System identifies music selections via brain scanning

February 2 2018

It may sound like science fiction, but mind-reading equipment is much closer to reality than most people realize. A new study carried out at D'Or Institute for Research and Education used magnetic resonance imaging (MRI) to read participants' minds and determine what song they were listening to. The study, published today in *Scientific Reports*, contributes to the improvement of the technique and paves the way to new research on reconstruction of auditory imagination and inner speech. In the clinical domain, it can enhance brain-computer interfaces in order to establish communication with locked-in syndrome patients.

In the experiment, six volunteers heard 40 pieces of classical music, rock, pop and jazz. The neural fingerprints of each song on the participants' brains were captured by via MRI while a computer learned to identify the brain patterns elicited by each musical piece. Musical features such as tonality, dynamics, rhythm and timbre were taken into account by the computer.

The researchers expected that the computer would be able to identify which song participants were listening to based on their brain activity—a technique known as brain decoding. When confronted with two options, the computer showed up to 85 percent accuracy in identifying the correct song.

The researchers then pushed the test even further by providing 10 options (e.g., one correct and nine wrong options) to the computer. In this scenario, the computer correctly identified the song in 74 percent of

the time.

In the future, studies on brain decoding and machine learning could enable communication regardless of written or spoken language. "Machines will be able to translate our musical thoughts into songs," says Sebastian Hoefle, researcher from D"Or Institute. According to Hoefle, brain decoding research provides a means to understand neural functioning and interact with it using artificial intelligence.

Provided by D'Or Institute for Research and Education

Citation: System identifies music selections via brain scanning (2018, February 2) retrieved 26 April 2024 from https://phys.org/news/2018-02-music-brain-scanning.html