Music-dementia project

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Music-Dementia Project

As I volunteered at the elderly day-care center in Japan, I was exposed to various situations on the severity of the lack of support the elderly have. Compared to the significant increase in the numbers of the elderly, the numbers of volunteers/caretakers are in shortage. Understanding this situation, I thought one task I must take part of was assisting the citizens in need. At HPA, I was introduced to the NeuroSky Headset that measures brain activity with research-grade, noise filtering, and EEG biosensors.

I composed a study that looked at the therapeutic effects of music on dementia patients. I finally displayed it in an excel grid format to make data comparisons.
After the first visit, I discussed with the organizer of the day-care center to increase the clients' exposure to music. A month later, I returned to the day-care, to once again conduct
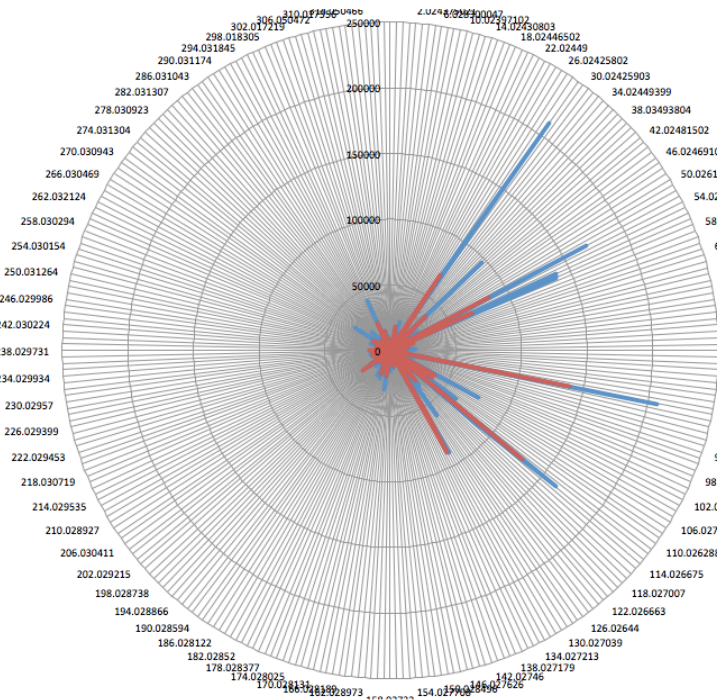
the two types of tests on the same clients. Although the duration of a month was a very short time period, the clients presented with an improvement of sleep, and began to show positive reactions. Some patients showed a great smile that they had never showed before. I brought this project back home in Fukuoka, Japan, where I was originally inspired. Similar responses were seen, with the patients showing especially higher levels of gamma waves. (Which is related to the cognitive processing component of the brain)

Cognitive Activity (Morning vs Night)

People have times of the day in which their cognitive activity is higher as opposed to other times of the day. Therefore, optimal study is more effective within a certain window of time. This study was conducted to display individual patterns in cognitive performance to find the times of the day that people are most alert, eventually corresponding to the performance with learning tasks.

In this study, I asked the subjects (boarding students) to take a survey to rate their stress level and the total hours of sleep they had on the night before. Using a visual test for analytical
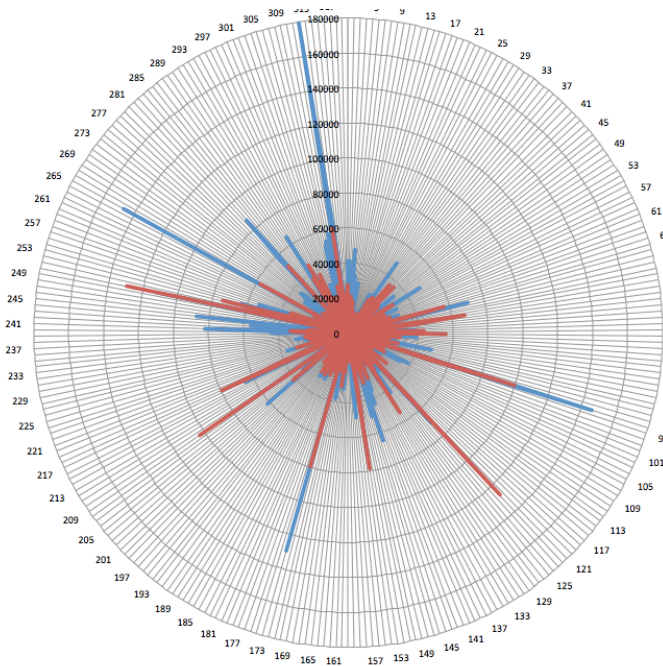
data, I simultaneously recorded their brainwave using the NeuroSky Brainwave Visualizer Application. Similarly to my music-dementia project, I used the data from the application, and converted the xml format data into an excel spreadsheet. Instead of looking at all ranges of brainwaves, the gamma waves were specifically looked at, as it relates to the students' ability to achieve the same performance with or without much exertion.

Overall, the majority of the people presented with better analytical scores of the visual test in the morning, and higher (high + low) gamma levels in the morning. The high school students I tested performed better in the morning as opposed to the night. One interesting data that I found was that 91% of the people stated the survey (I asked before the test) that they were in fact a "night person". Thus, I was able to prove their beliefs wrong