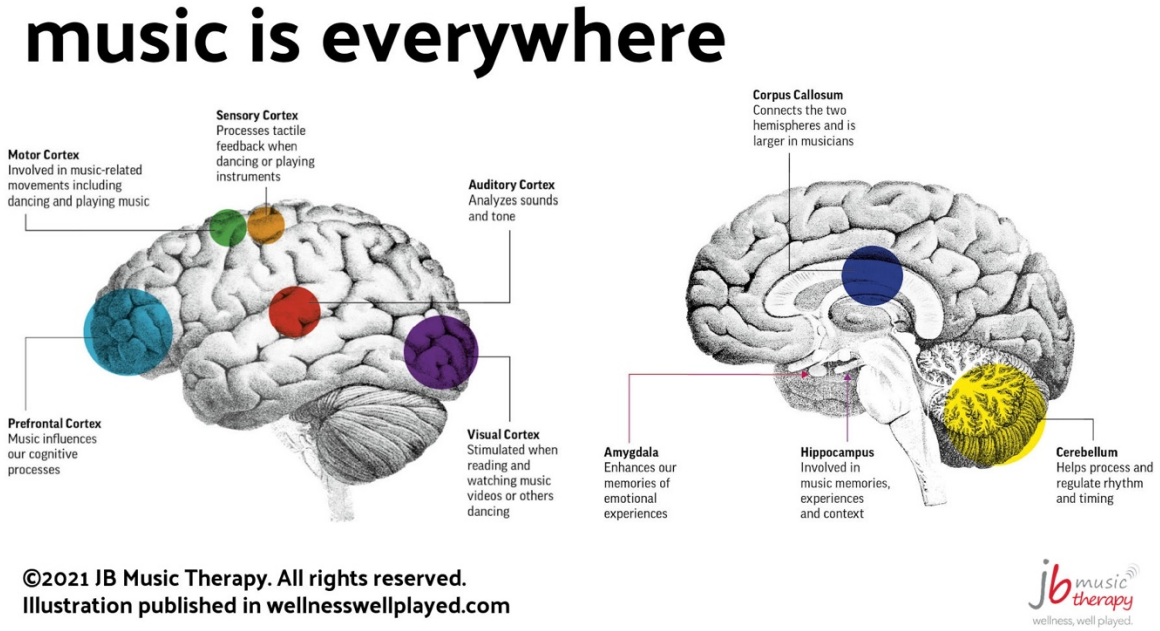
# The Effects of Sound on Emotions for Children through Adults

As through the years we have learned that music and sound have been used by many to inform, heal, laugh, mate, be joyous, in times of sorrow, in faith, nature…. Music and sound can take us right back to a certain place in time and have a strong emotional pull in a positive or negative direction. Cultures from all around the world have used it for centuries and no matter what language or beat, we can resonate with it. It can hype us up or calm us down. Music has fascinating qualities as music uses all parts of the brain and allows us to create. It effects how a person thinks, feels and behaves.

We use music in advertising, at stores, at events, in homes and cars. We also see it in the universe and throughout nature. Music is all around us. Science is just beginning to catch up with research of what many have known for thousands of years. The fact that the public is beginning to catch on to the fact that music can change how we think and feel is gaining momentum. The average person is beginning to understand that music has the power and potential in health care and education, and this is so important to understand why these programs are important, especially for children in our schools.

Now with the help of brain imagery, we understand that music is far more extensive than we previously believed. When we listen to music, sounds or vibration it is converted into nueral messages and transmitted to our thalamus (the brain's sensory relay station). From there, it goes through the auditory cortex and is broken down into many different elements. This is where tone, pitch and timbre comes in. Auditory information is also sent through our brain to compare it against emotional response and historic events. This stimulates both sides of the brain hemispheres. Neurologist are still researching how the auditory cortex functions but, they now believe that music processing is much more complex than we initially imagined and involves more parts of the brain than we thought (jbmusictherapy, 2021).




Prefrontal Cortex- music influences our cognitive process
Motor Cortex- involved in music related movements including dance and play.
Corpus Callosum- connects both hemispheres of the brain and is larger in musicians.
Amygdala- enhances our memories of emotional experiences.
Cerebellum- helps process rhythm and timing
Sensory Cortex- processes tactile feedback when dancing or playing an instrument.
Auditory Cortex- Analyzes sounds and tone
Hippocampus- involved in music memories, experiences and context
Visual Cortex- stimulates when reading music, watching others dance or music videos

**Differences in Sound Healing and Music Therapy**

There is a difference between sound healing and music therapy. Sound healing uses specific frequencies and harmonics that are said to heal the body. Music therapy uses a cacophony of frequencies and harmonies that trigger an emotional response (ent-surgery.com).

When we look at sound, we can look at how sound has a major impact on our emotions. It can impact us in a positive way or a negative way. Research shows that major cords have a positive effect on our emotions and minor chords can

produce a negative impact. For some, that impact is minor. For others, it can be life changing.

**Infants**

Childhood is a critical time of exploration, growth and development. Research shows that music and music experiences help to support the growth of connections that are being developed in the brain during the first three years of life. Infants are extremely interested in music. This interest enables babies to perceive nuances. They will pick up on tones and changes in the pitch or rhythm of songs in a foreign language that other adults may not pick up on. Infants have preconscious listening skills and in many ways they perceive music just as adults do. They will recognize and remember songs in different pitches and be able to distinguish songs that are missing or that contain dissonant notes. Babies prefer, pleasant rather than unpleasant sounds, just as adults.

Infants have an excellent memory for music. After 1-2 weeks of exposure, infants will remember the song and be able to distinguish it from other unfamiliar melodies. They will prefer new music, over old, as it is stimulating for them to hear something new. Infants that are sung to sleep better and have an overall better sense of well-being. Maternal singing is mesmerizing to infants and catches their attention better than spoken language. Mother's are usually a child's first mentor. And this helps to develop an ever deeper parental bond with the child. It also allows for the baby and mother to be more at ease and creates contentment which helps with the overall caregiving of a child. Parents that sing to their children typically have a specific set of lullabies and songs they play that are similar across each culture no matter where in the world you are from.

Social benefits:

Infants live in a highly musical world with the way parent speak in a sing-song way. Research show that infants love this way of parents speaking to them and they actually pay more attention. So we can conclude that music is innate, universal and a part of the universal human experience, even from an early age (NAMM Foundation, 2016).

**Toddlers**

For children, music is an essential part of their development. Just as babies, touch, place things in their mouths and explore the world around them, music is also a huge part of that development as well. Research reveals a strong connection between rhythm skills and pre-reading abilities in toddlers (Woodruff, et. al. 2014).

Cognitive benefits: Music enhances fine motor skills and the ability to use small acute muscles to write, use electronics, and perform other physical tasks. Research also shows a strong connection between rhythm skills and pre-reading abilities in toddlers. Infants will recognize the melody of a song long before they understand the words. They will attempt to mimic the sounds they hear and begin to move to the music when they are physically able. Toddlers love to dance and move to music. The key for toddlers is the repetition of the song which encourages word usage and memorization. If you sing a song to a child and change the words, this will make them laugh. They like being silly with song. Toddlers get exposed to song via their favorite TV shows. They can identify these songs and relate to them early. They like to sing on their own and will sing while they play. Even deaf children will sing independently while they play without being prompted. Deaf children with cochlear implants also love music, even though the sound might not be optimum. They will also sing along, although sometimes it may be off-key but, also gain a lot of enjoyment out of it. Deaf children don't often recognize melodies but, will often recognize rhythms. While there are differences in music perception with toddlers, those that are exposed to more music may turn out to be more musical due to that fact. The kind of music can definitely affect desire. More structured music may not appeal to children unless it appeals to their specific taste and interests. As a result, they may loose interest. Kids that were studied for 2 years that regularly attended music classes, show larger improvements in speech, reading and greater gains in auditory and motor functions than those that did not (Krause, 2014).

**Kids**

For kids, research also shows that music changes the brain and has impacts on listening skills, learning and cognition (Northwestern University, Sept/Oct. 2017). Children that are in high quality music programs score higher on standardized tests.

**Teens**

They also have higher graduation rates (NAME, 2015). Adolescent studies show that basic rhythm skills and tapping beats, relate to reading skills, and there is initial evidence that they both rely on common underlying neural mechanisms of

sound processing (Brain and Language, 2013. 124(3): p. 225-231. Students who take music in middle school tend to have significantly higher scores in Algebra in 9th grade than their counterparts (Helmrich. B.H. 2010). We know that 15-20% of students participate in music programs in the U.S.

**Seniors**

Music will stimulate certain parts of the brain that enhance memory for Alzheimer and dementia patients. A recent study at UC Irvine, showed that scores of memory test for Alzheimer's patients began to improve when they listen to classical music (PBS.org). Adults that are 60-85 improve processing speed of memory after three months of 30 minute piano lessons and three hours of practice a week (Krause, 2013). Playing an instrument as a kid sharpens the mind for adults, especially if they played for a decade or longer. Cognitive and neural benefits continue for individuals throughout their lifespan with sound. This can help to mitigate some of our loss as we age with hearing and cognition. Art programs have also been shown to be effective methods of assigning with this as well.

Research also shows that music, either listening or making it, can influence a seniors way of perceiving the quality of their life's. Some research has looked at different biomarkers in well-being and have shown improvement for aging adults. Music has been shown to reduce stress and help with many co-occurring disorders. Playing music helps to reduce blood pressure and respiration rates. Drumming circles have been shown to reveal reversal of stress hormones in blood samples (Bittman et al., 2001). Use of music has also been shown to be effective for individual's with anger challenges to begin to recognize emotion awareness. When feelings or emotion come up, discussion of those feelings become important and allows person's to begin to address them in a positive manner. Playing a musical instrument reduces stress on a molecular level (Loma Linda Medical School of Medicine and Applied Biosystems, 2022). Stanford University conducted a study of 30 individuals all over 80 years old that found that participants that were in a music therapy group were less anxious, less distressed and had a higher sense of self-esteem (Friedman, "Healing Power of the Drum." 1994). It has also been shown that rhythmic patterns help individuals with strokes and Parkinson's disease. Research has also shown that hearing slow, steady rhythms such as drumming beats can help Parkinson's patients move more steadily (Friedman, "Healing Power of the Drum", 1994). Playing music also helps with Human Growth Hormones (HgH) In aging adults, drumming can help individuals with predictability of the rhythm to provide a framework for repetitive responses that make demands on people with dementia (Clair, Bernstein and Johnson, 1995).

## Conclusion

We are recognizing now, more than ever, the impacts that sound and music have on the human psyche, socially and emotionally. When we begin to tap in to the world and sounds around us, we can look at transitioning back to our natural state and come back to vibrate at our full potential. It is society and humans that overcomplicate things. The ear and our sense of sound is a powerful medium to connect us to our inner self and world (ENTclinicSydney, 2014). When we are young, we come into this world knowing what we need, being open, exploratory and free. Music and sound is a huge part of our life's. As adults, we are conditioned to control and let it all go. Sound is the key to help us get back into our body and become free once again.

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