



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Joanna S. Jacobs	Project Number J1017
Project Title Music to Your Ears	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The goal of my experiment was to determine the average volume at which preadolescent and adolescent students listen to digital music using earbuds. My hypothesis was that students listen to "mp3" players at a volume that may eventually cause hearing loss. According to one researcher, "Most people are listening to their iPods on public transport to drown out the noise of traffic, but to do this they turn them up to quite dangerous levels." This experiment was conducted to see if students listen to mp3 players at a volume that might damage their hearing.</p> <p>Methods/Materials A total of 141 subjects in kindergarten and fourth through eighth grades were given an mp3 player and allowed to place the volume at the level they desired, as they listened to the song "We are the Champions." The volume of the mp3 player was initially set at 0, and each subject changed the volume to a comfortable level. I recorded the decibel levels they listened to throughout the song and calculated the average decibel level for each subject.</p> <p>Results According to the results, the kindergarteners listened at an average level of 77.7 decibels. The fourth graders averaged 79 decibels. The fifth graders averaged 80.2 decibels. The sixth graders averaged 81.2 decibels. The seventh graders averaged 80.6 decibels, and the eighth graders averaged 80.5 decibels. Males in all grades averaged 81.1 decibels while females averaged 79.1. Overall, the subjects listened at an average of 80.1 decibels which is approximately 10 times greater than the normal speaking level of 65-70 decibels.</p> <p>Conclusions/Discussion My hypothesis was supported by my results which showed that subjects listened to music at a level that could damage their hearing over time. Furthermore, the male subjects listened to music at a slightly higher decibel level than the females, which may be a significant difference since decibel levels are logarithmic.</p>	
Summary Statement This experiment was conducted to determine if students listen to digital music at a volume that may eventually cause hearing loss.	
Help Received Father for general help; Mother helped edit and proofread; Audiologist provided the decibel meter; Science teacher helped me with the testing process; Danielle Frasier was the scribe during the test	