



**CALIFORNIA STATE SCIENCE FAIR  
2009 PROJECT SUMMARY**

<b>Name(s)</b> <b>Xeni A. Tziouvaras</b>	<b>Project Number</b> <b>J0622</b>
<b>Project Title</b> <b>Pitch'ure Perfect</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> My objective was to discover whether different gender, musical experience and confidence will affect a child's ability to sing on pitch. I believe a girl with several years of musical experience and a sufficient amount of confidence will be able to sing accurately. My research helped me to learn the different abilities of the human voice and vocal chords, which further sparked my interest in singing.</p> <p><b>Methods/Materials</b> My list of materials included one questionnaire for each test subject (40 in all) which had general questions. I also used a chromatic tuner to find whether my subjects sung on pitch, flat or sharp. In addition I recorded the E,F,G note sequence in two octaves. I also had a playback device for the note sequences and finally, 10 test subjects for each of my categories. First, I gave each participant a questionnaire which they answered immediately and I collected. Then I played the note sequence which corresponded to their vocal range and allowed the subject to practice singing it. Then I played the notes a second time, and while the subject sang them and I used my chromatic tuner to find whether they were sharp, flat or on pitch.</p> <p><b>Results</b> My results for my first group, girls with musical experience, did not really surprise me. As a whole, they sang 24 out of 30 notes on pitch, or 80% of the notes. My second group, girls with musical experience, had a lower percentage of notes sung on pitch, only 43.3%. My third group, boys with musical experience, had an identical percentage of notes sung on pitch as my first group, with 80%. My fourth and last group, boys without musical experience, had the lowest percentage of notes sung on pitch, with only 40%.</p> <p><b>Conclusions/Discussion</b> My hypothesis did support my results, but only partially. It failed to include the fact that both my first group and my third group would have an identical percentage of notes sung on pitch. I also found that people with musical experience sing more accurately than those without it. In fact, my first and third groups' percentage of notes sug on pitch (80%) was twice as much as my fourth group's percentage (40%). My second group's percentage was just slightly higher than my fourth group's, with 43.3%, so it was practically half as much as my first and third group's results as well.</p>	
<b>Summary Statement</b> My project was about finding whether gender and musical experience affect a child's ability to sing on pitch.	
<b>Help Received</b> Father helped me create graphs; my science teacher helped me revise my hypothesis and question.	