



**Title of Project:** Depth Explanation for the Effectiveness of the Muller-Lyer Illusion

**Student Investigator:** Dan Reynolds, Fine Arts, 650-686-7566, [djreynol@uwaterloo.ca](mailto:djreynol@uwaterloo.ca)

**Faculty Supervisor:** Dr. Linda Carson, Fine Arts, 519-888-4567 ext. 38383,  
[lccarson@uwaterloo.ca](mailto:lccarson@uwaterloo.ca)

### **Study Purpose**

You are invited to take part in a study that investigates whether the illusion of depth in images affects the perceived length of the image. The study will use the Muller-Lyer illusion, which is an experiment where participants match the length of two lines with differently angled arrows at each end. This is a PSYCH 306 class project for the development of professional skills in how to conduct a study in human perception and analyze its results.

Past research proposes that the illusion of different depths is created by arrows angled towards the line and away from the line. This research suggests that the angled arrows create the illusion of different types of corners of a building. It concludes that this causes two lines of the same length to be perceived as different lengths (The Muller-Lyer Illusion, n.d.).

The purpose of this study is to determine the role of the depth illusion in generating the difference in perceived length of the lines by comparing the effectiveness of this illusion when the arrows are replaced with square brackets that do not create a depth effect. There is one group of participants in this study and there are no restrictions on eligibility.

### **Study Procedures**

As a participant in this study, you will be asked to view two different versions of the Muller-Lyer illusion, one using arrows and the other using angled brackets. You will be asked to adjust the length of the lines in each version by using buttons in a computer application until they are perceived to be equal.

### **Details of Methods**

In the experimental session, you will be asked to match the length of two lines with differently angled arrows at each end using buttons in a computer interface. There will be 25 trials and you will be able to rest or stop at any point that you feel fatigued. You will then perform the trials again with angled brackets at the end of each line instead of the arrows.

### **Potential Benefits**

By participating in this study, you will learn about the Muller-Lyer effect and general research in psychology. The information obtained from this research will help develop the professional skills of the

student investigator.

## **Risks**

There are limited risks in this study, including fatigue from conducting many successive trials. If at any time during the experiment you feel that you cannot continue, you may indicate to the student investigator that you want to pause or end the study without penalty.

## **Participation and Time Commitment**

Participation in this study is optional, and will take approximately 20 minutes of your time.

## **Withdrawal from the Study**

You may choose to withdraw your participation in the study at any point and are welcome to inform the student advisor that you refuse to perform some or all of the trials at any time without penalty or justification.

## **Confidentiality and Security of Data**

All information that you provide is confidential and any personal information such as your name will not be associated with the collected experimental data. The analysis of results will report average results over all participants and individuals will not be reported on in any way. All records of data collected from this study will be stored electronically and destroyed at the end of the academic term. Data collected will not be shared outside of the PSYCH 306 course.

## **Concerns or Questions about Participation**

All questions regarding participation can be directed to the student investigator Daniel Reynolds who can be reached at any time at the email and phone number provided.

This project has been given ethical clearance by the University of Waterloo Research Ethics Committee as a skills development project. Participation is at your discretion and if you have any concerns or comments about your involvement in the study you may contact the course instructor Dr. Linda Carson at 1-519-888-4567, Ext. 38383 or [lccarson@uwaterloo.ca](mailto:lccarson@uwaterloo.ca).

## **References**

The Muller-Lyer Illusion. (n.d.). *Rochester Institute of Technology*. Retrieved from <https://www.rit.edu/cla/gssp400/muller/muller.html>



## **Consent Form**

I have read the information presented in the information letter about a study being conducted by Daniel Reynolds under the supervision of Dr. Linda Carson at the University of Waterloo. I have had the opportunity to ask any questions related to this study, to receive satisfactory answers to my questions, and any additional details I wanted. I am aware that I may withdraw from the study without penalty at any time by advising the student investigator of this decision.

I understand that this project has received ethics clearance through a University of Waterloo Research Ethics Committee as a skills development project. I was informed that if I have any comments or concerns resulting from my participation in this study, I may contact the course instructor, Dr. Linda Carson, at (519) 888-4567 ext. 38383.

With full knowledge of all foregoing, I agree, of my own free will, to participate in this study.

Print Participant Name: \_\_\_\_\_

Participant Signature: \_\_\_\_\_

Witness Name and Signature: \_\_\_\_\_

Dated At Waterloo, Ontario: \_\_\_\_\_