



**CALIFORNIA SCIENCE & ENGINEERING FAIR
2018 PROJECT SUMMARY**

Name(s) <p align="center">Aria Delgado</p>	Project Number <p align="right">38316</p>
Project Title <p align="center">The Devil in Music: The Power of Tritones on Human Behavior</p>	
<p align="center">Abstract</p> <p>Objectives/Goals Can tritones can affect human memory, pulse, and blood pressure</p> <p>Methods/Materials Make an original sheet of music with different tritones Play the tritones on the two clarinets and record it Create a group of 16 students Have one student take their memory test Take the student#s blood pressure/heart rate with the monitor Repeat step 4-6 for 15 more students Have one student from the same group of 16 students listen to the tritones played on the clarinets with their earbuds while taking their memory test Take the student#s blood pressure/heart rate with the monitor Repeat step 8-10 for 15 more students Collect data and compare the results of the control group and the tritone clarinet group</p> <p>Results The results of my investigation on tritones affecting human behavior indicate that the tritones did raise SYS blood pressure and lower the ability to concentrate for the students during the memory test. Control - Heart Rate Results Lowest heart rate = 60 units Highest heart rate = 102 units Average heart rate = 79.0625 units Tritone Clarinet - Heart Rate Results Lowest Heart Rate = 60 units Highest Heart Rate = 94 units Average Heart Rate = 72.0625 units Tritone Harp - Heart Rate Results Lowest Heart Rate = 60 units Highest Heart Rate = 134 units Average Heart Rate = 101.8125 units</p> <p>Conclusions/Discussion After completing my investigation on whether tritones affect human behavior by analyzing changes in heart rate and blood pressure, I discovered that my hypothesis on tritones affecting the students was supported. My hypothesis stated that the tritones would affect human behavior because of the dissonant and restless harmonies produced by this specific combination of notes. The control group resulted in levels of 103.25 units for the SYS (systolic) blood pressure, 71.0625 units for the DIA (diastolic) blood pressure, 79.0625 units for the heart rate, and 30.1875 units for the memory test. The tritone clarinet group</p>	
<p>Summary Statement</p> <p>During my experiment, I noticed that the tritones played on the harp resulted in students having higher test scores, but these tones also raised students# average heart rate.</p>	
<p>Help Received</p>	