

The Effects of Music on the Mind: Beyond Soothing the Savage Beast

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Are people typically geniuses? Statistically, people probably are not. In fact, most people probably aren't even intellectually gifted at all. Most people are likely to be pretty much average, maybe a little bit above average, or a little below, but very average none the less. It is universally understood that people strive to learn to become wiser and more informed about the world around them. The more people learn, the more powerful they can become. It is the speed at which people learn that separates the geniuses from the average people from the learning disabled. Geniuses don't run into problems while learning, because they learn so fast. It is everyone else that could really use help.

One solid way to increase the speed at which people learn is with music. People learn through music and their minds grow faster because of it. Some music, when implemented properly, can have positive effects on learning and attitude. Music is a powerful thing, and when we understand its significance, it can bring dramatic changes both positive and negative into our lives.

The earliest stages of learning for young children are the most important. The fundamentals of learning are instilled into a child at a very young age and how much importance is placed on these fundamentals can have dramatic affects on the future of the child's learning. Music, when applied in a constructive way, can have positive effects on a child's learning and help them in many ways.

One way that music can make learning easier for a young child is by implementing music lessons into a child's normal activities. A small study was done two years back involving ten three-year-olds who were tested on their ability to put together a puzzle and the speed at which they could do it (1994, *Prevention* 24).

After the initial test was taken, five of the children were given singing lessons for 30 minutes a day and the other five were given piano lessons for 15 minutes a week (1994, *Prevention* 24). The lessons were conducted over a six- month period of time, and after the six months, all of the kids showed substantial improvement in the speed at which they could put together the puzzle (1994, *Prevention* 24).

The researchers understand this skill in putting pieces of a puzzle together as the same reasoning that engineers, chess players and high-level mathematicians use. In this study of inner-city kids, their initial scores were below the national average, but afterwards their scores nearly doubled (1994, *Prevention* 24).

The term they give to the type of reasoning and thought that goes into putting pieces of a puzzle together is called abstract reasoning. By teaching music, people exercise the same abstract reasoning skills that they use for doing math or some other exercise in which the people have to visualize in their head.

An eight month study was conducted by Frances H. Rauscher (1993, *Nature*) of the University of California at Irvine, in which 19 preschoolers, ranging in age from three to five, received weekly keyboard and daily singing lessons while another 15 preschoolers received no musical training at all (Bower 1995, *Science* 143). At the start, middle and end of the study, the subjects were tested on five spatial reasoning tasks (Bower 1995, *Science* 143). After only 4 months, scores on the test to assemble a puzzle to form a picture improved dramatically for the group with the musical training, while the control group didn't, even though both groups started out with the same scores (Bower 1995, *Science* 143).

It can be understood that this kind of improvement may not be substantial enough to alter the way people are fundamentally taught, but its results cannot be ignored. Rauscher explains, "Music instruction can improve a child's spatial intelligence for a long time, perhaps permanently" (qtd. in Bower Bower 1995, *Science* 143).

Implementing such changes and improvements into a young child's learning could have great effects on them in the future when dealing with the same spatial reasoning skills.

With its resulting improvements in spatial reasoning, music can also be a very helpful tool when actually implementing it into the classroom and involving it with learning basic curriculum. In New York City, a program called Learning through an Expanded Arts Program, or LEAP, has been going on for a while now in which music and the arts is implemented into the school curriculum to improve scholastic scores of children at all levels (Dean and Gross 614). One way in which music is implemented is with math. They call it "musical math," in which the teacher incorporates rhythm with counting and gaining a grasp on the fundamentals of math (618).

With the rhythm, they are able to learn basic elements of math like fraction and multiplication. Christine Bard, the LEAP consultant explains, "Music helps teach the precognitive skills. It gives students the capacity to trust themselves by providing internal discipline through a highly repetitive structure" (qtd. in Dean and Gross 618). On the whole, students' feeling of self-confidence and accomplishment are great and most importantly, the students' attitude toward math and learning is increased dramatically (618).

Music as a separate and thorough curriculum can have dramatic positive changes in the learning process of young people. Mary Jane Collett, the Director of the Office of Arts and Cultural Education of the Division of Instruction and Professional Development of New York City Public Schools says:

... a well taught sequential music curriculum not only results in music learning that has inherent value; it also gives students the chance to listen, react, see, touch, and move. Instruction in music skills, appreciation, and theory also provides a wealth of learning strategies that enhance

children's analyzing, synthesizing, and evaluating skills. Students learn to process information and transfer knowledge through these concrete, kinetic, and cognitive experiences (Collett 61).

Mary Jane Collett (1992) is an advocate for a program called *Learning To Read Through The Arts* (LTRTA), which makes music and the arts a separate course in the elementary curriculum instead of using it as an aid to different parts of the curriculum here and there (61). Music is taught through listening to different types of music while talking about the music, trying to understand it and interpret it in different ways and in many ways, imitate it (63). She further explains:

These integrated music experiences provide excitement in learning for children and thereby improve students' reading, writing, thinking, and analyzing skills and strategies. Learning through all the senses expands the learning process to accommodate different learning styles. Opportunities for integrating communication arts, literature, science, social studies, and the arts are limited only by the educator's imagination, creativity, and open-mindedness (64).

Music, when involved in the classroom, can have great effects on the early stages of learning for the very young up through elementary age school children. Music can also have significant effects on older people in a learning environment. Music does not have the same effect on older people as it does on younger people, however. It is easily understood that for young children, getting them to do fun musical things like learning to play an instrument is somewhat easy compared to getting an adult to do the same thing. Children will do it because it is something new and exciting whereas adults need to be motivated to do something because they won't do something simply because they can. For adults it is a matter of choice, but when they choose to involve music into their everyday lives, the effects can be just as dramatic, but different when compared with music effects on younger children.

One important aspect that music can have on learning for people of all ages is attitude. It seems logical to assume that it is more helpful for adults who are less likely to want to do a particular job or activity, but music can change this and give a listener a more positive attitude and motivation. As we will see, by simply listening to pleasant music in the background while doing an arduous task can make it seem so much easier, or in some cases, music may not increase positive attitude, but will ease the strain of an activity. A study was conducted by Shawn E. Mueske, a graduate student at Mankato State University, to determine the effects of background music on a biology lab. He studied to determine the effects of background music on attitude, achievement, time spent in the laboratory and on task behavior (Mueske 6-7). He used a control group which entailed one lab where no music was present, and one experimental group which listened to popular/soft rock music at an appropriate, soft sound level for background music (14). He found that there was no real difference in attitude or achievement among the two groups, but there was a significant increase in time spent in the laboratory and time spent on task (18-28).

Listening to music as background can help when people when they're thinking, learning, or working, but the music needs to be implemented correctly. It can be easily understood that if it's vocal music, it needs to be somewhat quiet, for if it isn't, it can be very distracting to the mind. It is logical to conclude then that if it's instrumental, it can be somewhat louder than vocal music, but not too loud because any music that is loud enough will make it hard to learn or think. As we will

see, the listener's preference to music must also be taken into account, because the primary goal is for the music to affect the person's mood and attitude positively, and if they are listening to music that they absolutely deplore, it won't help them think because it will be hard to shut it out of their mind.

When people listen to music in the background, it is very important that they listen to music that they are familiar and comfortable with. It is not necessarily better for people to listen to music that is supposed to relax them if they are unfamiliar with it. It is better for people to listen to music they are comfortable with and know well and like. A study of 50 male surgeons was conducted to see if they performed a basic surgeon-related task better and more efficiently while listening to surgeon-selected music, experimenter-selected music, or no music at all (Allen and Blascovich 882).

The test monitored skin conductance response frequency, pulse rate, blood pressure, speed and accuracy (883). The experimenter-selected music was Pachelbel's Canon in D. Both conditions with music showed significantly better results than the condition without music, but the condition with surgeon-selected music was clearly even higher than the other (883). Another study was conducted on 54 people (25 males and 29 females) to determine the difference of subject-selected music, experimenter-selected music and no music on affect, anxiety, and relaxation (Thaut and Davis 210). This study was done under the understanding that stress is a major factor to health problems of the day. It is important to cut down on stress in our daily lives and any way that we can do that is beneficial to our health in some way or another. One way to try and cut down on stress in people's everyday lives is by listening to music. In past years, there has been quite a bit of music created for the sole purpose of relaxation and the reduction of stress. The question posed by this survey is: Do these relaxation tapes really work better than a person's personal preference in music or no music at all in reducing stress? The study found that all three ways worked well for relaxation and reducing tension, but listening to music proved a little bit more beneficial. Of both music groups, it found that the relaxation tapes were equally as good as the subject-selected music, but were no better (219-220).

Music is an invaluable tool when it comes to reaching students who fail to do well in school. Scott Shuler, a music consultant in the Connecticut State Department of Education and adjunct professor in the Hartt School of Music in West Hartford, Conn. describes at-risk students as students that express characteristics such as: academic underachievement, lack of self-esteem and self-respect, inability to communicate thought and feeling on an intimate level, limited conflict resolution and problem-solving skills, boredom with traditional schooling, need for a supportive peer group with whom they can establish a social bond, learning styles that differ from those addressed by traditional modes of instruction, interest in artistic expression and eagerness to pursue tasks they find interesting, need for an experiential, hands on approach to learning, avoidance of academic risk taking, and need to experience success somewhere in the school setting (Shuler 31).

Shuler proposes that there are two essential reasons why students fail in school. They are lack of ability to learn or lack of desire to learn, and while most students who fail have the ability to do well, they choose not to because their school experience doesn't motivate them (30). At-risk students create an aversion to traditional styles of teaching and when attempts are made to cut out

"nonessential" subjects from curricula, it only worsens the problem and further distances the at-risk student from the goal of becoming motivated to do better (30-31).

For many reasons, music can be one of the most influential factors in getting at-risk students motivated. Music related courses in curricula give students many of the important elements that will erase the characteristics of an at-risk student. Every student likes music if only one kind, and outside of school, most students seek out music pretty actively (31). Therapists use music to help severely handicapped individuals, so why can't schools do the same thing to help at-risk students (31)?

Musical groups such as choir, orchestra or band help bring people together as well as improving communication skills, group work, and forming peer groups. Music creates a higher standard among people; where on a math test a grade of 90% would be an "A", a 90% grade on a performance would be quite bad (32). This study seems to suggest that music can provide a student with a level of individuality to learn in his/her own style. Music education creates a much more well-rounded student that do much more and learn much easier.

Music can also have very interesting and beneficial effects on the mind. A study was conducted at the Center for the Neurobiology of Learning and Memory at the University of California at Irvine by Frances H. Rauscher, Gordon L. Shaw and Katherine N. Ky in which 36 college students listened to one of three listening condition for ten minutes and then took the Stanford-Binet intelligence test designed for abstract reasoning (Rauscher, Shaw and Ky 611).

The experiment was repeated for each of the listening conditions which were listening to a Mozart piano sonata, a relaxation tape, and complete silence (611). They found that the equivalent IQ scores were the equal between listening to the relaxation tape and complete silence, but after listening to the Mozart piece, IQ scores were an average of eight to nine points higher than the others (611). The scientists explain how the enhancing effect doesn't last for more than ten to fifteen minutes after listening to the sample (611).

They were able to draw a certain amount of theories out of the results of this study, but much more testing is required for any solid conclusions to be made. They think that music that is without complexity or is highly repetitive will not enhance abstract reasoning, but rather interfere with it (611).

Their findings are put under scrutiny and criticism by Kristin Leutwyler, who tries to set the record straight about misinterpretations in the media regarding the findings of Rauscher, Shaw and Ky. She asserts that "...the popular press have suggested that anyone can increase his or her IQ by listening to Mozart. This supposed quick fix is false" (28). She explains that the IQ scores were based solely on spatial ability and not other factors that IQ takes into account (28). Leutwyler explains that Rauscher's work is "... based on the premise that listening to music and performing a spatial task prime the same neural firing patterns. But that's just a guess." (28)

Despite the skepticism of Leutwyler in the findings of the three scientists and the fact that more testing needs to done to take into account different variables, the initial findings cannot be ignored.

There is some correlation between listening to music and spatial reasoning and through it, there is some connection with IQ.

A good sized study was done many years ago to test intelligence across a wide range of fields and subjects (Schoen 94). On the study, 205 college students were given the Minnesota College Ability Test, all of the Seashore tests for musical talent, and were rated on a scale for musical training (94). After the testing was complete, they separated out the top 25 and the bottom 25 to determine if there was a difference in musicality among them, but found none (94).

Next, they excluded the 25 students with the greatest and least amount of musical training and found two interesting groups (94). Of the two groups left, the top group's average student had taken music theory, private piano lessons for two years, voice and cello for four years while he/she had played in orchestras for four years, sung in choir for six years, had three musicians in the family, could read music and supply missing parts, and attended concerts regularly (94). The lower group's average student had never had any private lessons, didn't play an instrument, had no musicians in his/her family, and never attended operas or concerts (95). Music won't turn anyone into a genius, but it can have some substantial effects on bringing people above average at least.

One thing that music does that cannot be ignored is it stimulates the brain- sometimes positively and sometimes negatively, but it effects the brain nonetheless. Some positive effects on the brain can be seen from the study conducted by Rauscher, Shaw and Ky where they found a temporary increase in spatial reasoning after listening to a bit of Mozart. These findings are somewhat inconclusive, but cannot be ignored altogether. It shows how there is much more studying that needs to be done in the future on this subject.

I have a personal anecdote about how music stimulates the mind. When I was in high school, I took the ACT for the first time in the fall of my Junior year. It was a normal day and I wasn't extremely focused or unfocused on the morning that I took it. That morning before I left, and on my way to the test site, I listened to some of my favorite rock music on my radio. The test seemed a little hard, but I got through it. When my results came back a few weeks later, I received a 19. That was a horrible score for me. I figured that I had better take it again and get a higher score, so in the spring of my junior year I took it again. This time, I felt a little more focused and during the entire morning before I left and on my way to the test site, I listened to Mozart. This time I was much more confident on how I did when I was finished. A couple weeks later, I found out that I received a 26. Most people improve on their ACT score when they take it a second time, but I've never heard of anyone improving as much as I did. I had read the report about listening to Mozart and how it supposedly raised your IQ temporarily, and that's why I listened to it that day. I was much more prepared for the test the second time, but to improve as much as I did, one has to wonder if listening to Mozart had anything to do with it.

Music has been known to have a very direct effect on people's moods. By just listening to music, people's moods are easily altered. Several studies were conducted to test people's mood changes after listening to certain kinds of music (Schoen 89-99).

One large study of 20,000 people showed music changes mood and the changes in mood were very uniform (89). A large number of people listened to classical music by various composers from various musical periods and were asked how the music made them feel. Another study showed that the effects of mood varied from person to person depending on their musicality. Non-musical people enjoy music rarely and when they do, the enjoyment is slight, while semi-musical people enjoy music quite often and when they do, it is enjoyable to them, while musical people enjoy music rarely, due to discriminating tastes, but when they do, it is with the greatest intensity (90).

These studies also showed that certain types of moods/emotions are characteristic with music while certain emotions are not such as anger, fear, jealousy, and envy (91). Certain emotions are more characteristic with vocal music because of the words such as: love, longing, reverence, devotion (91).

Another study was done on 205 people testing the effects of major and minor modes. Minor mode gave the feelings of "... melancholy, mournful, gloomy, depressing..." while major mode most often gave the feelings of "... happy, sprightly, cheerful, joyous, and bright ..." (99).

Music is an important and extremely useful tool in the way we learn and to deny its power is a waste of a truly wonderful resource. In recent years there have been concerns about some types of music such as Gangsta Rap having very negative effects on peoples minds and moods. This type of music imprints an extremely violent image into people's minds and there has been growing concern about it and tying it in with violent crimes. In cases like this, it only shows how much more we need to study music to fully understand its full impact on the human mind. In these days where cutbacks are always eminent in people's local schools, people need to struggle to keep the music and art intact. Music and the arts are what make life worth living and without them, people lose hold of their culture and diversity. The ideal way to learn in the future would be to fully incorporate music into the curriculum of every school. If every school supported and encouraged their students to freely pursue music with the culture of music in their everyday lives, people would become much more efficient in their learning and would become much better students on the whole. Music is a power too great for man to comprehend at this point but through further study man can learn how to better harness its power to use it to its full potential.

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