California Science Center

CALIFORNIA STATE SCIENCE FAIR
2001 PROJECT SUMMARY

Your Name (List all student names if multiple authors.)

Danya Villanueva

Science Fair Use Only

S1521

Project Title (Limit: 120 characters. Those beyond 120 will be ignored. See pg. 9)

Effect of Orientation Angles on Perception of the McCollough Effect

Division

S Junior (6-8) S Senior (9-12)

Preferred Category (See page 5 for descriptions.)

15 - Physiology

Abstract (Include Objective, Methods, Results, Conclusion. See samples on page 14.)

Use no attachments. Only text inside these boxes will be used for category assignment or given to your judges.

The McCollough Effect is an orientation-specific color aftereffect induced by adapting to colored gratings. It has been well documented for cases where both the adapting and test patterns are horizontal and vertical. This study measured the strength of the effect when the horizontal and vertical lines in the stimuli are progressively rotated. There were 22 test subjects (14-18 years old). The colored gratings were created with Adobe Photoshop 5.0 and Power Point, and shown to test subjects on a Datel computer (13-inch screen). Each subject was tested three times with the pattern first along the cardinal axis and then rotated in 5-degree increments, three repetitions per increment, until both patterns were 45 degrees from the original test condition. It was determined that on the average at the completely vertical and horizontal condition, the effect was observed 8 out of 10 times. When angles of 50/40 degrees were achieved the average fell to approximately 4 out of 9, and at 45/45 degrees approximately 1 out of 9. For the interocular condition, each subject was tested two times and each time consisted of nine trials. It was determined that all of the subjects did not see the aftereffect for this condition.

Summary Statement (In one sentence, state what your project is about.)

The goal of my project was to find out if changing the angle of orientation of the McCollough stimuli had an effect on the perception of the effect.

Help Received in Doing Project (e.g. Mother helped type report; Neighbor helped wire board; Used lab equipment at university X under the supervision of Dr. Y; Participant in NSF Young Scholars Program) See Display Regulation #8 on page 4.

Parents bought a new computer for project; Subjects volunteered their time