



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Kyle P. Hoffer	Project Number J0317
Project Title Motion and Emotion: Do These Factors Affect Short-Term Memory?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals This experiment's goal is to determine if motion, associated with roller coaster riding, and emotion, such as anxiety and stress, affect short-term memory.</p> <p>Methods/Materials The twenty three participants took a verbal memory test before the roller coaster. They were verbally given a list of words and then tested by a written document that had some of the verbal set of words, and some false words. They were to choose the verbal words. The first test prior to riding, served as their control. The participants then rode the Belmont roller coaster one time and were tested as before, but with different words. They then rode five consecutive times and were tested.</p> <p>Results Individual results were recorded as were group averages for both male and female subjects. The average test scores indicated that the number of correct words chosen by the subjects decreased and the number of incorrect words chosen, increased. 78.3% of the subjects had significantly less correct words marked. 17.4% of the subjects had significantly more incorrect words marked. In addition, there was no significant difference between males and females.</p> <p>Conclusions/Discussion The group's average scores were definitely negatively impacted by the motion and emotion associated with the roller coaster. The number of subjects who had significantly less correct words marked (78.3%) was much higher than the percentage that had significantly more incorrect words marked (17.4%). Therefore, subjects did not remember some of the words from the list, but did not mark false words that they had not heard. It is also clear that males and females did not perform much differently on the memory tests. It can be concluded that the roller coaster riding disrupted the memories of the subjects and this indicates that employees, whose jobs require motion or emotion, may experience a decrease in memory function.</p>	
Summary Statement The purpose of this experiment is to determine whether motion and negative emotions affect short-term memory performance.	
Help Received Father and Diane Anderson helped administer memory tests. Mother and Mrs. Gillum took digital photographs. Jonathon Clark, a NASA doctor, provided an insightful interview on motion and memory for the space program. Belmont Park provided their roller coaster.	