



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

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Project Title Caffeine: Is It Just Not for Breakfast Any More?	
Abstract Objectives/Goals Caffeine is a common drug used to improve mental alertness and stamina but can worsen concentration and reasoning. The researcher hopes to clarify how caffeine influences teenager performance during a complex test. It is hypothesized that caffeine will worsen performance by at least 7%. This prediction is based prior reasearch in adult subjects. Methods/Materials Test 70 students on two seperate days using a word puzzle of equal difficulty level. Subjects drink 12 oz of soda with blinded caffeine content 20 minutes prior to the test. All tests are timed using a stopwatch and data recorded in a log. Inclusion criteria for final analysis depend on questionnaire responses and ability to finish both tests. Needed Materials: Questionnaires, word puzzles, timer, soda, cups, and pencils. Results Result analysis included 39 students meeting criteria. The average completion time without caffeine was 16.64 minutes vs. 20.76 minutes with caffeine (a 20% difference). A high range in test taking time was seen in both groups. Using each subject as their own control for data analysis showed that 25% did better with caffeine and 75% performed worse with cafffeine (p-value of 0.05). Conclusions/Discussion As hypothesized, the results show that caffeine is detrimental for teenagers performing complex tasks. The effect was a 20% slowing of test completion time with caffeine. This was higher than the 7% predicted change in test performance. Teenagers are likely to benefit from avoiding caffeine intake before test taking in school. The results may have been affected by test anxiety and a learning effect. Future studies should include ways to reduce these potentially confounding variables. Using a larger sample size would also help strengthen any conclusion being made from measured results.	
Summary Statement The project showed a significant detrimental effect of caffeine on teenagers when taking a complex test.	
Help Received Mom helped with some typing. Dad helped supervise the test taking. Mrs. Gilllum help provide test time	