MUSIC AND THE BRAIN

Dr. Daniel Amen

Sing Whenever/Wherever You Can

Singing in the shower may be healing to your brain. Song has long been known to have healing qualities. You can often tell that a person is in a good mood if they are humming or singing. Song is a true joy of life, no matter how you sing. I have seen how the temperaments of my girls change when we sing together. They could be having a terrible day, but when they start singing, often they forget their cares and feel better.

Song is often associated with spiritual experience. When I was in college, I attended Calvary Chapel, a large church in Southern California. The music was magical. Listening to the choir was not just a pleasant listening experience, it was a wondrous experience that resonated through every cell in my body. The music uplifted both the soul and mood of the congregation. The pastor said the music was "Blessed by God Himself." Several of my friends were choir members. I often saw them become transformed when they started to sing. Shy people would become more extroverted, more alive. People in the congregation became more involved in the service during congregational singing. The church community glistened with the contagious joy of the music.

Preschool and kindergarten teachers have known for a long time that children learn best through songs. They remember the material easier and it is easier to keep them engaged in the activity. So why do we stop singing in the second or third grade? Perhaps we should continue the singing into later grades.

Interestingly, when I was in basic training in the military, we often sang when we marched. I still have those songs in my head. When we sang as a group, morale went up, and the tasks that we were doing didn't seem quite as bad (like 20-mile road marches).

Sing whenever and wherever you can. You may have to sing softly if your voice is like mine (my 16-year-old daughter is often embarrassed when I sing in church). It will have a

healing effect on your temporal lobes, and probably your limbic system as well.

Use Humming and Toning to Tune Up Your Brain

In the Mozart Effect, Don Campbell, founder of the Institute of Music, Health and Education, lists the benefits of using your voice to enhance mood and memory. He says that all forms of vocalization, including singing, chanting, yodeling, humming, reciting poetry, or simply talk can be therapeutic. "Nothing rivals toning," he concludes. The word 'toning' goes back to the fourteenth century and means to make sounds with elongated vowels for extended periods of time. Ah, ou (such as in soup), ee, ay, oh and om are examples of toning sounds. Campbell writes that when people tone on a regular basis for 5 minutes a day, "I have witnessed thousands of people relax into their voices, become more centered in their bodies, release fear and other emotions, and free themselves from physical pain…I have seen many people apply toning in practical ways, from relaxing before a dreaded test to eliminating symptoms of tinnitus or migraine headaches…Toning has been effective in relieving insomnia and other sleep disorders….Toning balances brain waves, deepens the breath, reduces the heart rate and imparts a general sense of well-being." Campbell reports that in his experience certain sounds tend to have certain effects on the body and emotions:

Ahhh - immediately evokes a relaxation response,

Ee or Ay - is the most stimulating of vowel sounds, helps with concentration, releasing pain and anger,

Oh or Om - considered the richest of sounds, can warm skin temperature and relax muscle tension. Try toning for 5 minutes a day for 2 weeks to see if it will help you.

In a similar way, humming can also make a positive difference in mood and memory. Mozart hummed as he composed. Children hum when they are happy. Adults often hum tunes that go through their minds, lifting their spirits and tuning their mind. Consciously focus on humming during the day. As the sound activates your brain, you will feel more alive and your brain will feel more tuned in to the moment.

Listen to Classical Music

In a similar way, listen to a lot of great music. Music, from country to jazz, from rock to classical, is one of the true joys of life. Music has many healing properties. Listening to music can activate and stimulate the temporal lobes and bring peace or excitement to your mind.

Music therapy has been a part of psychiatric treatments for centuries. When certain music is played it has a calming effect on patients. Fast-paced, upbeat music has a stimulating effect on depressed patients.

In highly publicized work, researchers at the University of California at Irvine (UCI) demonstrated that listening to Mozart's Sonata for Two Pianos (K.448) enhanced visual spatial learning skills. Frances H. Rauscher, PhD and her colleagues conducted a study with 36 undergraduates from the department of psychology who scored 8 to 9 points higher on the spatial IQ test (part of the Stanford-Binet Intelligence scale) after listening to 10 minutes of Mozart. Gordon Shaw, one of the researchers, suggested Mozart's music may be able to warm up the brain, "We suspect that complex music facilitates certain complex neuronal patterns involved in high brain activities like math and chess. By contrast, simple and repetitive music could have the opposite effect." In a follow up study the researchers tested spatial skill by projecting 16 abstract figures similar to folded pieces of paper on an overhead screen for one minute each. The test looked at ability of participants to tell how the items would look unfolded. Over a 5-day period, one group listened to Mozart's Sonata for Two Pianos, another to silence, and a third to mixed sounds, including music by Philip Glass, an audiotaped story, and a dance piece. The researchers reported that all three groups improved their scores from day one to day two, but the group that listened to Mozart improved their pattern recognition scores 62% compared to 14% for the silence group and 11% for the mixed group. On subsequent days the Mozart group achieved yet higher scores but the other groups did not show continued improvement. The researchers proposed that Mozart's music strengthened the creative right-brain processing center associated with spatial reasoning. "Listening to music," they concluded, "acts as an exercise for facilitating symmetry operations associated with higher brain function. Don Campbell gives a nice summary of this work in The Mozart Effect, along with many other examples of music enhancing learning and healing the body. Campbell writes that in his experience Mozart's violin concertos, especially numbers 3 and 4 produce even stronger positive effects on learning.

In the context of the temporal lobes this research makes perfect sense. The temporal lobes are involved in processing music and memory. Certain types of music may activate the temporal lobes and help them learn, process and remember information more efficiently. It is likely that certain types of music open new pathways into the mind.

Certain music can also be very destructive. It is no coincidence that the majority of teenagers who end up being sent to residential treatment facilities or group homes listen to more heavy

metal music than other teens. Music that is filled with lyrics of hate and despair encourage those same mind states in developing teens. What your children listen to may hurt them. Teach them to love classical music when they are young.

Music is influential from a very early age. Dr. Thomas Verny in his book The Secret Life of the Unborn Child cites scientific experiments showing that fetuses preferred Mozart and Vivaldi to other composers in early as well as later stages of pregnancy. He reported that fetal heart rates steadied and kicking lessened, while other music, especially rock, "drove most fetuses to distraction," and they "kicked violently" when it was played to their mothers.

Classical music and most beautiful soothing, stimulating music can make a positive difference in your brain.

Learn a Musical Instrument

In a follow up study by Rauscher and Shaw at UCI 34 preschoolers were given piano keyboard training. After 6 months, all the children could play basic melodies from Mozart and Beethoven. They exhibited significant increases in visual spatial skill (up to 36% improvement compared to other preschoolers who received computer lessons or other types of stimulation. Campbell reports on the following studies: The College Entrance Examination Board in 1996 reported that students with experience in musical performance scored 51 points higher on the verbal part of the SAT and 39 points high on the math section than the national average. In a study of approximately 7,500 students at a university music and music major had the highest reading scores of any students on campus. Learning a musical instrument, at any age can be helpful to develop and activate temporal lobe neurons. As the temporal lobes are activated in an effective way they are more likely to have improved function overall.

Move In Rhythms

The temporal lobes are involved with processing and producing rhythms. Many Americans never learn about the concept of rhythm and how important it can be to healing and health. Chanting, dancing and other forms of rhythmic movement can be healing.

Chanting is commonly used in eastern religions and orthodox western religions as a way to focus and open one's mind. Chanting has a special rhythm that produces an almost trance-like quality, bringing peace and tranquility to the person. In these states, the mind is more open to new experiences and learning.

Even for people with two left feet like myself, dancing and body movement can be very therapeutic. When I worked on a psychiatric hospital unit, the patients had dance therapy three to four times a week. I often found that my patients were more open and more insightful in psychotherapy after a dance therapy session. Dancing, like song and music, has the ability to change a person's mood and give them experiences they can treasure throughout the day, week, or even longer.

Look for opportunities to move in rhythms.

Mozart for Focus

In one controlled study, however, Mozart has been found helpful for ADD children. Rosalie Rebollo Pratt and colleagues studies 19 children, ages seven to seventeen, with ADD while playing recordings of Mozart during three times a week brain wave biofeedback sessions. 100 Masterpieces, Vol. 3: Wolfgang Amadeus Mozart was the music used. It included the selections of Piano Concerto No. 21 in C, The Marriage of Figaro, Flute Concerto No. 2 in D, Don Giovanni and other concertos and sonatas. The group that listened to Mozart had reduced their theta brain wave activity (slow brain waves often excessive in ADD) in exact rhythm to the underlying beat of the music, and displayed better focus and mood control, diminished impulsivity and improved social skill. Among the subjects that improved, 70 % maintained that improvement six months after the end of the study without further training.

The music you listen to matters!

After she heard me lecture on music and the brain, my 18 year old daughter, Breanne, did a study with 12 of her friends for a psychology class. She timed them playing the game Memory while they listened to nothing, Mozart, rock, heavy metal, and rap music. She found that they did best when they listened to Mozart (even better than to listening to nothing at all), and worst when they listened to heavy metal and rap music.

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