

## Consent Form



**University  
of Victoria** | **Neuroeconomics  
Laboratory**

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### Learning and Decision Making Systems

#### Introduction

We invite you to take part in a research study being conducted by Dr. Olave Krigolson, who is an Assistant Professor in the Department of Exercise Science, Health & Physical Education at the University of Victoria. Your participation in this study is voluntary and you may withdraw from the study at any time. If you are a student in one of the courses Dr. Krigolson teaches, your performance evaluation will not be affected if you decide not to participate. The study is described below. This description tells you about the risks, inconvenience, or discomfort that you might experience. You should discuss any questions you have about this study with the research assistant who will be testing you. Dr. Krigolson will not be aware of whether or not you participate in this study.

#### Purpose of the Study

You are being invited to take part in this study because it is important to study the basic mechanisms that underlie human learning and decision-making. At present we are interested in studying how you evaluate success and failure and how you make decisions. In particular, we are interested in understanding the brain mechanisms responsible for the evaluation of success and failure, and the factors that modulate the learning and decision-making systems in your brain.

#### Study Design

In this study you will be performing a simple computer-based task while we record event-related brain potentials – patterns of neural activity generated by your brain - from electrodes or optodes fitted to a cap or portable device you will wear on your head. Eye tracking data may also be recorded in which you will rest your chin on an eye tracker mount. The experiment will consist of a two or three hour testing session (depending on what you signed up for). The two or three-hour session includes the time we need to get you prepared for testing, the experiment, and a clean-up and debriefing period.

#### Who Can Participate In The Study

Any undergraduate student enrolled at the University of Victoria and anyone responding to our advertisement may partake in this experiment. With that said, we will not be able to test you if you are legally blind or if we are unable to fit you with an electrode cap for some reason.

#### Who Will Be Conducting The Research

The experiment you will be taking part in will be conducted by a graduate student or by a research assistant working for Dr. Krigolson.

### **What You Will Be Asked To Do**

The study will take place in Dr. Krigolson's laboratory (Room 0021 in the McKinnon building) and will take one to three hours. In this study you will be asked to complete questionnaires about fatigue, wellness, emotional states of stress, anxiety and depression, reasoning strategies, cannabis use and concussions. Then perform a simple computer-based task. In particular, you will be asked to play a game where possible reward and cognitive load is varied.

You will be fitted with either a cap containing 32 - 64 electrodes, a portable EEG, or an portable fNIRS device which will record electrical activity at the scalp, or blood flow with the fNIRS. You may also need to rest your chin on an eye tracking mount which will record eye activity. Your task will be completed on a computer. You will participate in a learning and decision making task that will include a series of trials in which you will receive feedback on your performance. You will learn to select presented stimuli to maximize reward. You shall do this by choosing either a colour, shape, or other stimuli to determine what is most valuable. The amount won each trial may contribute to a monetary performance bonus but will not affect your participation incentive (whether monetary or course credit). At the end of the experiment, you may be paid a portion of the amount that was won in the game.

We will be recording event-related brain potentials (ERPs) while you complete the learning task. An ERP is a brain response to a particular event, such as seeing a picture. The ERP recording process will involve the application of recording electrodes in a 64 electrode cap (similar to a swimming cap) in which the electrodes are mounted. If you are doing a study involving a portable device, electrode number will range from 8 to 16, depending on the device. These electrodes will allow us to measure the activity in your brain while you perform the task. Application of the electrodes involves the use of electrode gel at each electrode site. The gel is water soluble and you will be given an opportunity to wash the gel out of your hair after your testing session. If you are participating in a task involving fNIRS, much like with EEG optodes will be fastened to a swim-cap. A small device or combination of devices will be placed on your head via headband or small cap. There is no use of electrode gel in fNIRS recording, but use of an adhesive (such as medical tape) may be used to secure the device.

Following application of the electrodes, you may be asked to place your chin on an eye tracker mount. We will position two cameras near your eyes to track activity such as your gaze and pupil dilation. After this you will complete the learning and decision making task. At the conclusion of the testing session, the research assistant will explain the study in detail, including a description of the results we hope to find. The research assistant will also answer any questions you have at any time during the testing session.

### **Possible Risks And Discomforts**

There are no known health risks associated with recording ERP data. There is a slim chance during the application of the electrodes of a mild scratching of the skin due to the electrode tape and/or the application process. The adhesive we use is hypoallergenic. There are no known health risks associated with recording eye activity. There is a possibility that the questionnaires may increase your emotional or psychological discomfort. We would like to remind you that participation of any or all aspects of this study is voluntary and that you may withdraw from any or all aspects at any time. If you feel any discomfort, we have provided contact information of counselling services below for both University of Victoria students and members of the general public and encourage you to use these resources.

## **COVID-19 – Changes to Protocol**

In order to reduce the risk of COVID-19 in both yourself and our researchers we have made some changes to our testing protocol. Firstly, we ask that if you are feeling unwell please alert the experimenter immediately and leave the testing area. Secondly, we are asking that you wear a mask throughout your time in the lab – this has been provided to you if you do not currently have one. Our entire research team will be wearing PPE (masks). Third, we have conducted a full clean of the lab and all experimental equipment before you entered, and will do so after as well. Lastly, one researcher will have to breach the six-foot radius in order to apply the electrode. If you are uncomfortable with this, please let us know immediately. You will be compensated as either course credit, or an amount equal to the closest hour (i.e. \$10.00 for 0 – 60 min) for your time for coming in and there will be no penalties for withdrawing. As well, all our cleaning protocol is available on signs and checklists posted on the lab if you are interested to review it. We have been approved by the the UVic OHSE for our safe work plan and all cleaning and testing methods follow their suggestions. As well, to ensure that contact tracing is possible we will be recording your name, date of testing and a contact email or phone number. This will be done to ensure we can contact either yourself or the research assistants who have been in the lab in the event of an exposure to COVID-19.

## **Possible Benefits**

Your participation is beneficial to the scientific community as a whole, as the data we gain from testing you may help improve our understanding of how learning and decision making occurs in the human brain. There will be no specific benefit to you.

## **Compensation**

You will be compensated two credit point per hour or \$10 or \$10 in gift cards or \$10 in e-cards per hour depending on how you were recruited. You may also have the opportunity to win additional money depending on your performance (\$2 dollars minimum, up to a maximum of \$20).

## **Anonymity And Confidentiality**

Your participation in this study will not be anonymous, however, neither your name nor any other personal identifier will be associated with the data we collect from you. Instead, your data will be identified with a code number. However, a file with your code number and initials will be kept by the researcher for 2 months after your participation such that your data can be removed from the study if you decide you do not want us to use it. Additionally, you will not be identified in any reports and publications that stem from this research.

Your confidentiality will be respected. All of our data will be stored in a locked room with limited access on a password protected computer. Only Tom Ferguson, Chad Williams, Robert Trska, or research assistants working for Dr. Krigolson will have access to your data. Following completion of the study, and publication of the results, your data will be kept on the same secure computer for five years. After five years, your data will be destroyed.

Please note, that the data may be used in a thesis and disseminated online via the Uvic Internet since all student research is posted publicly via the library's UVicSpace.

## **Questions**

If you have any questions about the study, at any time, you may contact us by phone at 250-721-8381 or by email at [krigolsonlab@gmail.com](mailto:krigolsonlab@gmail.com).

### Contact Tracing

Contact tracing is the process of identifying, assessing, managing and communicating with people who have been exposed to COVID-19 to prevent onward transmission. When systematically applied, contact tracing will break the chain of transmission and is considered an essential public health tool to control the virus.

Because of this, we will ask you to fill out your contact information on a separate log. This information will be kept separate from your research data, and will be not be used for the present study. All information listed will be confidential, and kept separate from all research material. Your contact information will be securely stored within the Theoretical and Applied Neuroscience laboratory.

### **Problems or Concerns**

If you experience any discomfort with, or wish to voice concerns about, completing the questionnaires you may contact the Vancouver Island Crisis Line and Chat by phone at 1-888-494-3888 or the Crisis Centre by phone at 1-800-784-2433 or online at [www.CrisisCenterChat.ca](http://www.CrisisCenterChat.ca)

Alternatively, if you are a student at the University of Victoria and experience any discomfort with, or wish to voice concerns about, completing the questionnaires, you may also contact UVic Counselling Services by phone at 250-721-8341.

If you have any difficulties with, or wish to voice concerns about, any aspect of your participation in this study, you may contact Dr. Krigolson directly at 250-721-7843. In addition, you may verify the ethical approval of this study, or raise any concerns you might have, by contacting the Human Research Ethics Office at the University of Victoria (250-472-4545 or [ethics@uvic.ca](mailto:ethics@uvic.ca))

**Signature Page**

**Study Title: Learning and Decision Making Systems**

I, the participant, have read the explanation about this study. I have been given the opportunity to discuss it and my questions have been answered to my satisfaction. I hereby consent to take part in this study. However, I realize that my participation is voluntary and that I am free to withdraw from the study at any time.

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

\_\_\_\_\_  
Date

\_\_\_\_\_  
Participant Name (printed)

If you would like to participate solely as an observer, then we will not utilize your data in our analysis – it will be destroyed immediately upon completion of this testing session. If you would like to participate solely as an observer, please check here:

\_\_\_\_\_  
Investigator Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Investigator Name (printed)

A copy of this consent form will be left with you and a copy will be taken by the researcher.

**Media Release Form**

**Study Title: Learning and Decision Making Systems**

In the past, the Neuroeconomics laboratory has received attention from various media sources for research that we have conducted. In the instance that this occurs in the future, we are asking whether you would authorize the release of images or video footage taken of yourself. Your decision will not in any way affect your ability to participate in the current study or receive the incentives (course credit and/or monetary depending on recruitment process) for participating in the study. You will also be informed if images or video footage of you is used in media.

I, the participant, consent to the release of images or video footage taken of myself for the use of media coverage. I have been given the opportunity to discuss it and my questions have been answered to my satisfaction. Furthermore, I realize that my decision is voluntary and that it will not affect my ability to participate in, or the incentives of participating in, this study.

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

\_\_\_\_\_  
Date

\_\_\_\_\_  
Participant Name (printed)

**Contact Information if you wish to consent:**

\_\_\_\_\_  
Email Address

\_\_\_\_\_  
Phone Number

## **Appendix COVID-19 Safety and Guidelines**

### **Consent forms and Questionnaires:**

Before any data collection occurs, you will be asked to complete the self-assessment regarding COVID-19 symptoms once more, following guidelines established by the province of British Columbia (<https://bc.thrive.health/covid19/en>).

After the self-assessment, you will be provided a consent form outlining the data collection process, and what the experiment entails. A pen will be provided to you, which will be yours to keep once data collection is complete. You will find additional information about periods in which social distancing will be interrupted during the setup procedure.

### **During the session, you can expect that:**

- You will be provided with hand sanitizer and offered a face mask if you do not have one.
- Researchers will wash their hands and wipe down all contact surfaces between sessions.
- Devices such as iPads will be sanitized and disinfected per study session.
- During assessments and task completion, researchers will maintain a 2 m distance from participants.
- During device set-up, the researcher will need to be close to you to set up the recording equipment.
  - If you are participating in a complete EEG system task, setup will take approximately 40 – 50 minutes
  - If you are participating in a portable EEG task, setup will take approximately 5 – 10 minutes