



**CALIFORNIA STATE SCIENCE FAIR  
2017 PROJECT SUMMARY**

<b>Name(s)</b> Anya E. Jones	<b>Project Number</b> <b>J0712</b>
<b>Project Title</b> <b>How We Perceive Sound</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The objective of this experiment was to examine the effect on an individual's ability to identify an instrument when they were played samples with all three parts of a note: the attack (beginning), sustain (middle), and decay (end) vs. just the sustain. <b>Methods/Materials</b> Twenty-six participants were played 16 samples of four instruments (clarinet, saxophone, flute and trumpet) with and without the attack and decay. After hearing each note twice, participants wrote the corresponding sample number next to the instrument they thought it was on a test answer sheet. Participants were diverse in age and knowledge of music. Pre-recorded samples were played using an iPhone. <b>Results</b> The results of the experiment showed the attack, sustain, and decay test scores only had a 14.3% increase from the sustain-only test scores. But the average number of correctly guessed instruments was exactly the same for both test groups: 3.65. <b>Conclusions/Discussion</b> Although my hypothesis was proven--yes, the attack and decay of a musical note does improve a person's ability to identify an instrument--the effect was much smaller than I expected. It showed important limitations in how I conducted the tests. For example, the inconsistent use of earbuds and using a grid that let people guess. I also realized context and visuals affect people's perceptions of sounds. It showed there are many other variables that contribute to people's ability to identify instruments.	
<b>Summary Statement</b> My test of 26 participants showed that the attack and decay of a musical note has a smaller effect on a person's ability to correctly identify the instrument than I hypothesized.	
<b>Help Received</b> My dad, Christopher Jones, helped me come up with the initial idea of what to test and find the pre-recorded samples.	