



**CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY**

Name(s) Patrick Casebolt; Charley Huang	Project Number S0495
Project Title Auditory Reception as a Factor in Cognition: A Study on Selective Attention	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of this experiment was to determine to what degree various auditory distractions affect concentration. Additionally, we identified factors, such as gender, academic performance, and individual study habits that might correlate with one's ability to work in an environment manipulated by selective attention. We hypothesized that a subject's efficiency would deteriorate in the presence of auditory distractions, and that the amount of deterioration would correspond to that individual's typical work environment. For example, we would expect a subject who normally studies in a distracting environment to have a lesser decline in score in the presence of auditory variables during experimental testing.</p> <p>Methods/Materials A sample of 32 subjects, grades 9-12, participated in experimentation. To test our hypothesis, we developed surveys collecting information about individual study habits, specified based on a five point Likert scale, as well as a three part series of parallel tests that required completion of several simple math equations. The first section (A) was our control, which subjects completed in an environment free of auditory manipulation. The second (B) required subjects to complete the math problems, while simultaneously counting beeps, played intermittently into the subjects ear. The third (C) was conducted in the same fashion as the second, but with classical music played in the background. Subjects wore noise cancelling headphones to ensure a fully controlled environment.</p> <p>Results On average, we observed a 33 percent decline in performance once auditory variables were played in a subject's ear. Additionally, participants who studied more often in distractive environments had a less dramatic decrease in score from tests A to B than those who studied in quiet environments. We also determined a strong correlation between GPA and typical study environment of the subjects. Students with higher GPAs also tended to study in quiet environments, suggesting that academics can be affected by studying in distractive environments.</p> <p>Conclusions/Discussion Working in a distractive environment is not conducive to efficiency, and can even be linked to a decline in academic performance. Turning off the music and logging out of facebook while studying can have a substantial, positive effect on one's performance in school.</p>	
Summary Statement This project examines factors, such as academic performance and individual study habits, that may correlate with the ability to concentrate in a distractive environment.	
Help Received Parents paid for supplies	