



Dunedin Study Brain Imaging Project

Explanation of Procedures

Dear Study Member,

This information sheet is an outline of the Brain Imaging Study we plan to conduct as an addition to the overall Dunedin Study. We hope you will read this carefully and agree to participate in this worthwhile project. This is the first time we are conducting brain imaging, that is, Magnetic Resonance Imaging (MRI) scans, which we hope will provide us with valuable information about how the brain works.

As with all aspects of the Study, we want to remind you that your involvement is completely voluntary and you can withdraw at any time. We will follow this invitation with a telephone call to answer any questions you have and to ask some screening questions if you are interested in participating. We also have a video of a scan on our website for you to view.

What is the purpose of this study?

The purpose of this study is to gather information that will help scientists understand how parts of the brain influence people's reaction to different experiences in their daily life. We will link the results of this study to all the other information you (and your family and others) have provided over the years to see if our experiences in early life might shape our brain function and how this might influence our life as adults. We also want to see how the brain is connected to those parts of our body's functions which are involved in diseases of lifestyle and age.

What is involved in the Study?

During the study pictures of your brain will be taken using an MRI scanner. An MRI scanner is basically a large magnet with a tube in the middle that allows us to take pictures of the inside of your body, or in our case, your brain. The scanner itself does not move while we are taking the pictures, but it does make a lot of noise. The MRI procedure is completely non-invasive and painless, that is, you won't be poked, prodded or disturbed in any way. Two types of imaging will be done: *functional* and *structural*.

Functional means that you will be asked to complete mental tasks and play games while the images are taken. These tasks will include looking at numbers, words, sentences or pictures. You will see these using a combination of a mirror in the scanner and a projection screen placed near your head. Headphones will allow you to talk to us between scans. There will even be a game in which you could win money! You will be able to respond to these tasks by pressing buttons on a button glove. Before entering the scanner training will be given on how to do these tasks.

Structural means that images are taken of your brain anatomy. This will be done while you are resting comfortably and if you like, listening to music of your choice. We will ask you to lie very still as the smallest movement can affect the images, so no tapping of toes if you are listening to music!

You will also be asked questions about your current mood after you have practised the games and again after your scan.

Please refrain from excessive drug and alcohol use 24 hours prior to your scan appointment and from caffeine 1 hour prior.

Retinal Imaging

In addition to brain scanning, we will also do retinal imaging. You will be familiar with this as we did retinal imaging at the last assessment phase. We will use a camera to take pictures of your eyes in a darkened room. This is to examine the health of the small blood vessels that are easily visible in the eye. As we did last time, the images will be sent to our collaborator in Singapore, Professor Tien Wong, whose team will grade the scans. They will then be returned and stored at the Dunedin Research Unit.

What actually happens on the day?

- A Study staff member will meet you at Pacific Radiology, on Great King Street and once again explain the procedures. If you agree to participate you will be asked to sign a consent form.
- We will introduce you to the tasks/games we will ask you to do while we do the scans. Then we will ask you questions about how you are feeling.
- We will complete a screening form to confirm that it is completely safe for you to undergo the MRI scans and answer any questions you have. We will already have asked you these questions by phone but we want to make sure nothing has changed since, and it is safe for you to undergo scanning.
- You will be introduced to the MRI technician who will be conducting your scan, and they will ask you to change into scanning clothes provided by Pacific Radiology and take off all metal items, including jewellery. Your belongings will be stored in a secure place. The technician will also make sure you don't have anything in your hair (metal pins, clips etc. or even rubber bands) as these will get very uncomfortable when you are lying down. Please use as little makeup and hair product as you can before your scan, both for safety reasons and because they can interfere with the scan.
- The technician will help you into the scanner. You lie flat on your back and about half of your body will go into the scanner, depending on your height.
- You will be made comfortable - with a blanket for warmth, pillow under your knees, extra padding. We will give you earphones so that you can hear us. A microphone inside the scanner allows you to talk back to us in between scans. The technician will lower a type of plastic helmet over your head. This helmet allows us to take the pictures of your brain. You will also be given a button glove like the one you practised on for when you do the tasks. There will be a mirror inside the scanner which enables you to see the screen on which the tasks are displayed.
- You will be given a squeeze ball in your other hand to get the technician's attention while the scans are being taken. We ask that you don't use this unless absolutely necessary. Throughout the entire scan we will be talking to you and checking to see if you are comfortable and happy to continue.
- Once the technician is sure that you are comfortable and can see everything clearly, (s)he will leave the scanner room to go into the control room to start scanning. The technician and Dunedin Study staff member will be present in the control room throughout the scans.
- Pictures of your brain are taken while you are asked to play games or relax comfortably while listening to music of your choice. There will be times we will ask you to keep completely still. The technology is such that any single movement – even a tiny one – will affect the results. Any movement in your feet, wiggling, kicking or rocking will translate into your head and make the images too blurry to be useful. So we apologise now for possibly annoying you by constantly asking you to keep still!
- You will hear lots of different noises while we take pictures. It is normal for the scanner to make different loud noises and at times vibrate. Your headphones will make it quieter. Some people may

feel a tingling in their fingers or back – this is perfectly normal and will go away either after a few minutes or once the scan is over. If you have any facial tattoos, we will ask that you tell us if you feel these are getting warm. Since we have determined that you have no unsafe metal in your body, the MRI scan is perfectly safe and does not involve any immediate or long term risks.

- There will be one session of approximately 70 minutes
- Throughout the procedure we will be checking that you are okay and happy to continue.
- We will conduct the retinal scanning either before or after the scan.
- Once you have changed into your clothing and retrieved all your belongings, we will ask you questions about how you felt during the scan and ask for your feedback about the whole experience.

What are the risks of being involved in the Brain Imaging Study?

- MRI uses magnets and radio waves to make images (pictures) of the inside of the head. There are no ill effects reported from exposure to the magnetism or radio waves used for these studies. A known risk is that the magnet could attract certain kinds of metal and this could cause an injury. We will ask you about metal within your body (this includes certain dyes used in tattoos, body piercings and IUDs). The MRI room door is secure so that no one carrying metal objects can enter the room while you are having this scan performed.
- Female Study members will be asked if there is a chance they might be pregnant – if there is any doubt we will have pregnancy tests ready for you to use.
- The MRI scanner makes loud buzzing and clanging noises so headphones need to be worn for safety and comfort.
- The part of the MRI machine that you will lie in is an open tube although somewhat confining. This may cause you to have some feelings of anxiety. You will be able to communicate with the scanner staff throughout the procedure. You can ask to stop the scan and be removed from the scanner at any time by just asking the staff.
- When you look inside the body you do not always know what you might find. There is a very small chance that the technician or radiologist might notice changes in your brain, which may be related to a health condition. If this happens they will relay any concerns to Professor Richie Poulton, the Study Director, who will contact you to discuss what has been found and to help with any onward referral, if needed.

What are the benefits of taking part in the Study.

As with other aspects of the Dunedin Study, there is no direct benefit to you in participating but there is the possibility that this research will produce knowledge that is useful for preventing or slowing down age-related illnesses, and for showing if early life experiences shape our brain function.

Please note that the scans are for research purposes only. It is not a substitute for medical testing or neuropsychological evaluation. This research protocol is not designed to provide medical testing of any kind.

Confidentiality

Finally, and as always, we want you to be assured that ALL information we collect is for research only. It is strictly confidential and NEVER released to anyone unless you request it. Study members are assured that under no circumstances would we share information with anyone, including partners and parents.

If you have any concerns and questions at any time please contact:

Professor Richie Poulton,
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STUDY PARTICIPANT'S RIGHTS

If you would like advice as to your rights as a participant in this Study, you may wish to contact a Health and Disability Services Consumer Advocate:

Free Phone: 0800 555 050
Free Fax: 0800 2787 7678
Email: advocacy@hdc.org.nz