



**CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY**

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Project Title The Brain Beats	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals People all around the world listen to music every day. Some claim it helps them concentrate, while others claim otherwise. However, in the early 1800s, a different kind of "music" was discovered by Prussian physicist Heinrich Wilhelm Dove. This music has been labeled as "binaural beats," and the alternative medicine community claims that it can work wonders on the mind. This experiment is focused on if and how binaural beats can produce an effect on the brain and its functions.</p> <p>Methods/Materials The following materials were used in this experiment: "Brainwave (32 Binaural Programs)" app, "Memory Matches" app, ear-specific headphones, and a quiet testing environment. The participant was taken into the quiet testing environment and played the memory game three times. Then, they listened to binaural beats geared towards beta waves for ten minutes. After that, they played the game again three times.</p> <p>Results 80% of the 25 participants, 80% had an improvement in their median score by an average of 18% per person after listening to the binaural beats. An improvement, in this case, means a lower timing in the memory game. 82% of the teenage group (ages 10-15) improved their median score by an average of 19% per person after listening to the binaural beats.</p> <p>Conclusions/Discussion Overall, binaural beats did have an impact on the brain. Their applications are not simply restricted to memory and concentration. These beats can be utilized for treating insomnia and other such chronic ailments. The experiment proved that more tests can certainly be conducted, and this time, these tests can be tailored for certain age groups. They also proved that a tool may be needed to see the actual measurement of the brainwave frequencies. This will show that the binaural beats are a direct cause to an increase in cognitive activity, as opposed to simply being a correlation.</p>	
Summary Statement This project is about how sound frequencies can influence brain functions.	
Help Received My parents helped put together the board	