

# Peripheral Vision Detection under Colored Light

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**Abstract.** This experiment includes some of the many aspects of the functions and parts of the human eye. To perform this experiment a cardstock was set up with degree measurements along the side ranging from 70-90 degrees and a fixation dot in the middle for the subject to focus on. Three different colored LED light (red, blue, green) was shone through the cardstock towards their peripheral until they can no longer see the light. The result of this experiment is that the average measurement of the width of the visual field is 73 degrees for green light, 75 degrees for blue light, and 75 degrees for red light. This experiment may indicate that peripheral vision is narrower under green light, consistent with the distribution of cones in the retina.

**Keywords:** Peripheral Vision, Peripheral vision under red, blue and green light

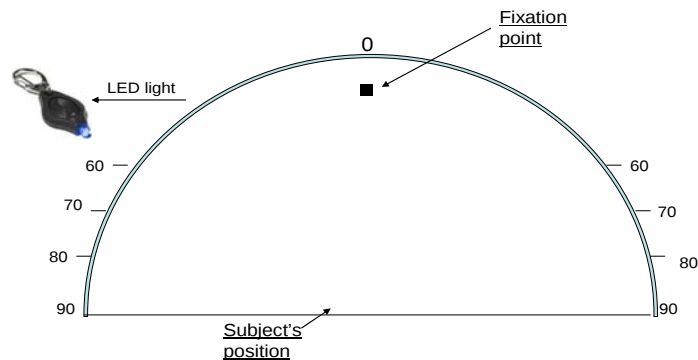
## INTRODUCTION

The red, green, and blue cones are not evenly distributed throughout the retina. I have hypothesized that the peripheral vision will be narrower for red and green lights and sensitive under blue lights. According to my hypothesis, blue cones are located more towards the edges of the retina and the green and red cones more towards the center.

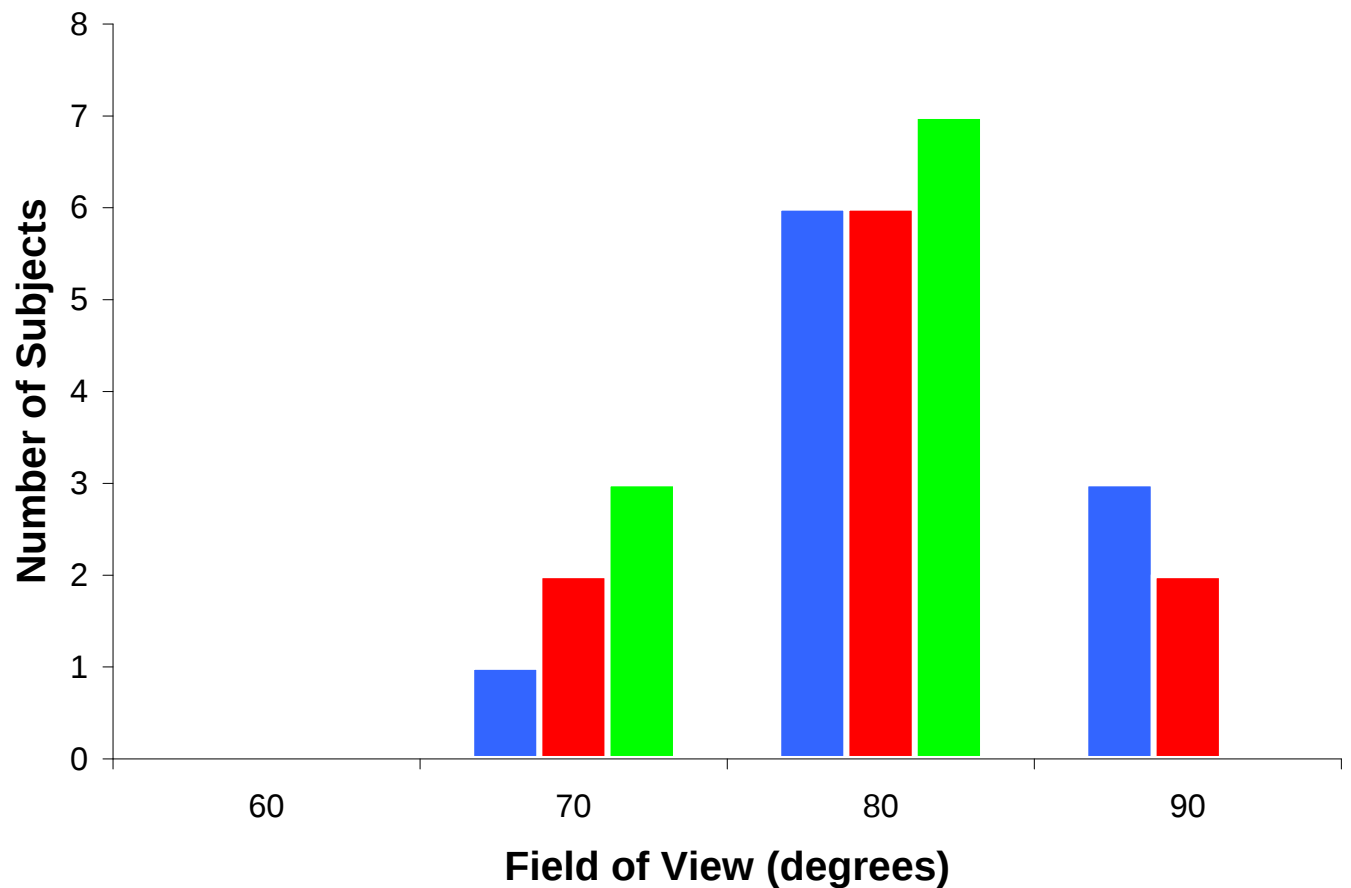
## METHODS

A warm white card stock in a semicircle marked with degrees measuring up to 90 degrees with a fixation dot in the middle. The fixation dot is placed in the middle for the person to focus on. Then, a white LED light was shone through an acute colored filter. This light was moved in the view of the subjects' peripheral vision until they could no longer see the light in their peripheral view. The measurement of the Subject's peripheral vision was compared to the measurement of their peripheral vision under red, green, and blue light.

### Construction of Experiment



**Figure 1.** Smaller version of the construction of the experiment and how it was done. This image shows that the LED light is moved towards the peripheral vision view until it can no longer be seen in the peripheral view.



**Figure 2.** Measurements of the subjects' peripheral vision under the colored lights of red, blue, and green. This graph indicates that there were no measurements for green light when the subjects' peripheral vision was tested in the 90° range. Measurements recorded on the detection of peripheral vision under blue and red light were closely ranged and the averages of measurements were closely averaged. This may indicate that peripheral vision is not as strong in the peripheral field as red and blue.

## RESULTS

The result of this experiment is that the average measurement of the width of the visual field is 73 degrees for green light, 75 degrees for blue light, and 75 degrees for red light.

## DISCUSSION

I did not test enough people to narrow down my results and to get better and clearer results of how peripheral vision is affected under the colored light (red, green, and blue). To perform this experiment, ten subjects were used in testing how peripheral vision is affected under colored light. If twenty subjects were used as opposed to ten, it would have been easier to narrow down exactly how much peripheral vision is affected under colored lights.

## CONCLUSIONS

This experiment may indicate that peripheral vision is sensitive under blue light as well as red light. The average measurement of degrees for the peripheral vision under blue and red light is 75 degrees and the measurement for peripheral vision under green light is 73 degrees.

## **ACKNOWLEDGMENTS**

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