



School of Psychology and  
Clinical Language Sciences,  
University of Reading,  
Earley Gate, Whiteknights Road,  
Reading RG6 6AL

### Information Sheet

<b>Investigator(s):</b>	<b>Email:</b>	<b>Phone:</b>
Kou Murayama	<a href="mailto:k.murayama@reading.ac.uk">k.murayama@reading.ac.uk</a>	+49 07071/29-76082
<b>Researcher(s):</b>		
Cansu Ogulmus	<a href="mailto:cansu.ogulmus@pgr.reading.ac.uk">cansu.ogulmus@pgr.reading.ac.uk</a>	+44-7534-690-463
Ying Lee	<a href="mailto:ying.lee@reading.ac.uk">ying.lee@reading.ac.uk</a>	

Title of Study: Neural and behavioural correlates of motivation during decision making

We would be grateful to you if you could assist us by participating in our functional magnetic resonance imaging (fMRI) study exploring how motivation affects decision making processes.

#### **Where will this study take place?**

The study takes place at the Centre for Integrative Neuroscience and Neurodynamics, adjacent to Harry Pitt building at the University of Reading.

#### **Why am I being asked to take part in this research?**

You are invited to participate in this study because you are a healthy adult aged over 18; you do not have any serious chronic illness; you are not taking psychoactive drugs; you are not currently nursing, pregnant, or intend to become pregnant; you do not have any cognitive impairment or learning disorder; you have met the fMRI screening criteria (e.g. you do not have metal in your body); you have normal or corrected vision and hearing, and you speak English fluently.

#### **How much time will the study take?**

The experiment will take in total approximately 1-2 hours. The total amount of time you are in the MRI suite may be up to 2 hours. This will include introducing you to the scanner room, making sure you are comfortable on the bed, tuning and calibration of the goggle system and the MRI machine, taking images of the structure of your brain as well as taking images of your brain activity while working on a task in which you will be presented with visual images.

### **Will I receive compensation?**

If you are recruited from the psychology research panel (SONA), you will receive 1 course credit per hour of your participation. If you are not a student recruited from the psychology research panel, we shall pay you £15 per hour to compensate you for the time and effort involved in participation. In addition, if you have to travel from an off-site location, parking will be provided at the University and we will cover travel expenses to the campus.

### **Do I have to take part?**

Taking part in this study is completely voluntary; you may withdraw at any time without having to give a reason. If you agree to participate you will be asked to sign the initial screening form, that accompanies this information sheet, in the presence of the experimenter. It is perfectly in order for you to take time to consider whether to participate, or discuss the study with other people, before signing. After signing, you will still have the right to withdraw at any time before or during the experiment.

### **What will I need to do if I take part?**

You will be asked to work on various types of cognitive tasks. For example, you might be asked to respond to presented stimuli (objects, letters, pictures, etc.) as quickly as possible. You might also be asked to answer some questions or rate some pictures or sentences. You might be asked to remember the presented stimuli and recall them later. You might be asked to make a simple decision or prediction on each trial in response to the stimuli presented. We are interested in how you respond to such information, as well as how well you will learn this information. These cognitive tasks may be performed in an experiment room, as well as while you are inside the MRI scanner.

You will also be asked to fill out a couple of questionnaires before and after completing the cognitive tasks. These questionnaires will include questions about your personality, motivational orientation, health, and your characteristics, such as date of birth, ethnicity, gender, first language, education level and occupation.

### **How does fMRI technique work?**

MRI is a method for producing images of the brain. It involves placing the participant inside a large, powerful magnet, which forms part of the brain scanner. We use MRI to take images of the composition of different parts of your brain. We can also observe which parts of your brain are more active or less active. When particular regions of the brain are active, they require more oxygen, which comes from red corpuscles in the blood. As a result, the blood flow increases. This can be detected as changes in the echoes from brief pulses of radio waves. These changes can then be converted by a computer into 3D images. This enables us to determine which parts of the brain are active during different tasks.

### **What can I expect in the scanner?**

Before the scan we ask you to lie on your back on a narrow-motorised bed. This is then moved until you are positioned correctly inside the scanner. It is important that you stay as still as possible during the scan, to help you with this your head will be kept in one position using padded headrests. As the scanner creates intermittent loud noises you will be provided with earplugs or sound-attenuating headphones for protection. These will soften the noise made by the scanner whilst allowing you to communicate with the operative/researcher through the two-way intercom system. It may require some effort on

your part to stay as still as possible for prolonged periods of time. If this becomes extremely difficult or uncomfortable you may request to be removed from the scanner immediately.

You may be asked to look at a screen through a small mirror (or other optical device) placed just above your eyes and/or be asked to listen to sounds through headphones. You may be asked to make judgements about what you see or asked to perform some other kind of cognitive task. Detailed instructions will be given just before the scan, and from time to time during.

### **What are the disadvantages and risks?**

Task related risks: This experiment includes viewing and solving math questions. If you feel great amount of stress or anxiety when engaging in math-related activities, you may not wish to take part in this study. You might also be presented with some negative words or pictures during the experiment, which may evoke an emotional response. Thus, the study may include a mild risk of anxiety, sadness, or other emotional reaction. However, those stimuli are widely used in the literature and are no more negative than those observed in our daily life. Additionally, there may be some feelings of psychological discomfort associated with sharing information about your personality and health. If the experiment becomes unacceptably difficult or uncomfortable, you may withdraw from the study at any time. In addition, if you have any questions or feel upset by the emotions that you have experienced during the study, please do not hesitate to contact the researchers named above.

Scanning related risks: As far as we know, this procedure poses no direct health risks. However, the Department of Health advises that certain people should NOT be scanned. Because the scanner magnet is very powerful, it can interfere with heart pacemakers and clips or other metal items which have been implanted into the body by a surgeon, or with body-piercing items. If you have had surgery which may have involved the use of metal items, you should **NOT** take part. Note that only ferro-magnetic materials (e.g., steel) are likely to cause significant problems. Thus, normal dental amalgam fillings do not prohibit you from being scanned, though a dental plate which contains metal would do so, and you would be asked to remove it. You will be asked to remove metal from your pockets (coins, keys), remove articles of clothing which have metal fasteners (belts, etc.), as well as most jewellery. Alternative clothing will be provided, as necessary. Watches and credit cards should not be taken into the scanner since it can interfere with their operation. You will be asked to complete a questionnaire (the Initial Screening Form), which asks about these and other matters to determine whether it is safe for you to be scanned. You will also be asked to complete a second, shorter, screening form immediately before the scan.

If you are likely to feel very uncomfortable in confined spaces (suffer from claustrophobia), you should NOT take part in the study. If you do take part and this happens, you will be able to alert the experimenters by activating an alarm and will then be removed from the scanner quickly.

### **Will researchers provide medical diagnosis after scanning?**

There is no intended clinical benefit of taking part in this study. The scans are not intended to provide a medical diagnosis or a 'clean bill of health' and the person conducting your scans will not be able to comment on the results of your scans. If you do have any health concerns, you should contact a qualified medical practitioner in the normal way.

The researchers involved do not have expertise in MRI diagnosis, as they are psychologists or allied scientists and are not medical doctors. We ask you to give the name and address of your GP. This is because occasionally, when we image healthy participants, the researchers

may be concerned that a potential abnormality may exist on the scan. In such cases, we will send a copy of the image to your GP, so that they can decide what course of action is best. By signing the consent form, you authorise us to do this. If you are not willing to authorise this, please do not volunteer for the study.

### **What will happen to information collected about me during the study?**

Your personal data will be kept confidential, securely stored in a locked cabinet at University of Reading. It will be destroyed when no longer required for the purposes of the study or if you wish to withdraw from the study.

Your research data from this study will be anonymised as quickly as possible after data collection. Any direct or indirect identifiers in the research data will be removed and replaced with a code number. Anonymised research data will be made available so that they can be consulted and re-used by others.

### **How will my information be kept confidential?**

As outlined above, your personal data will be securely stored at University of Reading. Your personal data and identifier code numbers that link your personal data to anonymised research data will be stored in separate locations to protect your identity. Only the researchers named above will have access to personal data. Your personal data will be destroyed when no longer required for the purposes of the study or if you wish to withdraw from the study.

### **What are my rights under data protection laws?**

The organisation responsible for protection of your personal information is the University of Reading (the Data Controller). Queries regarding data protection and your rights should be directed to the University Data Protection Officer at [imps@reading.ac.uk](mailto:imps@reading.ac.uk), or in writing to: University of Reading, Information Management & Policy Services, Whiteknights House, Pepper Lane, Whiteknights, Reading, RG6 6UR, UK.

The University of Reading collects, analyses, uses, shares and retains personal data for the purposes of research in the public interest. Under data protection law we are required to inform you that this use of the personal data we may hold about you is on the lawful basis of being a public task in the public interest and where it is necessary for scientific or historical research purposes. If you withdraw from a research study, which processes your personal data, dependant on the stage of withdrawal, we may still rely on this lawful basis to continue using your data if your withdrawal would be of significant detriment to the research study aims. We will always have in place appropriate safeguards to protect your personal data.

If we have included any additional requests for use of your data, for example adding you to a registration list for the purposes of inviting you to take part in future studies, this will be done only with your consent where you have provided it to us and should you wish to be removed from the register at a later date, you should contact Cansu Ogulmus.

You have certain rights under data protection law which are:

- Withdraw your consent, for example if you opted in to be added to a participant register
- Access your personal data or ask for a copy
- Rectify inaccuracies in personal data that we hold about you
- Be forgotten, that is your details to be removed from systems that we use to process your personal data
- Restrict uses of your data

- Object to uses of your data, for example retention after you have withdrawn from a study

Some restrictions apply to the above rights where data is collected and used for research purposes.

You can find out more about your rights on the website of the Information Commissioners Office (ICO) at <https://ico.org.uk>

You also have a right to complain the ICO if you are unhappy with how your data has been handled. Please contact the University Data Protection Officer in the first instance.

### **What will happen if I do not want to carry on with the study?**

Participation in this study is voluntary. You may decide to withdraw participation from the study at any time, without giving a reason. Your personal and research data will be destroyed if you wish to withdraw.

### **Who is organising and funding the research?**

This research is organised by Prof. Kou Murayama and is funded by The Leverhulme Trust.

### **What will happen to the results of this study?**

Results of the research will be published together with the anonymised research data. Your personal information will not be in any report or publication.

At the end of the session, we will debrief you about the aim and details of the study and discuss your experience. If you wish to be given a copy of the results of this research, please contact any of the researchers named above.

### **Who has reviewed this study?**

This application has been reviewed by the University of Reading Research Ethics Committee and has been given a favourable ethical opinion for conduct.

### **What if something goes wrong?**

If you have any complaints about the way you have been dealt with during the study or any distress you may have experienced please ask to speak to the principal researchers in the first instance, who will do their best to answer any queries. If you remain unhappy and wish to complain formally, you can contact any one of the listed supervisors at the University of Reading who will arrange a meeting with you to discuss any concerns you may have.

### **Further information and contact details.**

Please feel free to ask any questions that you may have about this study at any point. If you have any concerns about the research, please contact Prof. Kou Murayama

Email: [k.murayama@reading.ac.uk](mailto:k.murayama@reading.ac.uk),

Tel: +49 07071/29-76082.