



**CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY**

Name(s) Elaine R. Gray	Project Number J0315
Project Title Hang Up and Concentrate: Cell Phone's Effect on Reaction Time	
Objectives/Goals The objective of this project was to discover if cell phone's increase a person's reation time. The goal of this project is to relate the data to driving, and to show how much a person's reaction time can be effected negatively while on a cell phone, and how that would relate to a situation like driving.	
Abstract Methods/Materials 29 teens and pre-teens ages 10-14, and 22 adults ages 35-70 wwere gathered to act as test subjects. A reaction test program was obtained, this program worked on a computer with a floppy disk drive. What would happen during the course of the program was that 16 random trials would occur. Any of the trials consisted of either a grey square appearing in the center of the screen, or an audible beep. When either of those things happened, the test subject would press the space bar key as fast as they could. Each subject took this reaction test twice. Once free of distraction, and the second time while talking on a cell phone. To do this, another person would call them from another room and ask questions such as "What did you have for dinner last night?".	
Results Without a cell phone the average visual reaction time of a teen/pre-teen was .603 seconds. While on a cell phone, it jumped up 2.2% to .616 seconds. They had an average auditory reaction time of .405 seconds while not on a cell phone, and on a cell phone that time went up 80.1% to .730 seconds. When not on a cell phone teens/pre-teens had a combined average time (the visual and auditory time averaged) of .504 seconds. On a cell phone, the teen/pre-teen combined average time went up to .673 seconds, a 33.5% increase. Adults had a visual time of .642 seconds, this went to .788 on a cell phone, a 22.7% increase. Without a cell phone, adults had an auditory reaction time of .400 seconds, this went up to .671 seconds with a cell phone, a 67.6% change. When not on a cell phone, adults had a combined average reactiont iem of .521 seconds, this went up to .729 seconds on a cell phone, a 40,0% change.	
Conclusions/Discussion From this experiment, it can be concluded that cell phones do, in fact, effect reaction time by quite a lot. A 33.5% or 40.0% increase is quite significant, especially while driving when one needs to be aware of anything that is happening around them. A cell phone would greatly hinder one's ability to do this. This data suggests that there should be some kind of legislation made about using cellular phone's while driving.	
Summary Statement This project is about discovering if cellular phones have a negative impact on reaction time in teenagers and adults.	
Help Received Father helped get tests and proofread report; Teacher helped get test subjects and obtain program; Mother helped put together board; Sister helped get test subjects; Rich Baker got program.	