



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

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Project Title
Do You See What I See?

Abstract

Objectives/Goals
Does everyone see colors the same? Do either gender or age affect color perception? My hypothesis is that people see colors differently, especially as they age.

Methods/Materials
Materials:
1. An LED light box, which I will construct
2. DMM to measure voltage
Procedure:
1. Construct an LED light box, consisting of two different colored lights, red and green, each separately controlled.
2. Set the red LED light to a constant color, as measured by the DMM.
3. Subjects will be asked to adjust the green LED in such a way as to produce a third color.
4. Measure the voltage of the green LED with a DMM in order to determine an individual subject's color perception.
5. Graph the DMM reading of each subject and plot by age and gender.
6. Test the hypothesis based on the data.

Results
In these results, it was shown that in both genders, as a person ages, the DMM measurement gets higher, which means that they see colors as duller (requiring higher voltage to compensate and make the colors brighter). In particular, the color perception of men decreases significantly past the age of 45. For women, color perception also changes as they age, but not as significantly as men. Results also show that male and female color perceptions differ from each other, slightly when younger, and more significantly when older, with men having poorer color perception than women.

Conclusions/Discussion
My hypothesis that people see colors differently, especially as they age, was correct. It was surprising to me how much men's color perception degrades, especially beginning in middle age. My research also shows that males and females do see colors differently, with men having less distinct color perception than women, especially in the older age groups.
I believe this information could have practical applications. For example, knowing that older people see color less brightly could affect the way color is used in clothing, paint, store displays, and even pills (which are often differentiated by color) that are aimed at this age segment. Also, since men seem to see

Summary Statement
Both gender and age determine your color perception

Help Received
Grandfather taught how electricity works and how to build a LED light box