

How Does Music Affect The Brain?

By Arwen

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Problem / Objective

How does music affect the brain?

Why I Chose This Question

When I was trying to choose my Question my mom was helping me think of ideas based on my interests. She suggested something about music and how it helps your brain. My sister has Epilepsy which is a disease that causes you to have seizures. When she was first diagnosed with epilepsy her doctor said that she should do music to help her. I wondered if music is really helping her and I decided to research more on this topic.

Method

The background of the slide features a series of overlapping, wavy bands of color. The top portion is a solid, vibrant green. Below this, there are several layers of lighter, semi-transparent green and teal, which blend into a pale blue and finally into a white background at the bottom. The overall effect is a soft, layered, and organic-looking design.

Method

To do this project I first came up with my question. After I thought of my question I started researching. during my researching I thought up a bunch of questions that would support my research. I sent these questions to many people. The answers I got back were put in my own word and each put on a slide.

Hypothesis

I think music does help with mental conditions. At senior centers they always want people to play music for the seniors. I think that even if the music is not familiar it will jog the memory of people with Dementia. For many people music causes happy moods and I think it challenges the brain.

Questions Related To My Research

- How does the brain work?
- What type of music calms the brain best? (ex: rock, classical etc.)
- Does your brain change with age?
- How does your brain receive input?
- What is the difference of learning music vs. listening to music?

Questions Related To My Research

- What instruments are the best for stimulating the brain?
- Does music help your memory?
- What is the best age to learn music (why)?
- Is it better for your brain to learn more challenging instruments?
- Does different music help with different diseases?

Questions Related To My Research

- If you don't like a certain type of music, will it still help your brain?
- How does your brain deal with mental diseases?
- Do other parts of your body get affected by music?
- What is music therapy?

Questions Related To My Research

- Does music have an effect in animal brains?
- Does dynamic music affect the brain more or less?
- What are mental conditions?
- What other things help mental conditions?

How does the brain work?

There are many parts of the brain that do different things. These are: the Frontal Lobes, Occipital Lobes, Temporal Lobes, Parietal Lobes, The Thalamus (which is the main spot for sensory connections to go through), and the Brain Stem (this controls the main basic functions). These all come together to help the brain function. In general the brain is a very complex organ that houses many neurons that work together to control you. These neurons are activated by chemical messages called neurotransmitters. These are sent down different paths in our brain and when when we learn something new new pathways are made. We know a lot about the brain but there is still a lot to be learned about it, as it is a very complex organ.

What type of music calms the brain best?

According to research lyricless music or white noise calms the brain best. Though this is proven to be the best music to calm the brain it depends on the person. If a person doesn't like classical music they might not feel calm listening to classical music. Because they don't like it this isn't very calming music to them. Some people may like rock or jazz music and this calms them down. It also depends on emotional feelings from the past or different memories that help you feel calm.

Does your brain change with age?

As you age your brain changes too. As you learn new things and have different experiences new neural paths are formed. As you grow older your brain can shrink or atrophy. Your brain can lose cells and it makes it harder for your brain to keep up. This can lead to developing different disorders like dementia.

How does your brain receive input?

Your brain receives input from the nervous system. Like if you touch something hot the signal will go up your spine and go to your brain. These signals come from your five senses: sight, sound, touch, taste, and smell. The somatosensory receives these signals.

What is the difference between learning vs. listening to music?

When we learn music new pathways are formed in our brains. It is like learning a new language. It helps our brains get better. Studies also show that some of the motor functions on our brain do realize the difference between learning and listening to music. When listening to music new memories might form or some might be remembered. It also has an emotional response to the person listening to the music. In general music is both good to be listened to and played.

What instruments are best for stimulating the brain?

Each instrument created different pathways that help us learn. Different instruments help us with different motor skills as well. It also depends on the instrument that the person like listening to. This recalls memories and might feel different to each person. Thus a specific instrument isn't the best or the worst at stimulating the brain. Though this is all true string instruments and piano are very recommended instruments because they require both hands to do different things at the same time.

Does music help your memory?

Yes it does. Music can help recall memories for people with memory issues. Some people with Alzheimer's disease can forget a lot of things but can still remember how to play a musical instrument. It is easier for people to remember things if they can associate it with something else. Music helps with this because it helps us group words and notes together. Music also triggers memories.

What is the best age to learn music?

The best age to learn music is at a young age. Young brains are still developing and can soak up information easier. Ages 5-21 are usually a good age to learn a new instrument.. though it is easier to learn a new instrument when you are young it is also good to learn when you are older. It helps challenge older brains keeping them healthy. In conclusion all ages are good for learning.

Is it better for your brain to learn more challenging instruments?

Musical instruments have different difficulties for different people. The piano might be way easier to learn to one person but might be the hardest thing in the world to another. Some instruments are probably a bit harder than others (like a violin would probably be harder to play than a kazoo) but it is different to every person. It is good for your brain to be challenged though so anything that is challenging to you is good for your brain.

Does music help with different diseases?

Yes music is a very good tool to help with different diseases. It helps calm anxiety, helps recall memories, get parkinson's patients moving by motivating them, and can help boost moods. Music therapists use music as a helpful tool to help their patients.

If you don't like a type of music will it still help your brain?

Probably not. Even though all music still stimulates the brain it won't help you or your brain. If you have listened to a piece of music during a tragic time it might trigger bad memories. Music therapists like to have their patients listen to familiar music that they like and enjoy.

How does your brain deal with mental diseases?

It is a quite complicated process. Depending on the person and what disease they have reflects on how they deal with it. Different diseases will affect the brain in different ways. The brain will make new connections as it learns, helping deal with the disease.

Do other parts of your body get affected by music?

Music goes through the ear and is sent to the brain to process. The brain controls the music sensor and tells the body what to do like tapping toes or singing along to your favorite song. Music is also great to motivate you.

What is music therapy?

Music therapy is a tool to help improve your mood and well being. It uses music to help recall memories, boost mood, help verbal skills, and social skills.

Does music have an effect on animal brains?

Not much is known about how music affects animals as they can't tell us directly. Though, studies have shown that classical music can help reduce anxiety in dogs. Heavy metal music will cause dogs to bark loudly and shake vigorously. It has also been shown that cows listening to music 100 beats per minute or less produce more milk!

Does dynamic music affect the brain more or less?

Yes it does. Music that had different dynamics (loud, soft, in between) can help us pay attention better. Change will keep our brains alert. If something is the same all the time we will tend to drop out a bit.

Happy or more joyful music will create dopamine which will cause you to be happier.

What are mental conditions?

Mental disorders/conditions is a very broad topic. This is because it is hard to define a "normal" brain. Some mental disorders are caused by chemical imbalances in brains though that is only one cause. Some other causes are traumatic experiences, life circumstances, and many others. Mental disorders involve emotional changes, abnormal thoughts, and stops some people from functioning in everyday life.

What other things help mental conditions?

There are many treatments for mental conditions other than music therapy. Medications are a big help. Things like group therapy, social support, and counselling are also good ways to treat mental conditions. Even though these are all good ways to treat mental conditions the best is to have a healthy active lifestyle.

Alzheimer's disease

Is a disease that gradually breaks down memory and thinking skills. Eventually it leads to troubles doing everyday tasks. It usually starts showing symptoms during mid-60s, but a rare form of the disease called early onset alzheimer's disease can start showing symptoms during mid-30s to 60s. It is a common cause for dementia for many elderly adults.

Dementias

Is mostly caused by abnormal changes in the brain. The changes can cause slowing of thinking skills and can be severe enough to cause slowing of daily life and independent functioning. It can also change behavior, relationships and feelings.

Epilepsy

Is diagnosed when the brain has recurring seizures. Seizures are caused when there is a lot of electrical activity in the brain. Other things that cause epilepsy are head injuries, infections in the brain, and strokes.

Parkinson's

In the center of the brain there are some nerves that will degenerate gradually. This causes problems with coordination and movement. Some signs that you might have parkinson's disease is that you may find tremors in your hands, stiff limbs slow movement and your posture might be unstable.

Amyotrophic lateral sclerosis (ALS)

Is also called Lou Gehrig's disease. Nerves that control the muscle functions are quickly destroyed. It leads to paralyzation and difficulty breathing without assistance.

Analysis

The background features a series of overlapping, wavy bands in various shades of blue, ranging from a deep cerulean at the top to a very light, almost white blue at the bottom. The word "Analysis" is written in a white, elegant cursive font, positioned in the upper left quadrant of the image.

Analysis

1. It seems like the brain is affected by music.
2. Even if lots is known about the brain and the effects music has on it there is lots to be learned.
3. There are many conditions that the brain can have but many don't have cures.
4. Inputs going into the brain are received from the 5 senses sight, sent, taste, hearing, and touch.



conclusion

Conclusion

Music affects the brain in many ways. It can help patients with Parkinson's disease get moving, help recall memories and boost mood. To some people it challenges the brain and helps build new neural pathways when we learn a new instrument. Even though it is easier to learn an instrument when you are young it is a good challenge for you when you get older as well. It doesn't matter if you are listening to music or playing music there is still an effect on the brain. Music is a good tool for all.

Improvements

There are many improvements I would probably make. Next time I would probably like to start this project earlier so I wouldn't have to rush as much. Another improvement I would make is find more different resources like books or videos. Other improvements I would make are finding a subject I would be more interested in so it would be more motivating for me to work on it.

The background features a gradient of blue and purple colors with wavy, layered patterns that create a sense of depth and movement. The text is centered in the upper half of the image.

*Applications and
future research*

Applications and further research

Something I would else I would like to research more is how music specifically affects different diseases and how well or not well it works on the different diseases. Other things I would research is music therapy and it how it works. I would also look into how it would affect diseases like epilepsy specifically.

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