



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Sara K. Simpson	Project Number J0630
Project Title Musicians' Perceptions of a "Rhythmic" Variation on the McGurk Effect	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals This project uses the McGurk Effect and a new rhythmic variation on it to explore 1) whether young musicians favored audio information, visual information, or a combination of the two when presented with contrasting audio and visual information, to reveal a dominance of one of the two senses; 2) which theory of speech perception is most accurate: Motor Theory, Direct Realist, or FLMP; and 3) whether background affects perception of the McGurk Effect(s).</p> <p>Methods/Materials I created a possible "Rhythmic" McGurk Effect, which used rhythms instead of one-syllable words as stimuli. I used a video editing program to record myself lip-syncing a word or rhythm, and then voiced-over a different word or rhythm, to create the McGurk Effect and nine rhythmic patterns. The subjects, young musicians, first filled out a questionnaire revealing background differences, and then listened to the Regular McGurk Effect, writing down the sound they heard. Finally, they listened to the potential "Rhythmic" Effect, and I recorded them clapping back the rhythm they perceived. I then transcribed the recorded rhythms onto paper to compare to the original audio and visual rhythms.</p> <p>Results The results showed that 75% of the subjects perceived a combined audio/visual sound of the Regular McGurk Effect, proving that they were tricked by it. However, 75% reproduced the audio rhythm of the #Rhythmic# tests, proving that it did not create a McGurk-like Effect; instead, the visual was a distracting factor. Within the standard deviation, the instrument played by the subject did not appear to affect perception, but length of musical experience did. Differences between languages spoken hinted that it may affect perception, but the data was inconclusive as all subjects were English-influenced.</p> <p>Conclusions/Discussion The results support the Motor Theory, as a McGurk-type effect could not be created with rhythmic stimuli. The majority of the differences between subjects also appeared to affect perception, supporting that background affects perception. Last, when presented with contrasting audio and visual information, the subjects favored the audio information, as they attempted to block out the visual stimulus.</p>	
Summary Statement Young musicians, like the general public, combined the contrasting audio and visual stimuli in the McGurk Effect, but easily distinguished between contrasting audio and visual rhythmic stimuli.	
Help Received My father operated video camera during tests, as I needed to run the movie played for the subjects.	