

## PARTICIPANT INFORMATION SHEET – **Functional MRI**

### **How does the brain influence vision?**

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We invite you to take part in a research project investigating how you see the world. If you choose to take part in our study you will be asked to have a Magnetic Resonance Imaging (MRI) scan on up to two occasions. This will involve lying down and being scanned while making judgements about images on the screen, or simply watching a series of changing images.

**It is important you read all of this document carefully so that you can make an informed decision about whether you would like to participate.**

**1. Purpose of the research:** By observing your response to a variety of visual stimuli (images presented on screen) we can measure the limits of your vision. Functional Magnetic Resonance Imaging (fMRI) allows us to measure regional changes in blood flow and using it in our research provides an indication of which areas of the brain are most active during a visual task. We aim to better understand how the brain as well as the eye, limits vision.

**2. Your rights as a participant:** Participation in this study is voluntary. If you choose to participate, you can change your mind at any time without giving a reason and without any negative consequences. Whether or not you participate will not affect your relationship with the researchers. Participation or non-participation in the study will bear no penalties or loss of benefits with regard to the services provided to you by the University of Auckland Optometry Clinic. If you are a student of the researcher, your academic grades will not be affected whether you participate or not. Following participation, you have the right to request access to your data, and the right to request that your data be withdrawn from the study for up to one month after the session. You will be given a copy of this participant information sheet to keep.

**3. Procedure:** If you would like to volunteer, you will first be asked to participate in a 5-minute telephone interview to check that it is safe for you to have an MRI scan. If you are eligible, you will be invited to complete either one or two MRI sessions as described below. The scheduling of these MRI sessions may be within days to months of each other.

The MRI sessions will take a maximum of 2 hours to complete, which will include, completing the MRI safety form, changing into and out of gown, equipment set up before scanning etc, but the actual time in the MRI scanner will be no more than 1.5 hours.

MRI is routinely used for clinical purposes and has no known harmful effects on the human body. For an MRI scan you lie in a short tunnel inside a scanner machine, which produces a strong magnetic field. This is used to take images of the brain anatomy and to detect increased blood flow to active areas of the brain.

For this scan, you will change into a gown and remove all metallic objects and jewellery. You will then be asked to lie on your back on a bed, and lightweight equipment, a head “coil” will be placed around your head. With your permission, we will record where your eyes look during the part of the scan when you are asked to look at the screen, using a dedicated MRI eye-tracker. Because the scanning is noisy you will be given protective ear plugs and earmuffs to wear. This noise is due to the magnetic coils which produce the images vibrating against their casing within the scanner and is normal. You will then be slid into the scanner tunnel on the bed. You will be asked to remain as still as possible so that the images are movement free. You will be able to make contact with the MRI operator via the communication system or emergency buzzer at all times and can request to come out of the scanner at any time. In the first part of the scan you will listen to music for approximately five minutes while we image your brain anatomy. In the next part we will be taking images of your brain activity while you look at images. Images will be projected to a screen behind your head, viewed by a mirror and you may be asked to respond when required, by pressing buttons.

All MRI scans will take place at the Faculty of Medical and Health Sciences, Park Road, Grafton, at the Centre for Advanced MRI (CAMRI).

**4. Risks and discomforts.** Because we are often interested in the *limits* of your visual performance during scanning, the task may get increasingly difficult and we may measure your performance over a considerable number of repeated scans, therefore completing the scan may be a little tiring. However, you will be given regular breaks and the images you will be presented with will not contain stressful or emotional material.

MRI has been used to image millions of people worldwide with no side effects. Although the possibility of long-term effects cannot be ruled out completely, the weight of experience and opinion is against this. It is painless, and involves no ionising radiation exposure, needles or injections. However, MRI is unsafe for people who have magnetic metal implants in their body (e.g. pacemaker, hearing aid, screws/plates from an operation, etc.). You will be asked to fill out a safety checklist to make sure that this is not the case for you. Although MRI is not known to affect the unborn child, we exclude subjects who may be pregnant just to be on the safe side. People who are prone to claustrophobia can find lying in the narrow tunnel of the MRI scanner difficult. Therefore we do not recommend that they participate. Even though you will be given hearing protection, you may find the level of noise uncomfortable, if this is the case, you can ask

for the scan to be halted at any time. You will have short breaks between scans, when the noise will stop, however we would ask during this time that you remain still and inside the tunnel of the scanner. Very rarely people can find the scanner makes them feel warm or can feel a tickling or twitching sensation. These feelings are transient (will go away when the scanning stops) and harmless. However, if you feel uncomfortable for this or any reason whilst in the scanner you should let the MRI operator know via the communication system or the emergency buzzer. It is always your right to request that scanning be discontinued and that you be removed from the scanner.

**5. Detection of Abnormalities:** Your MRI scan is for research and is not a medical examination; therefore the images are not routinely reviewed by a radiologist and we are unable to perform diagnostic scans for medical purposes including of areas where you have known abnormalities. It is possible (although unlikely) that we may incidentally find an abnormality in your brain that is clinically significant. In the event that we detect a condition which is assessed to be a clinical abnormality through performing a scan on you, you will be informed of this and will be advised to consult your general practitioner. You should be aware that such knowledge would have consequences for you. For instance, it could affect your ability to obtain insurance (whether or not you take the matter further), or your ability to work in certain professions. If you do not wish to know about this type of finding, please do not participate.

**6. Benefits.** There are no direct benefits to you, but your participation will contribute towards our understanding of how the brain processes what we see. As compensation for your time you will receive \$25 petrol or supermarket voucher for each session you participate in. If you complete an MRI session, you can request to receive an electronic copy of the anatomical image of your brain. You can also request a copy of the final published report of the study.

**7. Confidentiality and data storage** Your name will only appear on the attached Consent Form, and one electronic master file stored on password protected university drive. The consent form will be kept in a secure place at the university, and the electronic master file will be stored on a university drive that is only accessible to the named investigators. Your name will then be coded with an identification number. The identification number is used to de-identify all other data, so that your identity is kept confidential. Your data (i.e. eye tracking and MRI scans) will only be referred to or labeled using this identification number and will only be shared with named researchers on this project. Research publications and presentations from the study will not contain any information that could personally identify you.

After completion of the study, identifying information (e.g. the consent form with your name on it) will be kept for period of 6 years, and then will be securely destroyed. De-identified data, including MRI data files, will be kept for a minimum period of six years to allow for publication and future re-analysis. Research publications and presentations from the study will not contain any information that could personally identify you.

**8. Future research.** We would like to contact you in the future to invite you to participate in further research (it is often very useful for us to compare how vision changes over time). If you are happy for us to contact you again about further studies we would be grateful if you supply your preferred contact details on the consent form. Only researchers within the School of Optometry and Vision Science will contact you and this will be a maximum of four times a year. You may opt out of being invited to future studies at any time.

***Thank you for taking the time to read this information sheet. If you have any queries or concerns, please contact us:***

**Researchers**

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**For any queries regarding ethical concerns you may contact:**

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**APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE**

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