



**CALIFORNIA STATE SCIENCE FAIR  
2006 PROJECT SUMMARY**

<b>Name(s)</b> <b>Sonia E.M. Barrad</b>	<b>Project Number</b> <b>J1701</b>
<b>Project Title</b> <b>Voices That Speak to Us</b>	
<b>Abstract</b> <b>Objectives/Goals</b> This project investigates to which characteristics of the human voice -- pitch (frequency), amplitude, and timbre (overtones) -- people of all ages respond positively and negatively. <b>Methods/Materials</b> I recorded six adult voices (three male, three female) saying the same 45-second excerpt from a patriotic speech, and asked volunteers from around the country (n=165), using an online survey, to rate each voice, to characterize each voice using no more than three of 60 pre-determined adjectives, and to choose the voice they liked best and least and describe why. I analyzed the voice samples for pitch, amplitude and timber, and compared those results to the survey results to determine which characteristics of the spoken voice are most and least liked by the study group. <b>Results</b> The study participants overwhelmingly preferred male voices to female voices; low-pitched voices to high-pitched voices; and voices with more overtones to those with fewer overtones. They had a mild preference for louder voices over softer voices, but the data did not correlate as closely on this characteristic. The study participants also disliked certain characteristics (nasal tones and monotone voices). <b>Conclusions/Discussion</b> People generally prefer certain vocal characteristics, including voices that are convincing, commanding and induce confidence in the listener. These voices generally are found in people with substantial "chest voices," -- that is, people who speak primarily from their chest. They dislike high-pitched vocal tones, whether in the voice itself or in the overtones. These voices generally are found in people whose speaking voice includes voices in the higher ranges, such as "head voices." They also like voices with more depth (e.g., multiple tones) than voices made up of purer tones. People react most negatively to three vocal characteristics: high-pitched tones, nasal tones, and monotones. Although the study showed an overwhelming preference for male voices, it would be interesting to see how people react to a low-pitched female voice as compared to a higher-pitched male voice.	
<b>Summary Statement</b> This project investigates to which characteristics of the human voice -- pitch (frequency), amplitude, and timbre (overtones) -- people of all ages respond both positively and negatively.	
<b>Help Received</b> Recommendation on software for voice analysis from Chuck Radue, sound engineer; HTML coding for on-line survey by Jorge Velasquez; mother helped type report and provided assistance with Excel spreadsheets.	