



# CALIFORNIA STATE SCIENCE FAIR 2017 PROJECT SUMMARY

<b>Name(s)</b> <b>Angelica Osorio; Clarissa Ramirez</b>	<b>Project Number</b> <b>J0716</b>
<b>Project Title</b> <b>Memory Strength: Musicians vs. Non-musicians</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> Our objective questions if students with experience as a musician possess stronger memory capabilities than those students who are not musicians. Our goal was to test a group of student musicians and a group of those students who are not musicians (ages 13-14), with memory tests, presumably finding if either group had a difference in memory strength.</p> <p><b>Methods/Materials</b> We tested twelve student musicians with two to three years of experience and twelve non-musicians willing to participate in three memory tests. Testing visual memory, we showed each participant a short story that they read for 35 seconds. They then answered corresponding questions solely off the memory of what they read. Testing auditory memory, we read a random sequence of three letters and three numbers aloud two times. Afterward, we blocked working memory, asking participants to recite the alphabet. Finally, we asked the participants to attempt to recall the characters they'd heard. Our last test measured the number of random words a participant could keep in their short-term memory. The online test was given, and we then recorded the given score. We recorded all responses for all three tests, then ended up giving each participant an overall score. The overall score was a combination of each of the three test scores. Every correct answer in every test was the equivalent of one point.</p> <p><b>Results</b> Taking all of the participant's total scores, we found the average score of each group (musician and non-musician). We also found which participants individually had the highest overall score, visual score, short-term memory score, and perfect auditory scores, and compared those between the groups. Our hypothesis was correct, student musicians had stronger memory compared to the non-musicians. The musician's average score was 78.25 and the nonmusicians' average score was 51.5. Also, there were four musicians who got a perfect score on the auditory test. As for the nonmusicians, only three got a perfect auditory score. Also, the highest overall score for a non-musician was 98 in comparison to a 135 from a musician. This shows musicians outperformed the non-musicians in multiple ways.</p> <p><b>Conclusions/Discussion</b> From our results, we conclude that learning how to play an instrument improves your power in the arts as well as enhancing neurological functions including but not limited to memory.</p>	
<b>Summary Statement</b> Using visual, auditory, and short-term memory tests, our project proves that student musicians have stronger memory capabilities than non-musician students	
<b>Help Received</b> None. We gathered, created and performed all the memory tests on each of our subjects, as well as organizing the data.	