



**CALIFORNIA STATE SCIENCE FAIR  
2002 PROJECT SUMMARY**

<b>Name(s)</b> Megan M. Bernstein	<b>Project Number</b>  22480
<b>Project Title</b> What's Driving Your Reaction?	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> Reaction time is an important safety factor for drives. This project explores a way to improve how cars work to decrease driver reaction time. The experiment tests whether using two simultaneous stimuli, such as both light and sound, decrease reaction for both male and female subjects. The hypothesis was that using two simultaneous stimuli will decrease reaction time for both male and female subjects.</p> <p><b>Methods/Materials</b> A reaction time testing device was built that presents either a single stimulus or dual stimuli and drops a dowel simultaneously. The test subjects stop the dowel by pinching the PVC tube. Reaction time was computed based on the distance the dowel fell. The testing device was composed of an electromagnet, a switch that turned from electromagnet to stimuli, a switch that selected the stimulus (light, buzzer, or both), and a PVC tube that held the dowel.</p> <p><b>Results</b> Test subjects responded to the buzzer and light together and the buzzer alone with comparable reaction times; these were significantly faster than the light alone. Male subjects reacted faster than females. Male subjects reacted fastest to buzzer, then light and buzzer, and then lastly light. Female subjects reacted fastest to light and buzzer, then buzzer, and lastly then light.</p> <p><b>Conclusions/Discussion</b> In conclusion, this report showed three things. First, using dual stimuli didn't decrease the reaction time compared to the buzzer overall. Second, males demonstrated faster reaction times than females. Third, the practice effect was strongest for the light stimulus, less noticeable for the dual stimuli and not noticeable for the buzzer stimulus. Perhaps this was because people were more distractible from the light than the buzzer. Both male and females clearly respond faster to audible stimuli than visual stimuli. However, most emergency driving situations are signaled with visual stimuli, such as brake lights or signal lights. Adding audible signals in a car automatically triggered by emergency situations could decrease driver reaction time and improve overall car safety.</p>	
<b>Summary Statement</b> This project explores whether presenting two stimuli decreases reaction time compared to presenting a single stimulus.	
<b>Help Received</b> Father helped with soldering and taught skills to assemble device.	