



# CALIFORNIA STATE SCIENCE FAIR 2010 PROJECT SUMMARY

<b>Name(s)</b> <b>Jonathan G. Swenson</b>	<b>Project Number</b> <b>S0325</b>
<b>Project Title</b> <b>How Quick Are You? A Study of Reaction Times</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> This experiment examines whether visual or auditory prompts lead to a shorter reaction time, and whether age, gender, video game playing experience, or driving experience improve or worsen reaction times. It involves two kinds of tests: one where a subject must simply react to the prompt by pressing a key and one where a choice must be made based on the prompt to press one of two keys. The hypothesis is that reaction times will be faster overall with the auditory tests than with the visual tests. Additionally, younger subjects and those with video gaming experience are expected to perform better than other subjects.</p> <p><b>Methods/Materials</b> The experiment is conducted over the web, using a subject's web browser. Data are collected from the browser and sent to a server where they are stored in a database for later analysis. The web application invites the subject to participate in four tests: visual with no choice, visual with choice, auditory with no choice, and auditory with choice. The choice tests involve selecting the correct key based on the prompt, whereas those without choice simply require pressing a single key when the prompt occurs. Visual prompts are based on a color change from white to either red to blue. The auditory prompts are based on either a low tone or a high tone.</p> <p><b>Results</b> Results from the experiment show, however, that visual prompts elicit faster reaction time than auditory prompts. While subjects with greater video gaming experience do have faster reaction times than those with limited or no experience, the relationship between age and reaction times is less direct. Teens and subjects in their early twenties show a better reaction time than younger children and older adults. Males outperform females by a negligible margin, but no relationship between driving experience and reaction times is apparent.</p>	
<b>Summary Statement</b> This experiment examines whether visual or auditory prompts lead to a shorter reaction time, and whether age, gender, video game playing experience, or driving experience improve or worsen reaction times.	
<b>Help Received</b> Father helped deploy finished application on Amazon Web Services (AWS).	