CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY

Name(s)
Danielle M. Noble

Project Number
J0325

Project Title
Can You Believe Your Eyes?

Abstract

Objectives/Goals
Since the fifth grade, I have been fascinated by optical illusions. It is easy to look around and see things with our eyes, but what happens when we look at images or pictures that are confusing or tricky -- an optical illusion? Is our brain able to perceive what is really there, or are we unable to make sense of it and continue to be fooled by the illusion? For my science project I wanted to see if the eighth-grade students at Madison Middle School would be able to figure out some common optical illusions. Are the girls better at this or are the boys? My hypothesis: Given an equal amount of eighth-grade boys and girls, the girls will perceive optical illusions with a higher percentage of accuracy than the boys.

Methods/Materials
For my procedure, I selected a sample of 50 girls and 50 boys from the eighth-grade science and math classes to test their responses to seven optical illusions that were part of three categories: two pictures with figure-ground (black and white scrambled patterns), one illusion in print (with lettering), and four illusory geometric figures (with lines and circles) that were in two-dimensions or three-dimensions. I created a series of questions that applied to each illusion and tested the students on their perceptions.

Results
The results showed that, overall, with 7 illusions, the girls were more accurate in their perceptions of the optical illusions than the boys. There were 350 possible correct responses for each group of 50 subjects: the girls had 119 correct answers (34%) while the boys had 96 correct answers (27.4%). However, comparing scores on each type of illusion, there were some variations in the results of the accuracy of the perceptions for the boys and girls, which can be seen in the data.

Conclusions/Discussion
In conclusion, my hypothesis that the girls would be more accurate overall in their perceptions of illusions was supported by the test results. There was, however, only a difference of 6.6% between the girls and boys, and neither group scored very highly in perceiving the optical illusions accurately. With both groups combined there were only 30.7% correct responses. I was surprised that less than one-third of the student#s perceptions overall were accurate. The results of this experiment show me that eighth-grade students have difficulty in perceiving pictures or objects as they really are. This can greatly impact what and how they learn.

Summary Statement
Is it easier for eighth- grade boys or girls to correctly perceive optical illusions?

Help Received
Father helped construct board; Mother helped edit report.