E. and Trainor, L. J. (2007). Music acquisition: effects of enculturation and formal training on development. *Trends Cogn. Sci.* 11(1), 466–472.
- Hudziak, J. J., Albaugh, M., Ducharme, S. and Karama, S., Spottswood, M., Crehan, E., Evans, A. C. and Botteron, K. N. (2014). Cortical Thickness Maturation and Duration of Music Training: Health-Promoting Activities Shape Brain Development. *Journal of the American Academy of Child & Adolescent Psychiatry*, 7(3), 1-8
- Hyde, K. L., Lerch, J. and Norton, A. (2009). The effects of musical training on structural brain development: a longitudinal study. *Ann N Y Acad Sci.*, 1169(1):182-186.
- Kandel, E. R., Schwartz, J. H. and Jessell, T. M. (2000). *Principles of neural science*. 4th ed. New York: McGraw-Hill. p. 604.
- Kraus, N. and Chandrasekaran, B. (2010). Music training for the development of auditory skills. *Nature Reviews Neuroscience*, 11(3), 599-609
- Kraus, N., Skoe, E., Parbery-Clark, A. and Ashley, R. (2009). Experience-induced malleability in neural encoding of pitch, timbre, and timing. *Ann. NY Acad. Sci.* 1169, 543–557.
- Lalitte, F. (2008). Learning music: prospects about implicit knowledge in music, new technologies and music education. Barbara Tillmann, Lyon, France. Available at: https://www.researchgate.net/publication/302013398_Learning_Music
- Lmerja (2016). *Music training enhances the auditory system of an adolescent!* WordPress.com.

- Luo, F., Wang, Q., Kashani, A. and Yan, J. (2008). Corticofugal modulation of initial sound processing in the brain. *J. Neurosci.*, 28(1), 11615–11621.
- Münste, T. F., Altenmüller, E. and Jäncke, L. (2002). The musician's brain as a model of neuroplasticity. *Nature Rev. Neurosci.*, 3(1), 473–478.
- Musacchia, G., Strait, D. and Kraus, N. (2008). Relationships between behavior, brainstem and cortical encoding of seen and heard speech in musicians and nonmusicians. *Hear. Res.* 241(1), 34–42.
- Neuroscience News (2010). *Neuroscience of Music: How Music Enhances Learning Through Neuroplasticity*. Neuroscience News.com
- Parbery-Clark, A., Skoe, E. and Kraus, N. (2009). Musical experience limits the degradative effects of background noise on the neural processing of sound. *J. Neurosci.*, 29(1), 14100–14107.
- Peretz, I. and Zatorre, R. J. (2005). Brain organization for music processing. *Annu. Rev. Psychol.*, 56(1), 89–114.
- Ronca, A. E., Alberts, J. R. and Lecanuet, J. P. (2005). *Maternal contribution to fetal experience and the transition from prenatal to postnatal life*. Fetal development: a psychobiological perspective. Hillsdale (NJ): Lawrence Erlbaum Associates. p. 331-350.
- Schneider, P. (2002). Morphology of Heschl's gyrus reflects enhanced activation in the auditory cortex of musicians. *Nature Neurosci.* 5(1), 688–694.
- Swaminathan, S. and Schellenberg, E. G. (2016). *Music Training*. Springer International Publishing Switzerland. Pp. 137-144
- Tillotson, J. K. and McCann, S. (2013). *Kaplan medical anatomy flashcards*. Kaplan Publishing.
- Trainor, L. J. (2005). Are there critical periods for musical development? *Dev. Psychobiol.*, 46(1), 262–278.
- Trainor, L. J., Samuel, S. S., Desjardins, R. N. and Sonnadara, R. R. (2001). Measuring temporal resolution in infants using mismatch negativity. *Neuroreport*, 12(1), 2443-2448.
- Trainor, L. J., Shahin, A. J. and Roberts, L. E. (2009). Understanding the Benefits of Musical Training Effects on Oscillatory Brain Activity. *Ann. N.Y. Acad. Sci.* 1169(1): 133–142
- Watanabe, D., Savion-Lemieux, T. and Penhune, V. (2007). The effect of early musical training on adult motor performance: evidence for a sensitive period in motor learning. *Exp. Brain Res.* 176(1), 332–340.
- Werner, L. A. (2007). *Human Auditory Development*. University of Washington, Seattle, Washington D. C.
- Wikipedia (2014). *Auditory system*. In Wikipedia, The Free Encyclopedia. Retrieved

from: https://en.wikipedia.org/wiki/Auditory_system

Winkler, I., Denham, S. L. and Nelken, I. (2009). Modeling the auditory scene: predictive regularity representations and perceptual objects. *Trends Cogn. Sci.*, 13(1), 532–540.

Wong, P. C., Skoe, E., Russo, N. M., Dees, T. & Kraus, N. (2007). Musical experience shapes human brainstem encoding of linguistic pitch patterns. *Nature Neurosci.* 10(1), 420–422.

Zatorre, R. and McGill, J. (2005). Music, the food of neuroscience? *Nature* 434(1), 312–315.

Traditional Dance as a Determinant of Physical Fitness and Well-Being of the Elderly

BY

Peters H. REIGNS, Ph.D
Department of Theatre Arts
University of Rochester
Rochester
New York City

ABSTRACT

The study was conducted to examine how traditional dance determines physical fitness and well-being of the elderly. Participating in dance may allow the elderly to improve their physical fitness, health and well-being. Another advantage is that they can significantly improve their aerobic capacity, lower body muscle endurance, strength and flexibility, balance, agility and gait through the dancing. Regular physical activity is considered one of the most important factors for lifestyle, maintaining good health in older ages and increasing life expectancy. Dance as a musical-kinetics skill, requires the coordination of body movements with rhythmic stimuli, developing the adaptability of the movement. Elderly seem to enjoy dancing as an activity while maintaining their functionality. Probably the elderly in traditional dance cause prosperity in their lives by promoting active aging. The study revealed that traditional dance has a way of impacting on physical fitness and well-being of the elderly. Hence, the study concluded how traditional dance impact on physical fitness and well-being of the elderly, it was believed that traditional dancing could be an important and effective tool for the prevention and the fight against the health problems of the elderly. The study show that traditional dancing contributes to the well-being of the elderly with a view of independent and quality living. Maintaining their physical fitness and functional capacity at satisfactory levels, lead them to a more qualitative and independent lifestyle while the risk of various diseases is reduced. One of the recommendation was that elderly should engage in traditional dancing on a regular basis to have better balance, postural stability and flexibility.

KEYWORD: Traditional Dance, Physical Fitness, Well-Being and Elderly

Introduction

Traditional Dance is considered an activity that offers the involvement of different senses and connects movement to music with self-expression and applies different aspects of personality (Kaufmann, 2011; Studer-Lüthi and Züger, 2012). Music, which is an important component of dance, improves physical performance. It's easier going to start moving, walking, dancing or to deal with any kind of exercise if some people choose their favorite music. Kattenstroth et al. (2011) showed that elderly people dancing on a regular basis have better balance, postural stability, flexibility and physical reaction time. Hui et al. (2009) shown that after 24 sessions for 52 adults aged 68 on average and trained in low-impact aerobic dancing, the dancers had improved their dynamic balance in Time Up-and-Go test, but not their static balance. Moreover, dance has been proposed as an actual promising program for the development and

improvement of balance and to prevent falls in the elderly people (Judge, 2003).

The percentage of people aged 60 and over is growing faster worldwide than any other age group, and the resulting aging population presents challenges and opportunities for all countries increased due to new social and economic demands. Countries adapting to this changing demographic, invest in healthy aging to enable people to live longer and have a healthy life. Healthy Ageing involves creating an environment that allows people to engage actively throughout their lives. Both the elderly and the environments in which they live are diverse, dynamic, changing and playing an important role in determining the physical and mental ability throughout a person's life. In interaction with each other, they possess incredible possibilities to allow or limit healthy aging (World Health Organisation, 2018). Regular physical activity is considered one of the most important factors for lifestyle, maintaining good health in older ages and increasing life expectancy (Lee et al., 2012).

In surveys with elderly people, it seems that physical fitness may have beneficial effects on cognitive and the physical functions (Villareal et al., 2011). In addition, physical activity in the elderly is associated with increased survival (Manini et al., 2006; Stessman et al., 2009). In another study it seems that physical activity when done regularly, delaying the reduction of functional abilities associated with aging and sometimes reverses the loss and morbidity (Nied and Fraklin, 2002). The activities proposed for the elderly should lead to the improvement or maintenance of physical and mental health (Stathi et al., 2004). Tsimaras et al. (2012) investigated the impact of a Greek dance program in 13 adults with hearing problems in their aerobic capacity and muscle tone. After 12 weeks of dance program observed significant progress in physiological peak parameters such as oxygen consumption and exhaustion time. Other research with Greek traditional dance, performed on people with breast cancer, showed improvement in their physical functioning, satisfaction with their lives as well as reducing depression symptoms (Kaltsatou et al., 2011).

The advanced age besides changes in physical fitness, increases sensitivity to chronic diseases and disabilities, and reduces the quality of life (Wanderley et al., 2015). In many studies it has been shown that the combination of exercise with nutrition is considered effective intervention for elderly people. Improving or maintaining their nutritional status combined with exercise is associated with many benefits, including increased physical fitness and strength, reducing the incidence of sarcopenia, reducing functional loss and rehabilitation of musculoskeletal injuries, reducing the risk of falls and/or their frequency. Also, improving gait and balance, their quality of life and mortality and morbidity of diseases by 30% of all causes (Weening-Dijksterhuis et al., 2011; Cadore et al., 2013). The satisfaction of life is observed as a basic characteristic of well-being, constitutes a provision for physical health and has gradually entered a more central in healthcare systems (Fugl-Meyer et al., 2002; Daig et al., 2009). Alternative categories of exercise programs have been performed in elderly people (Sofianidis et al., 2009). Dance of any type is being used for many years as a treatment modality. Dance involves elderly people and increases their motivation (Lima and Vieira, 2007). Furthermore, it has been shown in investigations that elderly people are excited when participating in dance programs, thus improving the quality of life, balance and mobility (Song et al., 2004; Federici et al., 2005).

Concept of Physical Fitness

Physical fitness refers to the ability of your body systems to work together efficiently to allow you to be healthy and perform activities of daily living. Being efficient means doing daily activities with the least effort possible. A fit person is able to perform schoolwork, meet home responsibilities, and still have enough energy to enjoy sport and other leisure activities. A fit person can respond effectively to normal life situations, such as raking leaves at home, stocking shelves at a part-time job, and marching in the band at school. A fit person can also respond to emergency situations - for example, by running to get help or aiding a friend in distress. (Corbin, & Masurier, 2017). Physical fitness is a state of health and well-being and, more specifically, the ability to perform aspects of sports, occupations and daily activities. Physical fitness is generally achieved through proper nutrition, (Tremblay et al 2010) moderate-vigorous physical exercise and sufficient rest. (De Groot & Fagerström 2011 and Malina 2010). Physical fitness refers to maximum functional capacity of all system of the body. We are exercising whenever we move and keeping our body tuned and in a good running order. The body of human is framed in such a way that it can jump, climb, bend, stretch and do more tedious work. (Sportsjone 2018). The human body becomes stronger as it exerts more and muscles involvement matters a lot in shaping it. Exercise helps in improving our health and builds up our energy and stamina. In simple terms, "physical fitness" refers to the ability of the body to adapt to external environment and cope with daily activities. Good physical fitness not only enables a person to carry out daily works, but also gives extra energy to enjoy leisure, ensuring the body can adapt to unexpected environmental changes and daily pressures. (LCSD 2018).

Physical fitness has always been an important part of life. It is theorized that when people left a hunter-gatherer lifestyle and formed fixed communities based around agriculture that physical fitness levels declined. This is not to say that levels of physical labour decreased but that the type of work undertaken was not necessarily as conducive to a general level of fitness. (Wikipedia 2017). As such, regimented fitness regimes were either invented or became more common. This was especially the case in classical civilizations such as Ancient Greece and Rome. In Greece, physical fitness was considered to be an essential component of a healthy life and it was the norm for men to frequent a gymnasium. Physical fitness regimes were also considered to be of paramount importance in a nation's ability to train soldiers for an effective military force. Partly for these reasons, organized fitness regimes have been in existence throughout known history and evidence of them can be found in many countries.

Concept of Well-Being

The concept of wellbeing is very broad and is applied to many situations for a variety of purposes (Paim, 2005). Applications of the concept range from specific domains of wellbeing, such as economic, material, social, and psychological, to all the domains impacting upon people. The diversity results from the different reasons there are for using the concept and different approaches to measuring it. The particular measure or measures that are used – or developed for use in any particular context reflect the purpose of the measurement and the disciplinary and theoretical perspectives that inform the measurement. Veenhoven (2004) suggests that, very broadly, the term 'wellbeing' "denotes that something is in a good state." Beyond that, the term does not, in itself, specify what is in a good state, nor the criteria for being in a good state. As with

other 'catchall' terms, such as 'progress' and 'welfare'. The term 'wellbeing' needs to be clarified by specifying what the term applies to and what constitutes it (a state of wellbeing). As far as the first question is concerned, the approaches to wellbeing that are discussed in this paper focus on the wellbeing of people, whether through the satisfaction of their preferences or the exercise of their capabilities.

Bradburn cited in Dodge, Daly, Huyton & Saunders, (2012) defined wellbeing as being present when an individual is high in psychological wellbeing, where an excess of positivity (positive affect) predominates over negative affect. In contrast, Shah and Marks (2004) argued that wellbeing is more than just positive affect (happiness, feeling satisfied), with feeling fulfilled and developing as a person an equally important aspect in defining wellbeing. Diener et al. (2000) extend the definition of wellbeing even further by defining wellbeing as *subjective wellbeing*, {SWB} more specifically as consisting of three essential interrelated components: life satisfaction, pleasant affect, and unpleasant affect. McCallum and Price (2016) propose an even more encompassing definition of wellbeing, outlining it as diverse and fluid, respecting the beliefs and values of individual, family, and community; and experiences, culture, opportunities, and contexts across time and change.

Wellbeing is in general a term used to describe a condition of an individual or a group, with reference to the social, economic, psychological, spiritual or medical attention. A high level of wellbeing is, in a sense, a positive experience of an individual or group. Similarly, a low level is associated with negative experience. But in general terms, the popular wellbeing is linked to and in close liaison with health. The two terms are used together; for example, in a report released in 2012 on a study of health determinants and social status, on young people aged between 11 and 15 years (Currie et al 2012). The approach of wellbeing from a subjective point of view actually means, asking individuals for opinions about their own perception on wellbeing. Thus, we can ask questions regarding the satisfaction in life (Diener, Emmons, Larsen & Griffin 2007). or we can use an index based on questions relating to eight different aspects of life and how wellbeing influences health. Thus, we can collect data on how different dimensions of life influence wellbeing.

They also aver that wellbeing can be described in very broad terms as a holistic, balanced life experience where wellbeing needs to be considered in relation to how an individual feels and functions across several areas, including cognitive, emotional, social, physical, and spiritual wellbeing (McCallum & Price, 2016). Some accounts of well-being (Boehm, Peterson, Kivimaki, & Kubzansky, 2011) include optimism--the general expectation that one will experience more positive than negative outcomes in life (Carver & Scheier, 2003). The disposition to be optimistic is associated with greater satisfaction and happiness and lower levels of depression and stress, lower risk of health problems and faster recovery from illness (Boehm & Kubzansky, 2012). Manderson (2005a) viewed that wellbeing is not just the state of individual bodies but of bodies in society. And: wellbeing includes more than physical and mental health: it incorporates a sense of satisfaction, contentment, personal fulfilment and existential calm; much more so than health, it is a social construct (Manderson, 2005a; Tov, 2018).

Concept of Elderly

Elderly refers to ages nearing or surpassing the life expectancy of human beings, and is

thus, the end of the human life cycle. Terms and euphemisms include old people, the elderly worldwide usage, OAPs British usage which stands for Old Age Pensioner, seniors American usage, senior citizens American usage, older adults in the social sciences, and the elders in many cultures including the cultures of aboriginal people. (APA 2009). Elderly people often have limited regenerative abilities and are more susceptible to disease, syndromes, injuries and sickness than younger adults. The organic process of ageing is called senescence, the medical study of the aging process is called gerontology and the study of diseases that afflict the elderly is called geriatrics. The elderly also face other social issues around retirement, loneliness, and ageism. (BBC 2016). Old age is not a definite biological stage, as the chronological age denoted as "old age" varies culturally and historically. In 2011, the United Nations proposed a human rights convention that would specifically protect older persons. (OHCHR 2015).

Conventionally, "elderly" has been defined as a chronological age of 65 years old or older, while those from 65 through 74 years old are referred to as "early elderly" and those over 75 years old as "late elderly" (Orimo, Ito, Suzuki, Araki, Hosoi and Sawabe, 2006). Most developed world countries have accepted the chronological age of 65 years as a definition of 'elderly' or older person, but like many westernized concepts, this does not adapt well to the situation in Africa. Today, people are living longer than ever before due to advances in education, technology, medicine, food distribution, and sanitary conditions. Aging is a lifelong process of growing up and growing old. It begins at conception and ends with death. So, in this sense, we are all aging from the time of birth (Chalise, 2019). Old age comprises "the later part of life; the period of life after youth and middle age usually with reference to deterioration". At what age old age begins cannot be universally defined because it differs according to the context. The United Nations has agreed that 65+ years may be usually denoted as old age. World Health Organization (2016). This is the first attempt at an international definition of old age. However, for its study of old age in Africa, the World Health Organization (WHO) set 55 as the beginning of old age. At the same time, the WHO recognized that the developing world often defines old age, not by years, but by new roles, loss of previous roles, or inability to make active contributions to society.

Most developed Western countries set the age of 60 to 65 for retirement. Being 60–65 years old is usually a requirement for becoming eligible for senior social programs. (Barry, 2016). However, various countries and societies consider the onset of old age as anywhere from the mid-40s to the 70s. The definitions of old age continue to change, especially as life expectancy in developed countries has risen to beyond 80 years old. In October 2016, a paper published in the science journal *Nature* presented the conclusion that the maximum human lifespan is an average age of 115, with an absolute upper limit of 125 years. (Dong, Milholland, & Vijg, 2016). However, the authors' methods and conclusions drew criticism from the scientific community, who concluded that the study was flawed. (Van Santen 2016)

Conclusion

This study revealed how traditional dance impact on physical fitness and well-being of the elderly, it was believed that traditional dancing could be an important and effective tool for the prevention and the fight against the health problems of the elderly. The study show that traditional dancing contributes to the well-being of the elderly with a view of independent and quality living. Maintaining their physical fitness and functional

capacity at satisfactory levels, lead them to a more qualitative and independent lifestyle while the risk of various diseases is reduced.

Recommendation

Based on the findings of this study, the following recommendations were deemed necessary:

1. Elderly should engage in traditional dance on a regular basis to have better postural stability, balance and flexibility.
2. Government should create a good environment or atmosphere for physical fitness, for the well-being of the elderly.
3. Disciplinary measures should be adopted in safeguarding the environment for the physical fitness and well-being of the elderly.

REFERENCES

- American Psychological Association, (2009). *Publication Manual of the American Psychological Association*, 6th edition
- Barry, P. (2016) "Medicare Eligibility Requirements – How to Qualify for Medicare – AARP Everyw..." AARP. Retrieved 2016-04-13.
- BBC (2016). "Jeremy Hunt highlights plight of 'chronically lonely' – BBC News". Bbc.co.uk. 2013-10-18. Retrieved 2016-04-04
- Boehm, J. K., & Kubzansky, L. D. (2012). The heart's content: The association between positive psychological well-being and cardiovascular health. *Psychological Bulletin*, 138(1), 655–691.
- Boehm, J. K., Peterson, C., Kivimaki, M., & Kubzansky, L. (2011). A prospective study of positive psychological well-being and coronary heart disease. *Health Psychology*, 30(1), 259–267
- Cadore E. L., Rodríguez-Mañas L., Sinclair A., Izquierdo M. (2013). Effects of different exercise interventions on risk of falls, gait ability, and balance in physically frail older adults: a systematic review. *Rejuvenation Res.* 16, 105–114.
- Carver, C. S., & Scheier, M. F. (2003). *Optimism*. In C.R. Snyder & S.J. Lopez (Eds.), *Positive psychological assessment: A handbook of models and measures* (pp. 75-89). Washington, DC: American Psychological Association.
- Chalise, H. N. (2019). Aging: Basic Concept. *Am J Biomed Sci & Res.*, 1(1), 8-10
- Corbin, C. & Masurier, G. (2017). *What is Physical Fitness*. Human kinetics: An Employee-Owned Company.
- Currie, C., Zanotti, C., Morgan, A., Currie, D., De Looze, M., Roberts, C., Samdal, O. Smith, F. & Barnekov, V. (2012) Social determinants of health and well-being among young people. Health behavior in school-aged children (HBSC) study: international report from the 2009/2010 survey, *WHO Regional Office for Europe, Copenhagen*, 2012, 1-44.
- Daig I., Herschbach P., Lehmann A., Knoll N., Decker O. (2009). Gender and age differences in domain-specific life satisfaction and the impact of depressive and anxiety symptoms: a general population survey from Germany. *Qual. Life Res.* 18, 669–678.
- De Groot GC, Fagerström L (2011). "Older adults' motivating factors and barriers to exercise to prevent falls". *Scandinavian Journal of Occupational Therapy.* 18 (2): 153–60.
- Diener, E. (2000). SWB: The science of happiness, and a proposal for a national index. *American Psychologist*, 55(1), 34-43.
- Diener, E., Emmons, R., Larsen, J. & Griffin, S. (2007). The approach of wellbeing from a subjective point of view. *Journal of Personality Assessment*, 49(1) 71-75.

- Dodge, R., Daly, A., Huyton, J., & Sanders, L. (2012). The challenge of defining wellbeing. *International Journal of Wellbeing*, 2 (3),222-235.
- Dong, X., Milholland, B. & Vijg, J. (2016). "Evidence for a limit to human lifespan". *Nature*. 538 (7624): 257–259.
- Federici A., Bellagamba S., Rocchi M. (2005). Does dance-based training improve balance in adult and young old subjects? A plot randomized controlled trial. *Aging Clin. Exp. Res.* 17, 385–389.
- Fugl-Meyer A. R., Melin R., Fugl-Meyer K. S. (2002). Life satisfaction in 18-to 64-year-old Swedes: in relation to gender, age, partner and immigrant status. *J. Rehabil. Med.* 34, 239–246.
- Hui E., Chui B., Woo J. (2009). Effects of dance on physical and psychological well-being in older persons. *Arch. Gerontol. Geriat.* 49, e45–e50.
- Judge J. O. (2003). Balance training to maintain mobility and prevent disability. *Am. J. Prev. Med.* 25, 150–156.
- Kaltsatou A., Mameletzi D., Douka S. (2011). Physical and psychological benefits of a 24-week traditional dance program in breast cancer survivors. *J. Bodyw. Mov. Ther.* 15, 162–167.
- Kattenstroth J. C., Kalisch T., Kolankowska I., Dinse H. R. (2011). Balance, sensorimotor and cognitive performance in long-year expert senior ballroom dancers. *J. Aging Res.* 2011:176709.
- Kaufmann K. (2011). Movement as a metaphor: how persistence, the tao and the wisdom of the ostrich helped build school dance programs. *J. Phys. Educ. Recreat. Dance* 82, 37–45.
- LCSD (2018) Physical Fitness Leisure and Cultural Services Department (Hong Kong). Available at: https://www.lcsd.gov.hk/en/healthy/physical_fitness/concept.html
- Lee I. M., Shiroma E. J., Lobelo F., Puska P., Blair S. N., Katzmarzyk P. T. (2012). Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. *Lancet* 380, 219–229.
- Lima M. M., Vieira A. P. (2007). Ballroom dance as therapy for the elderly in Brazil. *Am. J. Dance Ther.* 29, 129–142.
- Malina R (2010). Physical activity and health of youth. Constanta: Ovidius University Annals, Series Physical Education and Sport/Science. *Movement and Health*.
- Manderson, L. (2005a.) *The social context of wellbeing*. In Manderson, L. (ed.) Rethinking Wellbeing. Perth: API Network, Australia Research Institute, Curtin University of Technology.
- Manini T. M., Everhart J. E., Patel K. V., Schoeller D. A., Colbert L. H., Visser M. (2006). Daily activity energy expenditure and mortality among older adults. *JAMA* 296, 171–179.

- McCallum, F. & Price, D. (2016). *Nurturing wellbeing development in education: From little things, big things grow*. New York, N.Y: Routledge.
- Nied J. R., Fraklin B. (2002). Promoting and prescribing exercise for the elderly. *Am. Fam. Physician* 65, 419–426.
- OHCHR (2015). "*Human rights of older persons*". OHCHR.org. Office of the United Nations High Commissioner for Human Rights
- Orimo, H., Ito, H., Suzuki, T., Araki, A., Hosoi, T. and Sawabe, M. (2006). Reviewing the definition of "elderly". *Geriatrics and Gerontology International*, 6(3), 149-158
- Paim, L. (2005) "Definitions and measurements of wellbeing: a review of literature" *Journal of Economic and Social Measurement*. 21: 297-309
- Shah, H., & Marks, N. (2004). *A well-being manifesto for a flourishing society*. London, UK: The New Economics Foundation.
- Sofianidis G., Hatzitaki V., Douka S., Grouios G. (2009). Effect of a 10-week traditional dance program on static and dynamic balance control in elderly adults. *J. Aging Phys. Act.* 17, 167–180.
- Song R., June K. J., Kim C. G., Jeon M. Y. (2004). Comparisons of motivation, health behaviors, and functional status among elders in residential homes in Korea. *Public Health Nurs.* 21, 361–371.
- Sportsjone (2018) *Physical fitness- Concept, Meaning, Importance*. Available at: <https://sportsjone.com/physical-fitness-concept-meaning-importance/>
- Stathi A., McKenna J., Fox K. (2004). The experiences of older people participating in exercise referral schemes. *J. R. Soc. Prom. Health* 124, 18–23.
- Stessman J., Hammerman-Rozenberg R., Cohen A., Ein-Mor E., Jacobs J. M. (2009). Physical activity, function, and longevity among the very old. *Arch. Intern. Med.* 169, 1476–1483.
- Studer-Lüthi B., Züger B. (2012). Effects of dance intervention on body concept and cognitive abilities of normally developed children. *Musik, Tanz. Kunsttherapie* 23, 70–77.
- Tov, W. (2018). *Well-being concepts and components*. In E. Diener, S. Oishi, & L. Tay (Eds.), *Handbook of well-being*. Salt Lake City, UT: DEF Publishers.
- Tremblay MS, Colley RC, Saunders TJ, Healy GN, & Owen N (2010). "Physiological and health implications of a sedentary lifestyle". *Applied Physiology, Nutrition, and Metabolism*. 35 (6): 725–40.
- Tsimaras B., Giamouridou G., Kokaridas D., Sidiropoulou M., Patsiaouras A. (2012). The effect of a traditional dance training program on dynamic balance of individuals with mental retardation. *J. Strength Cond. Res.* 26, 192–198.
- Van Santen, H. (2016). "*Peer review post-mortem: how a flawed aging study was published in Nature*". NRC. Retrieved 11 December 2016.

- Veenhoven, R. (2004) “*Subjective measures of well-being.*” Discussion Paper No. 2004/07. United Nations University: WIDER.
- Villareal D. T., Chode S., Parimi N., Hilton T., Armamento-Villareal R., Napoli N., et al. (2011). Weight loss, exercise, or both and physical function in obese older adults. *N. Engl. J. Med.* 364, 1218–1229
- Wanderley F., Oliveira N., Marques E., Moreira P., Carvalho J. (2015). Aerobic versus resistance training effects on health-related quality of life, body composition and function of older adults. *J. Appl. Gerontol.* 34, 143–165.
- Weening-Dijksterhuis E., de Greef M. H., Scherder E. J., Slaets J. P., van der Schans C. P. (2011). Frail institutionalized older persons: a comprehensive review on physical exercise, physical fitness, activities of daily living and quality-of-life. *Am. J. Phys. Med. Rehabil.* 90, 156–168.
- Wikipedia (2017). *Physical fitness*. Available at: https://en.wikipedia.org/wiki/Physical_fitness
- World Health Organisation (2018). Ageing and Life Course. Available online at: <http://www.who.int/ageing/en/>.
- World Health Organization (2016). *WHO Definition of an older or elderly person*. World Health Organization. Retrieved 2016-04-04.

Evaluation of Intensive Music Instruction and Academic Success

BY

James M. WILSON, Ph.D
Wake Forest University,
Winston-Salem
North Carolina
United States of America

ABSTRACT

This study sought to examine the benefits of intensive music instruction to academic success. Students who are enrolled in music education program have higher standardized test scores compared to those who are not engaged in a music education program. Previous research has demonstrated the benefits of music training on a number of cognitive functions including verbal memory performance. Based on the study, it was observed that students who study music outperform better than their non-music peers in assessments of recalls, retention of verbal information's and foster superior working memory. Also, music education prepares students for learning by helping to develop their basic mental skills and capacities. One of the recommendations made, was that music educators should adapt and again show that music education is necessary for a well-rounded and all-inclusive education regardless of the means of assessment and evaluation.

Keyword: Intensive, Music, Instruction, Academic and Success

Introduction:

Music is an important part of human development that carries an emotional force in our day to day activities. It enhances our emotional well-being both in aspect of academics, culture and personal believe. Music instruction has special contribution towards boosting academic success and it is an important part of the education of a well-rounded student. As one of the arts, it balances the study of sciences and humanities to give students a creative outlet and exposes them to another sphere of learning. Music is taught from elementary to high school, and there are many different components to the subject. Classes can teach students to read and write music, to sing and play instruments, or focus on the history of music. Music instruction seeks to develop children's musical skills, expand their interpretative abilities and increase their overall appreciation of music (Teach.Com, 2020). According to the Music Educators National Conference (MENC), there are many personal benefits to participating in music education including confidence, self-esteem, and a sense of accomplishment (Music Educators National Conference, 2002). It shapes and molds character with self-assurance and stability; and has the added bonus of public performance which helps to conquer the fear of getting up in front of people. Furthermore, learning a musical instrument fosters good habits such as focus, mental discipline, staying with a task until its completion and it allows for the expression of emotions (Music Educators National Conference, 2014a). Music instruction comprises the application of educational methods in teaching music. Specifically, the inclusion of music education encompasses many areas of instruction, including music history, music theory, and proficiency in a

musical instrument, singing skills, and general music skills. Intensive music instruction can be reviewed as an object that sharpens the mental alertness of students and facilitate positive impact in their academic success.

Music advocates are convinced that instruction in music can help children learn in school. Moreover, music advocates believe that music has increased value for academic achievement for all students. In order to bring about a statewide and national implementation of music education in the general curriculum, legislatures and other school policy makers must also be convinced of its value (Akin, 2019). Educational research demonstrates the positive effect of music curriculum in developing academic achievement skills (Akin, 2019). Thus, music advocates, building on actual practices of contemporary music projects, are hopeful that music education can become available to more students, more schools, more districts, and more communities, even in the current climate of high stakes testing and accountability (Rabkin & Redmond, 2004). Consequently, the purpose of this study is to provide both music and non-music educators additional information regarding the impact of music education on academic achievement or success.

Conceptual Review

Concept of Music

According to Bakan (2011) Music is humanly organized sound. It is an intentionally organized art form whose medium is sound and silence, with core elements of pitch (melody and harmony), rhythm (meter, tempo, and articulation), dynamics, and the qualities of timbre and texture. Music means different things to different individuals or can be valued base on personal perception or believe. Also an age means of passing a message across to the people in the society. Beyond a standard definition of music, there are behavioral and cultural aspects to consider. As Tilton notes in his seminal text *Worlds of Music* (2008), we “make” music in two different ways: we make music physically; i.e., we bow the strings of a violin, we sing, we press down the keys of a piano, we blow air into a flute. We also make music with our minds, mentally constructing the ideas that we have about music and what we believe about music; i.e., when it should be performed or what music is “good” and what music is “bad.” For example, the genre of classical music is perceived to have a higher social status than popular music; a rock band’s lead singer is more valued than the drummer; early blues and rock was considered “evil” and negatively influential; we label some songs as children’s songs and deem them inappropriate to sing after a certain age; etc.

Music, above all, works in sound and time. It is a sonic event—a communication just like speech, which requires us to listen, process, and respond. To that end, it is a part of a continuum of how we hear all sounds including noise, speech, and silence. Where are the boundaries between noise and music? Between noise and speech? How does some music, such as rap, challenge our original notions of speech and music by integrating speech as part of the music? How do some compositions such as John Cage’s 4’33” challenge our ideas of artistic intention, music, and silence? (Milne library 2017).

Music instruction as well as the benefits received from music education instructions are evaluated by not only potential and current music education students but also their parents, teachers, administrators, and other stakeholders (Hargreaves, Marshall, &

North, 2003). This evaluation of value is true for many other elective or voluntary courses that are in public schools today. For students specifically, there are many aspects of a program evaluated before a student decides to invest their time into that elective or not. When a student sees that there is a substantial benefit to a program, such as music education, both socially and academically, they are more inclined to participate in that program. As students evaluate and participate in programs, like music education, other stakeholders begin to see value in the programs as well. When it pertains to student success and overall wellness, music education has created a standard that generates the environment conducive to student success not just in music but in other classes as well.

Music educators must adapt and again show that music education is necessary for a well-rounded and all-inclusive education regardless of the means of assessment and evaluation.

Concept of Intensive Music Instruction

Music has been integral to human development and advancement with the power to convey powerful emotions. It is not surprising that music is played all across the globe and that it has been found advantageous in the field of medicine. Music has been shown to help surgeons perform operations faster and to help in neurologic recovery following traumatic brain insults. (Siu, et al 2010 & Thaut, et al 2009). Music therapy is also unique in that it is very safe and the cost of implementation is low. Most hospitals have an easy listening TV channel that couples peaceful music and imagery.

The intensive care unit is a unique patient care experience. It is an extremely busy and loud place with frequent alarms and flashing lights where sleep often eludes patients. Therefore, the first question was whether music therapy improves a patient's sleep quality in the ICU over standard care without the addition of music. Su developed a randomized controlled trial in which patients were randomized to non-commercial music for 45 minutes at nocturnal sleep time or usual care with no music. The music consisted of sedating piano pieces composed by the authors of the study. Polysomnography was recorded for the first two hours of sleep. Results showed that stage N2 sleep was shorter by 5.2 minutes and stage N3 sleep was longer by 6.5 minutes in the first two hours. Patients in the music group had significantly lower heart rates and reported improved sleep quality over the control group.⁶

The second question was whether music is actually beneficial or is it simply the reduction in background ICU noise that offers benefits. In the largest music focused clinical trial to date, Chlan found that there are multiple benefits to music therapy.

Roles of Music Instruction in Academic Success

Music is an essential ingredient that boost an individual inspirational IQ towards academic success. It carries a powerful emotional effect on individual academic success. Also, the positive impact of music on populace has increased the level captivation of listeners globally. The power of intensive music instruction was the major reason why some sectors like education, economy and transport adopt the placement of TV channels and other listening gargets in their various offices. This helps to relieve the listeners of boredom. According to (schellenberg 2004) state that being involved in learning music can improve one's intellectual development or sagacity. Moreover,

musical aptitude is related to general intelligence (Lynn et al. 1989). Thus, it can be argued that learning music can probably improve musical aptitude as well as non-musical abilities (Schellenberg 2004). This assumption is in line with the concept of "musical aptitude in development," since musical potential is affected by the quality of environmental aspects. According to Gordon (2000), this occurs at an early age and continues until the child is 9 years old. Additionally, musical aptitude is also related to better academic achievement (Young 1971, Johnson 2000). Music lessons produce a small increase in IQ (Schellenberg 2004) and have slight positive associations with measures of intelligence (Schellenberg 2006). Schellenberg (2006) reported that music lessons were also positively associated with academic performance, even after the individual differences in general intelligence were established. Many researchers in field of neuromusicology shows that music is powerful tool for improving special-temporal reasoning. That is cognitive ability to observe in detail pictures and to recognize, compare and establish relations between patterns and details of some subject. Temporal element hires child ability to think in advance. This fact we can explain with action of playing some instrument, where a child needs to play one note, than few of them, and then line of few accords, and in that point, a child needs to think in advance, so that he could be able to be in ahead of music, to decide what to play next. Besides those activities, a child is using most of its senses

While playing some instrument, an eye for reading of notes, hand to play those notes, and foots to synchronize and press the pedal. All these activities require a level of concentration, ability to memorize, motor coordination and recognition of symbols. Because of all those activities, those children have higher level of executive functions, a category of interlingua tasks, which includes playing, strategizing and attention to detail and require simultaneous analyses of both cognitive and emotional aspects. Both sides of cerebral cortex, plus frontal and occipital lobe participating achieving those activities. According to (Davenport,2010). Music has provided many students with an exposure to a variety of learning experiences that can manifest a positive and lasting influence on youth development. However, during the last several decades of education in the United States, there has been a dramatic shift toward an emphasis on standardized test scores in core subject areas such as reading, mathematics, and science. This emphasis on core subjects and standardized tests, as the primary measure of academic success, has had the effect of marginalizing non-core subjects such as physical education, art, chorus, and instrumental music (Armstrong, 2006).

Benefits of Intensive Music in Academic Success

Music education prepares students to learn. Music education readies students for learning by helping them to develop their basic mental skills and capacities. Intensive music instruction impacts learning in the following ways:

Enhances fine motor skills: Motor function is the ability to use small, acute muscle movements to write, use a computer, and perform other physical activities essential for classroom learning. The parts of the brain associated with sensory and motor function are developed through music instruction, and musically trained children have better motor function than non-musically trained children (Forgeard, 2008; Hyde, 2009; Schlaug et al., 2005)

Prepares the brain for achievement: Complex math processes are more accessible to students who have studied music because the same parts of the brain used in processing math are strengthened through practice in music. For example, students who take music in middle school score significantly higher on algebra assessments in ninth grade than their non-music counterparts, as their brains are already accustomed to performing the processes used in complex math (H elmrich, 2010).

Fosters superior working memory: Working memory is the ability to mentally hold, control and manipulate information in order to complete higher-order tasks, such as reasoning and problem solving. Musicians are found to have superior working memory compared to non-musicians. Musicians are better able to sustain mental control during memory and recall tasks, most likely as a result of their long-term musical training (Berti et al., 2006; Pallesen et al., 2010).

Cultivates better thinking skills: Thinking skills such as abstract reasoning are integral to students' ability to apply knowledge and visualize solutions. Studies have shown that young children who take keyboard lessons have greater abstract reasoning abilities than their peers, and these abilities improve over time with sustained training in music (Rauscher, 2000). Music is a magical gift we must nourish and cultivate in our children, especially now as scientific evidence proves that an education in the arts makes better math and science students, enhances spatial intelligence in newborns, and let's not forget that the arts are a compelling solution to teen violence, certainly not the cause of it!" Michael Greene, Recording Academy President and CEO at the 42nd Annual Grammy Awards, February 2000. Perhaps the basic reason that every child must have an education in music is that music is a part of the fabric of our society. The intrinsic value of music for each individual is widely recognized in the many cultures that make up American life & emdash; indeed, every human culture uses music to carry forward its ideas and ideals. The importance of music to our economy is without doubt. And the value of music in shaping individual abilities and character are attested in a number of places:

Secondary students who participated in band or orchestra reported the lowest lifetime and current use of all substances (alcohol, tobacco, illicit drugs). Texas Commission on Drug and Alcohol Abuse Report. Reported in Houston Chronicle, January 2016. Success in society, of course, is predicated on success in school. Any music teacher or parent of a music student can call to mind anecdotes about effectiveness of music study in helping children become better students. Skills learned through the discipline of music, these stories commonly point out, transfer to study skills, communication skills, and cognitive skills useful in every part of the curriculum.

Another common variety of story emphasizes the way that the discipline of music study; particularly through participation in ensemble; helps students learn to work effectively in the school environment without resorting to violent or inappropriate behavior. And there are a number of hard facts that we can report about the ways that music study is correlated with success in school: "Music has a great power for bringing people together. With so many forces in this world acting to drive wedges between people, it's important to preserve those things that help us experience our common humanity." Ted Turner, Turner Broadcasting System (Central VPA High School, 2016). Each of us wants our children; and the children of all those around us to achieve success in school, success in employment, and success in the social structures through which we move.

But we also want our children to experience "success" on a broader scale. Participation in music, often as not based on grounding in music education during the formative school years, brings countless benefits to each individual throughout life. The benefits may be psychological or spiritual, and they may be physical as well. Studying music encourages self-discipline and diligence, traits that carry over into intellectual pursuits and that leads to effective study and work habits. An association of music and math has, in fact, long been noted. Creating and performing music promotes self-expression and provides self-gratification while giving pleasure to others. In medicine, increasing published reports demonstrate that music has a healing effect on patients. For all these reasons, it deserves strong support in our educational system, along with the other arts, the sciences, and athletics" (Michael and DeBakey, 2014).

Improves recall and retention of verbal information: Musical training develops the region of the brain responsible for verbal memory the recall and retention of spoken words which serves as a foundation for retaining information in all academic subjects. Music students who were tested for verbal memory showed a superior recall for words as compared to non-music students (Ho et al. 2003).

Advances math achievement: Students who study music outperform their non-music peers in assessments of math, and the advantage that music provides increases over time. These findings hold true regardless of socio-economic status and race/ethnicity (Baker, 2011). Additionally, students involved in instrumental music do better in algebra, a gateway for later achievement (Helmrich, 2010; U.S. National Mathematics Advisory Panel, 2008).

Boosts reading and English language arts (ELA) skills: Students who study music surpass non-music students in assessments of writing, using information resources, reading and responding, and proofreading. The gains in achievement of music students compared to non-music students increase over time (Baker, 2011).

Increases average SAT scores: The SAT is a standardized test designed to measure "readiness for college." An analysis of 10 years of SAT data revealed that students who took four years of arts courses in high school earned the highest scores on both the verbal and math SAT, but overall, students taking any arts courses scored significantly higher than students who took no arts courses (Vaughn et al., 2000). Of these students, those who took music courses earned the highest math and second highest verbal SAT scores (College Board, 2010).

Conclusion

The study concluded that students who study music outperform better than their non-music peers in assessments of recalls, retention of verbal information's and foster superior working memory. Also, music education prepares students for learning by helping to develop their basic mental skills and capacities. Finally, in medicine, increasing published reports demonstrate that music has a healing effect on patients. For all these reasons, it deserves strong support in our educational system, along with the other arts, the sciences, and athletics.

Recommendation

1. Music educators should adapt and again show that music education is necessary for a well-rounded and all-inclusive education regardless of the means of assessment and evaluation.
2. Any music educator or parents of the students should bear in mind the good secret about intensive music instructions is that it helps children become better students.
3. All the public and private schools should adopt intensive music instruction in their academic calendar in order to enhance students' performance.
4. Mathematics processes are more accessible to students who have studied music because the same parts of the brain used in processing mathematics are strengthened through practice in music.

REFERENCES

- Akin, M. (2019). Music enhances category fluency in healthy older adults and Alzheimer's disease patients. *Experimental Aging Research* 31(1), 91–99.
- Armstrong, T. (2006). *The best schools: How human development research should inform educational practice*. Retrieved from the Association for Supervision and Curriculum Development.
- Bakan, M. (2011). *World music: Traditions and transformations*. New York, NY: McGraw-Hill.
- Baker, R. A. (2011). *The relationship between music and visual arts formal study and academic achievement on the eighth-grade Louisiana educational assessment program (LEAP) test: A dissertation*. (Unpublished doctoral dissertation). Louisiana State University, Louisiana.
- Berti, S., et al. (2006). Different Interference Effects in Musicians and a Control Group. *Experimental Psychology*, 53(2), 111-116.
- Central VPA High School (2016). *Benefits of Music Education*. Central VPA High School, S. Kingshighway, St. Louis.
- College Board. (2010). *2010 College-bound Seniors Total Group Profile Report*. New York
- Davenport, K. O. (2010). *The Effects of Participation in School Instrumental Music Programs on Student Academic Achievement and School Attendance (Doctoral dissertation, Tennessee State University)*. Ann Arbor, MI: University Microfilms International (UMI).
- Forgeard M, Winner E, Norton A, Schlaug G (2008) *Practicing a musical instrument in childhood is associated with enhanced verbal ability and nonverbal reasoning*. PLoS ONE 3: e3566.
- Gordon E. (2000). *Teoria da Aprendizagem Musical para Recém-nascidos e Crianças em Idade Pré-escolar*. Lisbon: Fundação Calouste Gulbenkian.
- Hargreaves, D.J., Marshall, N. & North, A.C. (2003). Music education in the 21st century: a psychological perspective. *British Journal of Music Education*, 20, 1-17.
- Helmrich. B. H. (2010). Window of opportunity? Adolescence, music, and algebra. *Journal of Adolescent Research*, 25(4).
- Ho, Y.C., Cheung, M.C., & Chan, A.S. (2003). Music training improves verbal but not visual memory: Cross sectional and longitudinal explorations in children. *Neuropsychology*, 17, 439-450.
- Hyde KL, Lerch J, Norton A, Forgeard M, Winner E, et al. (2009) Musical training shapes structural brain development. *J Neurosci* 29: 3019–3025.

- Johnson, D. A. (2000). *The development of music aptitude and effects on scholastic achievement of 8 to 12 year olds*. Unpublished doctoral dissertation, University of Louisville.
- Lynn, R., Wilson, R. G., & Gault, A. (1989). Simple musical tests as measures of Spearman's ρ . *Personality and Individual Differences*, 10, 25-28.
- Music Educators National Conference (2014a). *Opportunity-to-learn standards for music instruction: Grades PreK-12*. Reston, VA: The National Association for Music Education.
- Music Educators National Conference (MENC, 2002). *Prekindergarten music education standards: Guidelines for early-childhood educators, music specialists, parents, and day-care providers*. Reston, VA: National Association for Music Education.
- Pallesen, K. J., Brattico, E., Bailey, C. J., Korvenoja, A., Koivisto, J., Gjedde, A. and Carlson, S. (2010). *Cognitive Control in Auditory Working Memory Is Enhanced in Musicians*. Plos One.
- Rabkin, N., & Redmond, R. (2004). *Putting the arts in the picture*. In N. Rabkin & R. Redmond (Eds.), *Putting the arts in the picture: Reframing education in the 21st century*. Chicago: Columbia College Chicago.
- Rauscher, F. H. (2000). *Is the Mozart effect "debunked"?* Poster session presented at the Biannual meeting of the International Conference on Music Perception and Cognition, Keele University: Keele, UK.
- Schellenberg, E. (2004). Music lessons enhance IQ. *Psychological Science*, 15(8), 511-514.
- Schellenberg, E. (2006). Long-term positive associations between music lessons and IQ. *Journal of Educational Psychology*, 98(2), 457-468.
- Schlaug G, Jancke L, Huang Y, Steinmetz H (2005) In vivo evidence of structural brain asymmetry in musicians. *Science* 267: 699-701.
- U.S. Department of Education. (2008). *Foundations for Success: The Final Report of the National Mathematics Advisory Panel*. Washington, DC
- Vaugh, K., & Winner, E. (2000). SAT Scores of Students Who Study the Arts: What We Can and Cannot Conclude about the Association. *Journal of Aesthetic Education*, 34(3/4), 77-98.
- Worlds of Music (2008). *Worlds of Music: An Introduction to the Music of the World's Peoples*. Available at: <https://milnepublishing.geneseo.edu/music-and-the-child/chapter/chapter-2/>
- Young W. T. (1971). The role of musical aptitude, intelligence, and academic achievement in predicting the musical attainment of elementary instrumental music students. *Journal of Research in Music Education*, 19, pp. 385-398.

Assessment of Dance and its Health Benefits

BY

David K. WILSON, Ph.D
Department of Library and Information Science
Faculty of Education
University of Rochester
Rochester, New York City

ABSTRACT

Dance over the history has been a very important factor for healthy life. In the ancient millennium of Greek and the Egyptian, dance was seen as a form of artistic expression, religious rituals and educational method. But as time went by, dance evolved from the ancient ways to the middle ages which gave birth to the classical dance in the 19th century as well as the modern dance in the 20th century. Dance is an art form or sports activity that is typically used in performance, liturgical or expressionist venues. There are many styles of dance, each with its own attractions such as: ballet, jazz, hip-hop and ballroom etc. However, as a general exercise, dancing brings many known benefit such as better performing cardiovascular system, weight control, metabolism and psychological benefit that can also be produced with many others forms of exercise. The review further recommended that, dance participation appears to contribute positively to individuals' wellbeing and health across cultures and age groups. In such manner it should be implemented both in educational function and workshops.

KEYWORDS: Dance and Health Benefits

Introduction

Dance is a healthy physical activity, with many far reaching physical, and psychological benefits. Dancing can be enjoyed in many forms, and is for every age and ability (Wikipedia, 2015). Dance involves the body, emotion, and mind, all three of these culturally mediated, not only biologically based. In the perceptions and use of body, emotion, and mind are influenced by culture (Hanna, 2000). Types of dance can entail body movements, expression and collaboration (Ravelin, Kylmä and Korhonen, 2006). Dance for health has become an important factor in the prevention, treatment and management in several health circumstances. It can benefit both physical and psychological health and subsidizes social communication (Ward, 2008). Dance conditions an individual to moderate, eliminate, or avoid tension, chronic fatigue, and other disabling conditions that result from the effects of stress. Dancing may help in healing process as a person gains a sense of control through (a) possession by the spiritual in dance, (b) mastery of movement, (c) escape or diversion from stress and pain through a change in emotion, states of consciousness, and/or physical capability, and (d) confronting stressors to work through ways of handling their effects (Hanna, 2000). The correlation between dance and health has been subject of a number of research studies that show dance to be a largely healthy exercise. However, there are a number of health risks that require attention (Ward, 2008).

Dance Origins

During the ancient civilizations, such as the Greek and the Egyptian, had a significant development of dance as a form of artistic expression, religious rituals and educational method (Meyer-Dietrich, 2009). As far as the ancient Greeks are concerned, Lawler cited in Elpidoforou (2016) wrote that for them dance was a truly social activity. They tended to express all their feelings by dancing and dance itself was marking all the great social events. The end of the ancient period has found Europe in the midst of changes at all levels. The art was impregnated by social movements and uprisings, and the "Dark Ages" of the Middle Ages preceded the periods of Renaissance and Enlightenment during which dance had a development similar to the process in each society (Elpidoforou, 2016). During middle Ages, they were only two forms of dance expression: the laity dances ("dances des sociétés populaires") and the courtier dances ("dances de cour"). The period of Renaissance transformed along with philosophy, art, and religion, as well as dance in Italy and then in France setting the stage for the birth of classical dance (Craine and Mackrell, 2004). Classical dance could be defined as a form of Western academic dance using a dance technique known as "danse d' école (the classical school). A key role in the construction of Ballet played by Louis XIV and this type of Western academic dance has developed in Russia in a more virtuosic style during the latter half of the 19th century (Craine and Mackrell, 2004). In the era of Modern Dance, it has been used to describe the type of dance which has been historically placed in the early period of the 20th century and it is not based on the academic school of classical ballet (Elpidoforou, 2016). On the contrary, the first pioneers of modern dance, such as Isadora Duncan, Ruth St Denis, Martha Graham and Doris Humphrey, have created dance pieces rejecting the structural formality and sometimes the thematic frivolity of classical ballet. Until the 60s, (modern) dance has been inspired by Zen, Indian philosophy, the Theosophists and artists of the East (Au and Au, 2002).

Types of Dance

Dance is an art form or sports activity that is typically used in performance, liturgical or expressionist venues. From the French word, "danser," dance involves the movement of your body (typically to the beat of music) in various fashions according to the style being used. There are many styles of dance to choose from, each with its own attractions, but those featured in ballet, jazz, hip-hop and ballroom etc. are the most frequently used which include the following:

Ballet: Ballet has been the dominant genre in Western theatre dance since its development in Italy during the Renaissance by the Medici family as an independent form in the 17th century, and its characteristic style of movement is still based on the positions and steps developed in the court dances of the 16th and 17th centuries (Mackrell, 2009). This is a very graceful and technical form of dance perfect for all ages, created in Italy during the Renaissance by the Medici family. It is mostly performed in classical music, this dance style focuses on strength, technique and flexibility. The most basic feature of the ballet style is the turned-out position of the legs and feet, in which the legs are rotated in the hip socket to an angle of 90 degrees and the feet point outward (Setia, 2008). This position gives the body an open, symmetrical appearance, and it also facilitates the high leg extensions and fast turns typical of ballet. Openness is most characteristic of the ballet dancer's stance, for the head is nearly always lifted and

the arms held out in extended curves.

Hip-hop: In the early days, hip-hop was generally seen in breakdancing and from there on, one could witness many innovations of this dance style. It is strenuous and mostly improvisational; a lot of people simply make up steps, that go with the heavy beats of the music. Hip-hop dancing covers a large spectrum; breaking, locking, popping, freestyling and krumping can be categorized under this dance form, mostly performed in hip-hop music (Lindberg, 2019).

Ballroom dancing: Ballroom dancing is one of the most entertaining and elite styles of dancing, originated in Germany, but is now a popular act followed in varied dance styles. In the earlier days, ballroom dance was only for the privileged class of people in the socialites. This dance involves a number of partner-dancing styles such as the Waltz, Swing, Foxtrot, Rumba, Quickstep, Tango, Viennese waltz, Samba, Cha-Cha-Cha, Paso Doble, Mambo and Jive (Dance Facts, 2012). Today, the popularity of ballroom dance is evident, given the innumerable shows and competitions worldwide that revere dance, in all its form.

Belly dancing: Belly dance is one of the most famous oriental folk dances in the world originated in the Middle East, and it emphasizes the complex movement of the torso and entire body utilizing sudden percussive movements, unstoping fluid body motions and presence of small and fast shimmies, shivers and vibrations of the hips or the ribcage. Belly dance is regarded as very sensual, emotional and captivating.

Tap dancing: Among many types of popular dances around the world, tap dance is one of the most unusual dances. Instead of focusing on body movements and dancing with a partner, tap dance focuses on timing and beats which is characterized by the creation of percussion-like musically-focused rhythm performance using tap shoes striking on the floor in accordance with the dancing music.

Jazz: Jazz dance finds its origins in the African-American culture. From the olden days till date, there are many influences that have added variety to this dance form. It is a high-energy dance style involving kicks, leaps and turns to the beat of the music. One can see many overlapping steps in jazz dancing, which are common to others. These steps in Jazz dance that mimic other forms are the ball change, the pivot step, the toe rise, the pirouettes, the jazz walk etc. This type of dance can also incorporate various styles.

Tips for Dancing Well

Let go of insecurity and fear

Start with a strong foundation

Have a Goal

Practice outside of classes

Master the rhythm and timing before styling

Position yourself correctly in class

Dance and Health Benefits

From the dawn of history, dance can be understood to provide great benefits to the body's metabolism and health. As millennia's went by, knowledge of human body gave more concrete evidence of the benefits of dance to health (Dance Facts, 2012). However, as a general exercise, dancing brings many known benefit such as better performing cardiovascular system, weight control, metabolism and psychological benefit that can also be produced with many others forms of exercise. Therefore, from better physical and mental health to a boost in emotional and social well-being, moving your body to the sound of music can transform your life (Lindberg, 2019).

Physical Health and Fitness: Dancing can be a way to stay fit for people of all ages, shapes and sizes. It has a wide range of physical, and mental benefits including: improved general and psychological wellbeing, greater self-confidence and self-esteem, and better social skills; improved muscle tone and strength (Ravelin, et. al., 2006), weight management, stronger bones; increased aerobic fitness; improved condition of your heart and lungs; improved balance and spatial awareness; increased muscular strength, endurance and motor fitness; improved mental functioning; reduced risk of osteoporosis, better coordination, agility and flexibility, increased physical confidence as well as help reduce cardiovascular disease (Lindberg, 2019), help weight control, stress and bring about other benefits commonly associated with physical fitness.

Mental Health: Dance has been repeatedly shown to positively impact a person's mental health. Minton and Faber (2016) described the mind as doing mental gymnastics while learning complex dance movements. The complexity alluded to contributes to the extremely diverse mental health benefits of dance. Duberg, Hagberg, Sunvisson and Möller (2013) found that, despite problems such as stress and other potential challenges in being an adolescent, dance can result in high adherence and a positive experience for the participants. Dancing had the potential to contribute to new healthy habits. An advocate for arts, Jensen, Eric (2001) clearly identifies the effects of dance on mental health. He noted that dance improved cognitive development, creativity, concept of self, improved learning and competencies, vestibular action, ability to follow direction and instruction, timing and memory, and emotional expression and control.

Emotional Benefits: Research argues that emotions, thinking, and learning are all connected (Salo, 2019). Emotions drive attention, create meaning, and have memory pathways (Jensen, 2005). This strong, productive combination leads to learning. The classroom and the school provide opportunities for endless emotional experiences, and students' brains will be altered by those experiences. The brain is far more active and chemically stimulated when emotions are involved. Dopamine and norepinephrine are released during movement and physical activity. These emotional chemicals (hormones and neurotransmitters) enhance long-term learning when administered either before or after learning (Jensen, 2005). Though dance choreography can be deep in meaning, movement does offer instant gratification that elicits positive feelings and emotions. Similarly, Pavitra and Shubrata (2014) states that children are emotionally inept and do not have the mature capacity to express themselves verbally with coherent articulation; their emotions are bottled up, unresolved, tense, and repressed. "Since earliest times...dance and creative movements are known to reach out to the depth of the unconscious aspects of the mind and effectively mobilize the blocked psychic content. The aesthetic distance physically between the dancer(s) and audience enables both

parties to release emotions, channel other emotions and transform their remaining the emotions (Pavitra and Shubrata, 2014).

Dance and Wellbeing

The contribution of dance participation to wellbeing involves a variety of social, physical, and personal components. However, most prominent is the overarching quality of life, or sense of life satisfaction group-based dance participation brings. Through a randomized control trial involving 57 women aged 65–80 years in Portugal, Cruz-Ferreira, Marmeleira, Formigo, Gomes, and Fernandes (2015) observed an increase in life satisfaction and physical fitness in the intervention group when compared to their control group after 24 weeks. They concluded that the integration of mobility, physical, cognitive, and social skills attributed to the dance classes was the root cause for this improvement in quality of life. Similarly, Nadasen (2008) found out that older women participating in regular dance classes reported a significant increase in their engagement in social activities and a widening of their social networks. For most of these women (aged 60–82 years), having joined the dance class merely as a way of boosting their weekly physical activity, the boost to their social activities (and their quality of life) was unexpected but welcome. Additionally, Muro and Artero (2017) studied 87 young women (mostly university students; average age 20.88 years) who participated in at least 3 hours of non-competitive dance practice every week. The aim of this cross-sectional study was to determine if wellbeing and life satisfaction could be correlated with dance participation. Muro and Artero found that those who regularly participated in dance practice were more mindful and experienced a better quality of life than those who did not dance (or practice any other kind of sport). Consistently, Duberg, Moller, and Sunvisson (2016) found similar results in a randomized control trial of 112 teenage (13–18 years) girls. The girls in the intervention group reported dance classes as a safe, enjoyable space where they could express themselves emotionally. Improved self-image and self-trust were paramount to the perceived quality of life and wellbeing of the participants.

Conclusion

Dance is a physical activity, with many far reaching physical, and psychological benefits. The benefits of dance encompass all areas of health, including physical, mental, and emotional. Not only does it give you a way to express yourself and have fun, but it also counts toward your cardiovascular exercise. Dance has become a very important factor for healthy living in the prevention, treatment and management in several health circumstances. Dance conditions an individual to moderate, eliminate, or avoid tension, chronic fatigue, and other disabling conditions that result from the effects of stress. Several types of dance include: Ballet, Hip-hop, Ballroom dancing, Belly dancing, Tap dancing and Jazz dance etc. has been viewed in this paper.

Recommendations

1. Dance participation appears to contribute positively to individuals' wellbeing and health across cultures and age groups. In such manner it should be implemented both in educational function and workshops.
2. Further researches should be conducted empirically, to see the effects of dance, in both adolescent and adult on the physical activity levels, reducing or preventing weight gain, reducing anxiety, improving mood and eating disorders as well as the health impact of creativity in dance.

REFERENCES

- Au, S. and Au, S. (2002). *Ballet and modern dance*. Thames & Hudson, New York, USA.
- Craine, D. and Mackrell, J. (2004). *The Oxford dictionary of dance* (1st edition). Oxford, Oxford University Press, USA.
- Cruz-Ferreira, A., Marmeleira, J., Formigo, A., Gomes, D. and Fernandes, J. (2015). Creative dance improves physical fitness and life satisfaction in older women. *Research on Aging*, 37(1), 837–855.
- Dance Facts (2012). *Health Benefits of Dance*. Dancefacts.net
- Duberg, A., Hagberg L; Sunvisson H; Möller M (2013). "Influencing Self-rated Health Among Adolescent Girls With Dance Intervention. *JAMA Pediatrics*, 167 (1): 27–31.
- Duberg, A., Moller, M. and Sunvisson, H. (2016). "I feel free": Experiences of a dance intervention for adolescent girls with internalizing problems. *International Journal of Qualitative Studies on Health and Well-being*, 11(1), 31946.
- Hanna, J. L. (2000). The Power of Dance: Health and Healing. *Journal of Alternative and Complementary Medicine*, 1(4), 323-331
- Jensen, E. (2001). *Arts with the Brain in Mind*. Alexandria, Virginia: Association for Supervision and Curriculum Development.
- Lindberg, S. (2019). *8 Benefits of Dance*. Healthline Media.
- Mackrell, J. R. (2009). *Dance critic*. The Guardian, London.
- Meyer-Dietrich, E. (2009). *Dance*. In: W. Wendrich, (ed.). *UCLA Encyclopedia of Egyptology*, eScholarship. University of California, Los Angeles, USA.
- Minton, S. C. and Faber, R. (2016). *Thinking with the Dancing Brain*. New York: Rowman and Littlefield.
- Muro, A., and Artero, N. (2017). Dance practice and well-being correlates in young women. *Women & Health*, 57(1), 1193–1203.
- Nadasen, K. (2008). "Life without line dancing and the other activities would be too dreadful to imagine": An increase in social activity for older women. *Journal of Women & Aging*, 20(1), 329–342.
- Pavitra, K. S. and Shubrata K.S. (2014). Dancing mind – Promoting mental health through the medium of movement." *Psychiatry* 56(1): 107-110
- Ravelin, T., Kylmä, J. and Korhonen, T. (2006). Dance in mental health nursing: a hybrid concept analysis. *Issues in Mental Health Nursing*, 27(3): 307–317.
- Salo, A. (2019). *The Power of Dance: How Dance Effects Mental and Emotional Health and Self-Confidence in Young Adults*. Master's Theses. 133.
- Setia, V. (2008). *Earthly Delights: History of Dance*. Encyclopaedia Britannica

Ward, S. A. (2008). Health and the Power of Dance. *Journal of Physical Education, Recreation and Dance*, 79(4): 33–36.

Wikipedia (2015). *Dance and health*. Wikipedia, The Free Encyclopedia.

**Playing Tchaikovsky's 'Nutcracker' and other Music as Determinants of Kids
Brain Improvement**

BY

Benjamin K. Godson, *Ph.D*
Department of Communication Studies
University of Illinois at Chicago
Northern Illinois,
United States

ABSTRACT

Music serves as an imperative aspect of human life. It is useful to live with joy and wellbeing. Music is very useful to brain development of children. Childhood is all about learning and so the development of the brain and the learning connections within the brain are at the heart of learning for young children. On the basis of this research the importance of music and the brain development of children has been established. In this research article the endeavor is made to juxtapose varied research studies with the subject and tried to derive its implications. Infants are born with a limited amount of neurological wiring. Their vision is rudimentarily wired, as are their hearing and other senses. Nothing is wired in the higher region of the brain, known as the cerebellum. The hardware is in place and ready to wire but requires 'earthly' experiences and human interactions for the cells to forge the neurological networks that will become the foundation for thinking and reasoning, language, physical movement, and social and emotional behaviors. During the first three years of life, a child builds an estimated 1,000 trillion synapses through the experiences she encounters. The study concluded that music skills have positive impact on early child education in regards to provoking good ear listening and personal narratives. Hence, music education is believed to deserve the status as an equally significant core subject. One of the recommendations made was that every human being should not underrate any discipline. Parents and care givers should create an enable environment including music for kid brain learning improvement.

KEYWORDS: Music, Brain Improvement, Kids,

Introduction

There's no straightforward recipe for what a good-quality home-learning environment looks like. However, research shows that it should provide both the kinds of experiences and the environment that a child needs for the development of their brains and their language skills. This could include plenty of books, and opportunities to be read to and to read, to learn rhymes and to sing songs. Studies have shown that these early activities continue to show positive benefits for children's education throughout their lives (Sylva et al 2004). According the National Scientific Council on the Developing Child (2008), children experience the world through their relationships with care givers and parents. These relationships affect virtually all aspects of their development. When children start school, they have a facility for rote memory, and simple facts have been imprinted in their minds through songs and musical games.

Thinking is associated with a child's experience; for the young child, to think means to recall experiences or knowledge from the mind. Piaget defines the cognitive or mental structures by which individuals intellectually adapt to the environment as schemata (plural of schema) (Wardsworth, 2004). Music has the potential to activate a child's schemata, which can jump-start the child's comprehension and creative writing. In the context of literacy, visualisation is the process in which a reader forms mental images to build understanding while reading or listening to a text (Massie et al., 2008). When first- and second grade students were asked to draw or write what they pictured in their minds as they listened to A Whole New World soundtrack, each child separately drew and wrote about a peaceful world. Pre-service teachers attributed the similarities to coincidence, but for Piaget (in Wardsworth, 2004), the children's drawings about a peaceful world were constructions from the stimuli which fit their own perspectives, experiences and previous schemata. Music invites children to revisit what they know, stimulates their curiosity and promotes thinking. Miché's research (2002) showed that music training helps children to read and write. This idea was explored with the adult participants, who were invited to create a story from a set of sounds and soundtracks downloaded from the Internet.

Concept and Origin of Tchaikovsky's Nutcracker Music

The Nutcracker has become the most popular ballet of our times. It was first presented in 1892 at the Maryinsky Theater in St. Petersburg, Russia. The ballet was an adaptation of the 1816 story by E. T. A. Hoffman, *The Nutcracker and the Mouse King*. The Nutcracker was choreographed by Lev Ivanov with music by Peter Ilyich Tchaikovsky. Marius Petipa, the reigning choreographer at the Maryinsky, fell ill, so the job passed to Ivanov. Tchaikovsky only reluctantly accepted the commission to compose the score which, when completed, he considered "infinitely worse than 'Sleeping Beauty'." At the premiere, the ballet was deemed a complete failure.

Peter Ilyich Tchaikovsky was born in Kamsko -Votinsk, Russia on May 7, 1840. He was a very bright child who could read Russian, French and German by the time he was six years old. He also hated physical exercise, did not like to wash and didn't care about how he looked or what he wore. He showed an interest in music that was so strong for a young child that his governess worried about him. If he could not find a piano to try out the music he made up, he would use his fingers to tap out his tunes on the windowpanes of his house. One time while he was doing this he tapped so hard that he broke the glass of the window, and cut himself very badly.

Peter began taking piano lessons when he was six years old. After attending a boarding school, he studied law and mathematics and got a job as a clerk working in the Ministry of Justice. After just four years he quit his job to go to music school full time in order to study composition. He was soon invited to teach classes. Tchaikovsky was a nervous, unhappy man all his life, yet his beautiful music made him the most popular of all Russian composers. He wrote the music for the three most famous ballets of all time, *The Nutcracker*, *Swan Lake*, and *The Sleeping Beauty*. In his lifetime he also wrote nine operas, six symphonies, four concertos, three string quartets, and numerous songs, suites, and overtures. One of his most famous pieces is the 1812 Overture, which uses cannons and church bells; because it sounds so grand it is often chose to accompany fireworks at 4th of July celebrations. Tchaikovsky was only 53 when he died in St. Petersburg in 1893. He had just completed his sixth symphony, which he felt was the

best piece of music he ever created.

The **Nutcracker** choreography was begun by the redoubtable Marius Petipa. The balance of the work was taken up by his assistant Leon Ivanov when Petipa fell ill. According to historical accounts, when the ballet was finally produced, Petipa refused to have his name linked with it, feeling his own part in its creation was insufficient to be publicly announced. Dance historians have, however, recognized his contribution, and the original choreography is generally credited to both Petipa and Ivanov.

The **Nutcracker** has two major ensemble dances: the *Dance of the Snowflakes* and the *Dance of the Flowers*. One of the strengths of the Seiskaya Company has always been ensemble segments. Nowhere is this more evident than in these dances. Flowing lines, exact patterns and intricate interplay between corps and soloists are the hallmark of the choreography.

The basic libretto of the **Nutcracker** has as many interpretations as there are staged versions. The characters' names often change and plot twists are added. The only constant is the music. Tchaikovsky's musical genius created one of the most recognizable and enduring scores ever written. An abbreviated version, the **Nutcracker Suite**, is one of the most recorded selections in classical repertoire. In the final analysis, it is the music that has truly given the **Nutcracker** a life of its own.

First presented in Western Europe by the Sadler's Wells Ballet at the Sadler's Wells Theatre, London, January 30, 1934, the production was staged by Nicholas Sergeyev after the original Petipa-Ivanov version. The first full-length American **Nutcracker** was produced by the San Francisco Ballet in 1944 with choreography by William Christensen.

Concept of Music

Music according to (Baycrest, 2002) is a human universal. In order to determine if a certain human trait is part of the brain's hardwiring, scientists submit it to a set of criteria. Some of the questions concerning the biological evidence of music's hardwiring include 1) whether or not it is present in all cultures; 2) if the ability to process music appears early in life, i.e., it is found in infants; 3) if examples of music are found in the animal world; and 4) if there are specialized areas of the brain dedicated to it. Music fulfills all of these criteria, and is definitely hard-wired in the human brain. Music is an aged means of passing information to the society that comes in various forms such as symbols, signs, rhythm etc. Base on human believe, it also means different things to different individuals in the society. According to recent neurological research, "the ability to perceive and enjoy music is an inborn human trait" (Sousa, 2011, p. 221). If music is an inborn and biological component, it should be found in infants, as well as in other animal species. Musical ability is indeed found in infants, who at only a few months old can manipulate an object in response to hearing certain songs. Infants can also differentiate between sounds as well as recognize different melodies. They are well aware of their mother's voice and will turn their heads towards it when she speaks.

Concept of Kids Brian Improvement

In the first two years of life, a child starts to develop a wide range of skills and abilities. During this time a child will start to explore and learn about the world around them

through developing communication skills, behaviours and emotional attachments like playing with toys, watching cartoon etc. At this stage, they also try to test any object or material that comes across them in their mouth. A child's brain begins developing in the womb. According to Herculano-Houzel 2009, Goswami (2015) A fully - grown adult brain has an estimated 86 billion neurons – the information processing cells in the brain. But the majority of them are actually formed in the womb. Then, during infancy, the connections between neurons become stronger and more extensive, with new connections forming. These connections form the networks that underlie children's development (Stiles & Jernigan 2010). Pam Schiller (2010) stated that there are fertile times when the brain is able to wire specific skills at an optimum level. These fertile times are called 'windows of opportunity.' The windows are scientific; they are open from birth to puberty. The open windows of opportunity are the same for all children, no matter where on the planet they are born.

According to Brotherson (2009), at age three a child's brain is estimated to be about twice as active as an adult's brain. While at age five a child's brain uses almost twice as much energy as an adult's brain to support brain development (Kuzawa et al 2013)

Advantages of Music on Kids Brain Improvement

A 2016 study at the University of Southern California's Brain and Creativity Institute found that musical experiences in childhood can actually accelerate brain development, particularly in the areas of language acquisition and reading skills. Yoon, (2000) stated that the power of music exceeds mere pleasure for it has strong biological roots, helps the brain to grow and integrate the two hemispheres, and plays a crucial role in the neurological development of the child. Today music can be used to help facilitate child knowledge about the physical environment, the world and others (Davies, 2000). The basic functions of music on early child improvement and development can be elaborated below:

For Personal Narratives: Because music is connected to children's lives, it enriches personal narratives that promote language experiences. Gallas (1994) saw narrative as a complex of signs and texts that make children's thinking visible. Music mentally and emotionally engages children into thinking processes that help them build stories that can be expressed through the modalities of talk, dance, music and art into writing. This article aims to create in the reader an awareness of music's power to engage children in thinking activities. The purpose is to encourage efforts to incorporate musical elements in the early childhood environment that will help children establish connections with the world. Roskos and Neuman (2003) defined environment as behaviour settings where daily life happens. Certainly, those daily life experiences do not occur in silence; rather, that environment is characterised by music and soundscapes or sounds (Ceppi & Zini, 1998).

Intellectual Competence: Music promotes thinking in children and they often translate thinking into reading and writing. A natural connection exists between thinking, music and language. One can only understand how children develop language by relating language to thought. According to Gardner (2006), musical intelligence is the first intelligence to develop, and the use of music, soundtracks or sounds capes to learn is attributed to the individual's musical intelligence. Musical intelligence is ascribed not only to those who are proficient at playing an instrument or singing, but also to those

who prefer to use sounds and music for understanding or expressing themselves. Musical intelligence interacts with other human intellectual competencies; Gardner's (2006) claim is that the intelligences work in concert. Human beings have a repertoire of skills for solving different problems, and music is one of these.

Having a Good Ear: Having a 'good ear' means being able to hear sounds in your head, knowing how notes and chords sound in relation to one another and being able to identify when something is wrong. It also encompasses rhythmic awareness and the ability to repeat aural patterns or sequence. This ability to internalize and imagine sound is often called 'inner hearing'. Beethoven, for example, was someone with an excellent aural sense, despite being completely deaf. He 'heard' the music internally and then represented this as written music.

Others Benefits Include:

- To enable the child to explore, clarify and express ideas, feelings and experiences through a range of arts activities
- To provide for aesthetic experiences and to develop aesthetic awareness in the visual arts, in music, in drama, in dance and in literature
- To develop the child's awareness of, sensitivity to and enjoyment of visual, aural, tactile and spatial environments
- To enable the child to develop natural abilities and potential, to acquire techniques, and to practice the skills necessary for creative expression and for joyful participation in different art forms
- To enable the child to see and to solve problems creatively through imaginative thinking and so encourage individuality and enterprise
- To value the child's confidence and self-esteem through valuing self-expression
- To foster a sense of excellence in and appreciation of the arts in local, regional, national and global contexts, both past and present
- To foster a critical appreciation of the arts for personal fulfillment and enjoyment.

Types of Music that Improve Kids Brains

Music is an art form deeply rooted in human nature. It is a discrete body of knowledge, a unique form of communication and a means by which feelings and interests are organised and expressed. Although we are used to hearing and singing pop music, a child's voice and brain is not yet ready to sing songs either with such a wide vocal range or with the sophisticated lyrics, vocal stylings or timbre that he or she might try to imitate from pop singers. As children's voices are very light, they should not be pushed out of their vocal ranges too soon. According to James Hudziak (2014) a violin might help a child battle psychological disorder even better than a bottle of pills. "We treat things that result from negative things, but we never try to use positive things as treatment," he says.

Below are a few of the rhymes and songs particularly good for newborns and toddlers. They include some very familiar nursery rhymes and action games appropriate for this age group. Keep in mind that almost any nursery rhyme can be used for these activities, as long as they have a steady beat, which luckily most of them do.

Bounces

For newborns to three-year-olds, having them feel the beat in their bodies, aided by adults, are called “bounces,” based on the experience of bouncing a child up and down on a knee or lap.

Bumpity Bump:

O-ver the road we bump-i-ty bump, O-ver the road we bump-i-ty bump,
O-ver the road we bump-i-ty bump, How we love to bump-i-ty bump!

The image shows two staves of musical notation for the song 'Bumpity Bump'. The first staff contains the first two lines of lyrics, and the second staff contains the next two lines. The music is written in a simple, rhythmic style suitable for young children.

Tommy O'Flynn

Tom-my O'-Flynn and the old grey mare, Went to see the coun-ty fair. The
bridge fell down and the bridge fell in, and that was the end of Tom-my O'-Flynn.

The image shows two staves of musical notation for the song 'Tommy O'Flynn'. The first staff contains the first line of lyrics, and the second staff contains the second line. The music is written in a simple, rhythmic style suitable for young children.

Wiggles

Wiggles are those activities involving the wiggling of fingers or toes. “This Little Piggy Went to Market” is another wiggle with which you may be familiar.

The first little pig danced a merry, merry jig

The second little pig ate candy

The third little pig wore a blue and yellow wig

The fourth little pig was a dandy

The fifth little pig never grew to be big

So they called him Tiny Little Andy

Tickles

Tickles involve exactly that—tickling the child either all over or just in the stomach, usually ending in lots of giggles!

Slowly, slowly, very slowly up the garden trail (*crawl hands up baby starting from feet*)

Slowly, slowly, very slowly creeps the garden snail (*continue crawling*)

Quickly, quickly, very quickly all around the house (*tickle all over*)

Quickly, quickly, very quickly runs the little mouse (*continue tickling*)

My father was a butcher (*make chopping motions on child's body*)

My mother cuts the meat (*make cutting motions on child's body*)

And I'm a little hot dog

That runs around the street (*tickle all over*)

Clapping (Nine+ Months)

As children develop physically, they can clap their hands either together or against those of another. The well-known "Patty Cake" is a good example.

Patty Cake

Patty cake, patty cake, baker's man

Bake me a cake as fast as you can

Roll it and pat it and mark it with a "B"

And put it in the oven for baby and me!

Lullabies

Bye Baby Bunting

English lullaby, 1784

The image shows the musical notation for the lullaby "Bye Baby Bunting". It consists of two staves of music in 2/4 time, with a key signature of one flat (B-flat). The melody is simple and consists of quarter and eighth notes. The lyrics are written below the notes: "Bye, ba - by bunt - ing, Dad - dy's gone a hunt - ing, To catch a lit - tle rab - bit skin to wrap his ba - by bunt - ing in."

For slightly older children, Feierabend (2001) identifies activities that help children develop spontaneous ability and original music thinking under his "Arioso" category, as well as a detailed array of vocal- and motor-based experiences with music. In addition, exposing young children to music also help to build and increase kids' vocabulary.

Conclusion

The study shows how a good quality learning skill and experience improves kids' brain development. Therefore, the study concluded that music skills have positive impact on early child education in regards to provoking good ear listening and personal narratives. Hence, music education is believed to deserve the status as an equally significant core subject. The study also exposes and reveals the proper ways in which music activate kids' brain improvement just as in the case of Tchaikovsky's nutcracker ballet.

Recommendations

1. Every human being should not underrate any discipline. Parents and care givers should create an enable environment including music for kid brain learning improvement.
2. Since music is an inborn and biological component, kids should not be deprived the opportunity of getting in touch with music that will accelerate cognitive improvement.
3. Nongovernmental organization should help in creating more awareness on the positive impact of music for kid brain improvement.

REFERENCES

- Baycrest Center For Geriatric Care. (2002). *Study to look at possible benefits of musical training on brain function in young and old*. Science Daily. Retrieved from: <http://www.sciencedaily.com/releases/2002/01/020110074219.htm>
- Brotherson, S. (2009). *Understanding Brain Development in Young Children*. Bright Beginnings, NDSU Extension Service, North Dakota State University.
- Cabrera, D., & Cotosi, L. (2010). The World at our Fingertips. *Scientific American Mind*, 21(4), 49-55.
- Dennison, P. E., & Dennison, G. E. (1989). *Brain gym®: A teacher's manual to explain, instruct, and facilitate whole brain learning*. Glendale, CA: Edu-Kinesthetics.
- Diamond M, Hopson J. (1998). *Magic trees of the mind: How to nurture your child's intelligence, creativity, and healthy emotions from birth to adolescence*. New York: Plume.
- Ellenbogen, J. M., Hu, P., Payne, J. D., Thone, D., & Walker, M. P. (2007). In *Proceedings of the National Academy of Sciences, USA*, 104(18), 7723-7728.
- Fagen J, Prigot J, Carroll M, Pioli L, Stein A, Franco A. (1997). Auditory context and memory retrieval in young infants. *Child Development*, 68:1057-1066
- Gamon, D., & Bragdon, A. D. (2003). *Building mental muscle: Conditioning exercises for the six intelligence zones*. Brain waves books. New York: Walker & Company.
- Goswami, U. (2015) *Children's cognitive development and learning*. Cambridge Primary Review Trust: Cambridge.
- Healy, J. M. (1987). *Your child's growing mind: A parent's guide to learning from birth to adolescence*. Garden City, NY: Doubleday.
- Herculano-Houzel, S. (2009) The Human Brain in Numbers: A liner scaled-up primate brain. *Frontiers in uman Neuroscience*, 3:31.
- Kuzawa, W., C., Chugani, T., H., Grossman, I., L., Lipovich, L., Muzik, O., Hof, R., P., Wildman, E., D., Sherwood, C., C., Leonard, R., W. & Lange, N. (2013) *Metabolic costs and evolutionary implications of human brain development*. PNAS vol. 111, no. 36.
- Nash, M. (1997, February). Fertile Minds: Newborns may seem cute and passive, but their brains are working overtime. *Time — New York*, 149(6), 48-56.
- National Scientific Council on the Developing Child (2008) *The timing and quality of early experiences combine to shape brain architecture*. National Scientific Council on the Developing Child: Harvard.
- Ramey, C. T., & Ramey, S. L. (2004). *Early Educational Interventions and Intelligence: Implications for Head*

- Schiller, P. (2001). Brain Research and Its Implications for Early Childhood Programs — Applying Research to Our Work. *Exchange*, 140, 14-19.
- Scott, L. O., Lynn, S. J., Ruscio, J., & Beyerstein, B. L. (2010). *50 Great myths of popular psychology: Shattering widespread misconceptions about human behavior*. Hoboken, NJ: Wiley-Blackwell.
- Sousa, D. A. (2005). *How the brain learns* (Revised ed.). Reston, VA: National Association of Secondary School Principals.
- Start. In Edward Zigler & Sally J. Styfco (Eds.), *The Head Start Debates* (pp. 3-18). Baltimore, MD: Brookes Publishing Company.
- Stiles, J. & Jernigan, L., T. (2010). The basics of brain development. *Neuropsychology Review*, 20:327-348.
- Sylva, K., Melhuish, E.C., Sammons, P., Siraj, I. and Taggart, B. (2004). *The Effective Provision of Pre-School Education (EPPE) Project: Technical Paper 12 - The Final Report: Effective Pre-School Education*. London: DfES / Institute of Education, University of London.
- Wallace WT. (1994). Memory for music: Effect of melody on recall of text. *Journal of Experimental Psychology: Learning, Memory, & Cognition*, 20(1) :1471–1485.
- Yoon, J. (2000) *Music in the Classroom: Its Influence on Children's Brain Development, Academic Performance, and Practical Life Skills*. 42p.; M.A. Thesis, Biola University.