Lesson 2 | Music and the brain

Assignment 1 **Article music and our brain**

Read the article "This is What Music Does to Our Brain" and then answer the following questions.

1.What does music do to our brains?
2. Which areas of the brain are stimulated by music?
3. What effect can music have on our mood?
4. Music can cause a certain hormone to be released that makes you feel good; which is this?
5. Study the image of music and our brain and fill in the table.
6. How, according to Schaefer, could we apply music in care?

Part of the brain	Latin or English name	Function in relation to music
Motor cortex		
Sensory cortex		
Forebrain		
Nucleus accumbens		
Cerebellum		
Amygdala		
Prefrontal cortex		
Auditory cortex		
Visual cortex		

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Assignment 2 **Film professor Erik Scherder**

Why do you almost automatically start moving when you hear music?
Why can music therapy solve certain brain problems?
VU professor Erik Scherder explains it.

1. Watch the following episode https://www.youtube.com/watch?v=9Kq3rwjMxTE
2. Write a report on what you have learned from this episode and justify your answer (at least half a page of A4).

Report:

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This is what music does with our brain

WHAT DOES THE SCIENCE SAY?

Music activates our entire brain. It is one of the most powerful ways to excite emotions. Why does a song make us happy, active or restful? Neuropsychologist Rebecca Schaefer gives an insight into our musical brains.

Let a premature baby listen to harp music and is has a positive effect on growth. Stressed? Put on the music of Verdi or the arias from Puccini's opera Turandot. The repeating 10 second cycles feel like a heartbeat and have a calming effect. If you are a wine merchant and want your customers to buy expensive wines, play classical music.

Numerous studies 'prove' the positive influence of music on the brain and behaviour. Some have become urban legends. For example: cows produce more milk when hearing Beethoven; or listening to Mozart makes you more intelligent. "You have to take some research with a pinch of salt, because it is not well defined", says Rebecca Schaefer, neuropsychologist at the University of Leiden

Activation
Schaefer guards against firm, general conclusions based on small studies. Scientists do not yet know exactly how the brain reacts to music. But it is clear that everything happens in the brain.

"Music is one of the most powerful means of evoking emotions. You can put yourself in a certain mood with it. Even if you play a song in your head, the brain activates in a similar way to actually hearing a song."

The question of what music does to the brain cannot be captured in one answer. Music can activate the whole brain. Each element, such as rhythm, sound, melody and harmony, can affect a specific part of the brain.

"The reaction to music goes in all directions from the hearing area. It causes everything to happen in the brain at once. It stimulates brain areas that are involved in emotion, motor skills, memory and language, among other things." It activates, relaxes, makes you happy or sad".

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Moving to music, as we do, seems to be unique to humans.

Sad

How the brain then interprets music depends on several factors. It can evoke associations with an event. If that is a positive memory, dopamine is released and a person is happy to hear a specific song. When people are sad, they tend to listen to wistful music instead of cheerful ones. "Music is a safe way to explore negative feelings."

Some musical genres are strongly associated with the 'negative'. Fado and opera songs are often sad, death metal expresses anger. "That is partly due to certain aspects of music, such as the type of chords. Songs in a minor key are considered sad. Consonant notes sound good together, but dissonant notes give a rough sound and people think that sounds negative.

Health

Many athletes use music with a loud, regular beat to cheer themselves up before a game or workout. Battle songs like Eye of the Tiger help to present yourself as invincible and to intimidate your opponent.

Schaefer mainly conducts research into the application of music in healthcare. "We can do a lot more with music there than we do now. It is important that we make specific what we want to tackle. In people with dementia, music hardly helps to improve memory, but it can help with restlessness, anxiety or panic. We can try to get patients to go into surgery more relaxed with calming music that has an effect on muscle tension and heart rate."

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Autism

Certain elements of music can be helpful for specific groups of patients and problems. On one hand music therapy can help people with autism communicate and on another, the application of music can help someone with Parkinson's disease, walk.

The conclusion that music can be used as medicine is still a step too far for Schaefer. "We can only use interventions properly if we have an idea of the underlying mechanisms in the brain. What happens in the body when you hear music? Among other things, I research the influence of musical rhythm in movement rehabilitation. A beat or certain rhythm may be able to help people, with a more stable movement or better timing. But maybe motivation and fun are also important in this."

Movement

If anything is unique to humans, it's that when we hear music, we automatically tend to move or clap along. The videos of the parrot moving along to music of the Backstreet Boys or the sea lion dancing to the song Boogie Wonderland are wellknown.

"Those animals can do that because it is learned from, or encouraged by humans. A monkey can't do that. Some animals can hear tones very well, but that function seems to be different from how we listen to music. Moving to music, as we do, seems to be unique to people."

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