



**CALIFORNIA STATE SCIENCE FAIR  
2015 PROJECT SUMMARY**

<b>Name(s)</b> Alexa Q. Infelise	<b>Project Number</b> <b>J0714</b>
<b>Project Title</b> <b>Investigating Influences on the Recognition of Mandarin Tones</b>	
<b>Abstract</b> <b>Objectives/Goals</b> Recently, I have been researching whether music or foreign language proficiency impacts the ability to distinguish the four primary Mandarin tones. As a Chinese adoptee, I wanted to further explore the effect of exposure to Chinese at infancy on the ability to distinguish Mandarin tones. I believe that the brain may store in its long-term memory this exposure to Mandarin and this project investigates that hypothesis by comparing the abilities of Chinese adoptees and non-adoptees of non-Chinese descent and non-Chinese households. I also believed exposure to musical training would enhance the ability to distinguish Mandarin tones. <b>Methods/Materials</b> I created an online survey using SurveyGizmo. I gathered and analyzed 140 responses. The survey requested demographic information such as age, grade, gender, and data on music and foreign language proficiency. It included an audio tutorial on the four tones of Mandarin and an identification assessment of 10 randomly played tones. The survey was distributed through social media such as Facebook to the Chinese adoption community. I also tested students at my school in order to compare Chinese adoptees to non-adoptees. <b>Results</b> The results of my project indicated that adoption from China does enhance the ability to distinguish Mandarin tones. Adoptees scored 10% higher on average on the tone identification test than non-adoptees. The difference was even greater among female respondents with female Chinese adoptees scoring more than 29% higher on average than female non-adoptees. I also found that musical training and especially musical proficiency was highly correlated with the ability to distinguish tones. <b>Conclusions/Discussion</b> Based on my results, I suggest that Chinese adoptees learn Mandarin because they will be able to learn tones more easily, as their ability to identify tones is greater than non-adoptees. Another useful application would be for Chinese language teachers to encourage their students to participate in musical training.	
<b>Summary Statement</b> My project explored whether exposure to Chinese in infancy or music proficiency might impact the ability to distinguish the four primary Mandarin Chinese tones.	
<b>Help Received</b> Professor Tony Tan provided research and advice	