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| **Conclusion**  The goal of my project was to see if a high school student was affected by different doses of caffeine. Since I instructed people who consumed a lot of caffeine to drink none and vice versa, I was trying to see if the drug really had an effect on people or if it was just psychological. I administered a survey to my three test groups each containing ten people in hopes to gain some answers.  In my first test group, the subjects increased their servings of caffeine from 0-1 times a day to 3-4 times a day. This test group produced data that was expected. Everybody felt more awake and more alert during the day. A majority also felt their concentration level improve, while all but one person felt like they had more energy to complete their work. There  was, however, one anomaly in this set of data. The group was split in the middle when asked if it was easier to listen to their teachers and read during class. This discrepancy could be attributed everyone�s different attention span. Some people find reading or listening to lectures interesting while other people think it�s the most boring way to spend time. It all depends on the individual�s tastes. Also, this 50/50 split could be connected to the rate at which people absorb caffeine. No one has exactly the same body shape and type. After all, caffeine absorption is based on a person�s rate of metabolism and weight. Next, most of the test subjects experienced side effects ranging from headaches to difficulty sleeping. This came as no surprise since these subjects instantly increased their amount of caffeine. The body had little time to adjust to the new caffeine intake. Overall, Group 1 produced no really surprising results and for further explanation the graph entitled "Group 1" can be viewed.  Group 2 was the control group and their caffeine intake was not altered. They continued their normal consumption of caffeine. All the results from this group were as expected. Their "new" caffeine intake did not effect any of them. The subjects felt no real improvement during the day. They all felt the same. There was no increase in concentration level or alertness in class. No one suffered any side effects or anything out of the ordinary. All subjects received adequate amounts of sleep and ate normally. This group�s data was not unusual. All in all, drinking caffeine in moderation is best. It does not give a person too big of an energy boost and at the same time it doesn�t produce any harmful side effects.  Group 3 normally consumed large amounts of caffeine and was asked to reduce that amount dramatically. They went from having caffeine four times a day to zero times a day. These results were very conclusive. All but one person felt no improvement in their concentration level. All ten people found it more difficult to listen to their teachers and had less energy throughout the day to complete tasks. Only 2 people felt more alert and more awake during class. Almost everybody, though, received their normal hours of sleep and ate just like normal. Nine people in total suffered from side effects and of those nine people, eight felt more than one effect. This confirms that caffeine may be addictive and can cause withdrawal symptoms. A couple of days without caffeine can cause regular caffeine consumers to experience withdrawal. A majority of the test subjects felt that their normal caffeine routine helped them the most and said that they would not continue having no caffeine in their life. For a clearer interpretation of the data, view the graph entitled "Group 3."  All in all, this experiment was fairly successful. I received the results I had expected and nothing came as a surprise. The data supports my hypothesis and prediction. People who had no caffeine experienced no improvement in concentration, energy, or alertness levels and people who had caffeine felt an increase in their concentration, energy, and alertness levels. This, however, is not enough for me to make a solid conclusion. There are a number of other factors besides the survey that I need to take into account. For example, caffeine affects each and every person in different ways. Also, a survey is difficult to use since it is all based on the subject�s opinion. There was no real medical procedures done to verify their opinions. In addition, I could not factor in the person�s life. For instance, some people have many extracurricular activities, but another person could have none. Someone could wake up very early in the morning, but someone else might go to bed late. I cannot attribute these results to caffeine along. There are just too many factors that could contribute to a person�s caffeine intake. Caffeine is a very fascinating subject to study and hopefully in the future someone will conduct an experiment and compile concrete evidence about the actual effectiveness of caffeine.  Recommendations  I have a few recommendations for anyone trying to duplicate this project. First of all, a survey is a very difficult way to collect data. There is some bias involved and you have to rely greatly on the test subjects. Next time, there needs to be a more precise way to collect quantitative data. Also, the effectiveness of caffeine is based on many factors, not just amount of consumption. Someone has to take into account the rate of absorption, rate of metabolism, body weight of the person, and the person�s daily routine like how much food they eat or their sleeping habits. Other than that, the experiment is very easy to recreate and if these recommendations are given a lot of thought, the results could be spectacular.  [[Home](http://docs.google.com/home.html)][[Introduction](http://docs.google.com/introduction.html)][[Hypothesis](http://docs.google.com/hypothesis.html)][[Procedure](http://docs.google.com/procedure.html)][[Data](http://docs.google.com/data.html)][[Conclusions](http://docs.google.com/conclusions.html)][[Bilio/Links](http://docs.google.com/biblio.html)]  [[2001 Projects](http://docs.google.com/index.html)][[2000 Projects](http://docs.google.com/AP2000/index.html)][[1999 Projects](http://docs.google.com/AP99/index.html)][[1998 Projects](http://docs.google.com/AP98/index.html)] |