CONSENT FORM

Eye Movements in Biological and Artificial Vision Systems

Principal Investigator: Michele Rucci, Ph.D.
Co-Investigator: Martina Poletti, Ph.D

This consent form describes a research study, what you may expect if you decide to take part and important information to help you make your decision. Please read this form carefully.

The study staff will explain this study to you. Please ask questions about anything that is not clear before you agree to participate or at any time. You may take this consent form home to think about and discuss with family or friends.

- Being in this study is voluntary – it is your choice.
- If you join this study, you can change your mind and stop at any time.
- If you choose not to take part, your educational status and/or employment status will not be changed in any way.
- There are risks from participating and you should understand what these mean to you.

Introduction

You are being asked to take part in this study because you are an English speaker who is at least 18 years of age and has passed the vision screening test.

This study is being conducted by Dr. Michele Rucci and Dr. Martina Poletti of the University of Rochester's Center for Visual Science.

Purpose of Study

The purpose of this study is to study the patterns of eye movements performed by humans during the analysis of visual scenes. We are interested in determining how the alternation between voluntary gaze shifts and smaller eye movements performed without being aware contribute to process visual information. We will use eye movement data, an image of your retinal anatomy acquired with an optical coherence tomography (OCT) scan, and, for some experiments, data on brain activity. This correlation of data will help us better understand the neural mechanisms and anatomy underlying the human vision system.

274 Meliora Hall, Box 270270
G-4110 Med. School, Box 319
Rochester, NY 14627-0270
(585) 275-2459
(585) 271-3043 fax

Description of Study Procedures

We have already performed a visual acuity screening, which has determined that your vision is good enough to qualify you for participation in this study. We will perform a second screening at the end of the experimental session. You will be informed of the results of both optometric tests and recommended to consult an ophthalmologist if abnormal fluctuations of visual acuity are observed.

All experiments will take place in the Active Perception Laboratory at the University of Rochester. As one of the subjects in these experiments, your eye movements will be recorded by means of an eye-tracking device while you will be examining images projected on a display, either a computer monitor or a virtual reality monitor. The tasks you will be asked to perform in the experiments will include identification of different objects and/or their number in an image, the localization of a target, and the determination of its fine characteristics in a field of distracting objects. Responses will consist of verbal reports and/or pointing responses. In general, an experimental session will last no more than 2 hours. Depending on the phase of the study in which you are involved, you may be asked to participate in more than one such session in order to complete a full set of experiments. We expect some subjects to perform only one two-hour session, while other subjects performing a different set of experiments may be asked to participate in as many as 10 sessions. The investigator has informed you (during the screening consent process) of the number of sessions that you have been asked to participate in. Remember that you are free to withdraw from the study at any time and for any reason without penalty.

In order to measure eye movements, the experimental procedures may require the use of a device to track the position of your eyes. A non-invasive Dual-Purkinje-Image (DPI) eye-tracker or similar device may be used for this purpose. Light rays striking the eye produce four reflections, called Purkinje images, from the front and rear surfaces of the cornea and lens. The DPI eye-tracker compares the first and fourth reflections to estimate the motion of the eye. You may be required to utilize a comfortable chin and forehead rest so as to reduce movements of the head during the presentation of the images.

Some experiments will also use a non-invasive electroencephalogram (EEG) cap. For these experiments, you will be asked to wear a cloth cap fitted with electrodes which will measure the electrical activity on your scalp while you perform the tasks in the experiment. The system uses medical gel to help convey electrical signals to the electrodes. You will be provided with shampoo and a clean towel to wash your hair in one of the lab sinks after the experimental procedures are complete. Set-up and clean-up of the EEG part of the experiment are expected to take up to 30 minutes each;

therefore, experimental sessions that involve EEG procedures may take up to 2 hours each.

After you have come in for a few sessions, we will ask you to sit for an OCT scan. We will do this scan as part of one of your normal visits. You will be asked to sit with your head in a chinrest for about 15 minutes while our OCT machine scans your eyes non-invasively. This scan will give us information about the anatomy of your retina. The data from this scan will help us understand the link between eye movements and retinal anatomy.

Number of Subjects

Approximately 200 subjects will take part in this study.

Duration of the Study

Each experimental session will last between one and two hours and you will participate in a minimum of three experimental sessions; most subjects participate in an average of approximately 10 sessions. Different experimental sessions will be held on different days in order to ensure that you are not fatigued and continue to pay attention to the images displayed on the monitor.

Risks of Participation

This study involves minimal risk. Computer monitors and virtual reality displays are unable to display images at potentially dangerous intensities, and the contrast and brightness of the display may be adjusted to the level that you find most comfortable. In the unlikely event that the image is too bright or you experience any discomfort in looking at the display, simply look somewhere else and inform the investigator. The eye-tracker is non-invasive and there will be no physical attachment between you and the device. The EEG gel might cause some slight discomfort if left on for long periods of time; therefore, we advise you to wash it out of your hair at the conclusion of the session. If at any moment you do not feel comfortable, simply lift your head from the chin rest or remove the virtual reality display. You can and should stop/terminate the experiment at any time if you do not feel comfortable. The apparatus is lightweight and there is no significant potential risk to your body, even should you accidentally bump into the eye-tracker. The OCT machine carries no additional risk. You will be informed of any new findings that might affect your willingness to participate in these experiments as they arise.

Benefits of Participation

You might not benefit from being in this research study. The only potential benefit to you from being in this study might be the free optometric screening both prior to and at the conclusion of testing.

New Study Findings
If we discover anything that might make you change your mind about continuing in the study, we will let you know.

Sponsor Support
The University of Rochester is receiving payment from the National Institutes of Health and the National Science Foundation for conducting this research study.

Costs
There will be no cost to you to participate in this study.

Payments
You will be paid $10 per hour for taking part in an eye-tracking-only experiment. You will be paid $20 per hour for taking part in an EEG experiment.

Circumstances for Dismissal
You may be withdrawn from the study if you do not keep appointments for study visits or if you cannot complete study activities.

Confidentiality of Records
The University of Rochester makes every effort to keep the information collected from you private. In order to do so, you will be assigned a random, unique number for identification purposes. This number will be used in identifying subject data files and in all reports, publications, and references to the subjects.

Sometimes, researchers need to share information that may identify you with people that work for the University, regulators or the study sponsor. If this does happen we will take precautions to protect the information you have provided. Results of the research may be presented at meetings or in publications, but your name will not be used.

Contact Persons
For more information concerning this research or if you feel that your participation has resulted in any emotional or physical discomfort please contact: Michele Rucci at 617-353-7671.

Please contact the University of Rochester Research Subjects Review Board at 265 Crittenden Blvd., CU 420628, Rochester, NY 14642, Telephone (585) 276-0005 or (877) 449-4441 for the following reasons:

- You wish to talk to someone other than the research staff about your rights as a research subject;

- To voice concerns about the research;
- To provide input concerning the research process;
- In the event the study staff could not be reached.

Voluntary Participation

Taking part in this study is voluntary. You are free not to take part or to withdraw at any time, for whatever reason. No matter what decision you make, there will be no penalty or loss of benefit to which you are entitled. In the event that you do withdraw from this study, the information you have already provided will be kept in a confidential manner.

If you are a student at the University of Rochester, this will not affect your class standing or grades. You will not be offered or receive any special consideration if you take part in this research.

If you are an employee of the University of Rochester, taking part in this research is not a part of your University duties, and refusing will not affect your job. You will not be offered or receive any special job-related consideration if you take part in this research.

****

SIGNATURE/DATES

After reading and discussing the information in this consent form you should understand:

- Why this study is being done;
- What will happen during the study;
- Any possible risks and benefits to you;
- Other options you may have instead of being in the study;
- How your personal information will be protected;
- What to do if you have problems or questions about this study.

Subject Consent

I have read (or have had read to me) the contents of this consent form and have been encouraged to ask questions. I have received answers to my questions. I agree to participate in this study. I have received (or will receive) a signed copy of this form for my records and future reference.

_____
Subject Name (Printed by Subject)

_____ _____
Signature of Subject Date

Person Obtaining Consent

I have read this form to the subject and/or the subject has read this form. I will provide the subject with a signed copy of this consent form. An explanation of the research was given and questions from the subject were solicited and answered to the subject's satisfaction. In my judgment, the subject has demonstrated comprehension of the information. I have given the subject adequate opportunity to read the consent before signing.

_____
Name and Title (Print)

_____ _____
Signature of Person Obtaining Consent Date