



**CALIFORNIA STATE SCIENCE FAIR  
2011 PROJECT SUMMARY**

<b>Name(s)</b> <b>Kaila Corrington; Sneha Pang</b>	<b>Project Number</b>  31541
<b>Project Title</b> <b>Blasting Binaural Beats on the Brain</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The objective of the experiment was to discover whether the effects of beta binaural beats on problem-solving ability could be altered by combining the frequencies with various controlled ambient noises, and if so, which ambient noises would produce the most significant effects. <b>Methods/Materials</b> Five, three-minute audio samples were generated. Four included the underlying beta binaural beat (three of which were layered with another ambient noise), and one was pure silence. A representative sampling of individuals from varying education backgrounds participated by completing as much as possible of a 100-problem, simple operations math worksheet while listening to each of the five tracks. The five different tests were collected and scored, awarding points for correct answers and including a guessing penalty. Necessary materials for this procedure included audio editing programs, audio samples, audio playing devices, headphones, headphone splitters (optional), math worksheets, a stopwatch, writing utensils, and the participants. <b>Results</b> The majority of participants performed best on the trials in which the binaural beat was merged with either lyrical music or the ambient noise of an environment typical to an outdoor shopping center. Overall, the average scores proved that the beta binaural beat could be best enhanced in combination with the shopping center ambient track or the lyrical music track, respectively. When the trial with the silent audio sample was administered, each participant exhibited their poorest performance of each of the five trials. The aforementioned trends were demonstrated at each tested education level. <b>Conclusions/Discussion</b> As revealed in the poor performance on the silent trials, the beta binaural beat assuredly has a positive effect on problem-solving performance. The extent of this effect can be enhanced by layering the frequencies with an ambient track, and while the results of different ambient tracks can vary between individuals, the overall trends suggested the ambient noise of a shopping center was most beneficial in conjunction with the beta beat. These trends signify the environments that individuals have become accustomed to concentrating within, and our results suggest that the most efficient studying habitat is one that combines the beta binaural beat with the ambient noises customary to everyday activities.	
<b>Summary Statement</b> The experiment revealed the effects of beta binaural beats on problem-solving ability and how said effects could be enhanced by combining the frequencies with various controlled ambient noises.	
<b>Help Received</b> William Schlegel, Christopher Morgan, and Gregory Peck were all high school science teachers that offered their guidance to the experiment. A family friend assisted in preparing the wood for the project board.	