

Information Sheet for parents

Functional connectivity and temporal resolution in neural development

Principal researcher: Joel B. Talcott, Aston University

Introduction

We would like to invite your son/daughter to take part in a research study carried out by staff at Aston University. Before you decide, it is important for you to understand why the research is being carried out and what is involved. Please take some time to read the following information carefully and discuss it with others if you wish. Please contact the researcher if you would like more information.

What is the purpose of the study?

The brain continues to develop and change throughout childhood and adolescence, and so we wish to build up a map of changes in brain during this time. It is hoped that the findings of this study will contribute to finding more objective measures which will aid current diagnostic methods in developmental disorders. The information from the MEG scan will be used to contribute to our understanding of how the brain develops and how this can help us understand the developmental differences we think are particularly associated with dyslexia and motor coordination difficulties.

Why have I been chosen?

This study will evaluate whether the changes in neural development associated with dyslexia and coordination disorder result from either developmental delay or atypical development. You may have been asked to participate because your child has previously seen Dr. Kim Rochelle at the Aston Dyslexia and Development Assessment clinic for an assessment of literacy skills.

Do I have to take part?

It is entirely up to you whether you take part or not. If you decide to take part both you and your child will be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time without giving a reason. A decision to withdraw or not to take part will not affect the standard of care your child will ever receive and any data collected from your child will be destroyed.

What will happen to me if I take part?

We will ask you and your child to travel to Aston University in Birmingham and take part in an MEG study. We will first ask you and your child to complete a consent form for the study. We will also ask for your permission to access your child's assessment records for research purposes. Your child will be asked to complete a computerised measure of their ability to detect short auditory tones, and if they have not already done so during their original assessment, a test of motor and balance skills. After this we will carry out the MEG scan and we will then ask your child to have a short structural MRI scan. The entire study should be completed within one hour and twenty minutes.

What is MEG?

MEG (magnetoencephalography, or 'em-ee-gee'), is a powerful and established method for investigating brain function in healthy people. MEG responds to the electrical signals given off by the brain. These are picked up by the MEG scanner and analysed to provide detailed information about the location and function of brain activity. MEG only needs the head placed into the scanner for the brain activity to be recorded.

What will the MEG recording involve?

When you arrive a member of the research team will review what the study is about, and answer any questions you or your child may have. Before your child's scan (s)he will be asked to remove any metal they are wearing because these interfere with both the MEG and MRI equipment. (E.g. watches, coins, jewellery, glasses, credit cards, batteries, and clothes that contain metal such as tops with zips and bras). Your child will then have a headband attached to his/her head and will then be taken into the MEG room. You may accompany your child into the scanning room if you both wish, and

in this case it will be necessary to ensure that you have removed any metal you are wearing also. In the MEG room the child will sit on a chair, which we can elevate to that the top of your head is in the MEG helmet.

What will I be asked to do during the MEG?

During the recording your child will be seated comfortably in a chair. We are investigating the brain during resting state, so we will ask your child to open or close their eyes, and then to listen to background noise. There is no other task during this recording, but we will ask your child to remain as still as possible and try to refrain from blinks and head or body movements.

What will the MRI scan involve?

Magnetic Resonance Imaging (MRI) allows us to create a structural image of the brain by using magnetic fields. MRI scans will be acquired using a 3 Tesla scanner. This procedure consists of lying on a special bed that will be moved into a cylindrical opening where pictures of your brain will be taken during a 15 minute period. The MRI machine will be somewhat noisy during the scan and you will be given earplugs to reduce the sound level. Your child simply has to relax during this session and we will show them a video of their choice during this short procedure.

It is vital that no metal items are taken into the scanner, so we would ask you to complete the enclosed screening form and return it back to us. A video of the scanning procedure has been included on the CD in this pack, to give you an idea of what you can expect from a MRI scan. If you don't have a computer or haven't had a chance to look at the video before you come to Aston University, don't worry, we will have a computer available for you and your child to watch the video before you decide whether or not you want to complete this part of the study.

Will my taking part in this study be kept confidential?

The participation of your child will be treated with strict confidence. All personal information, such as your address and contact details, which is collected about you during the course of the research will be kept in a locked cabinet in a locked room (like a medical file) and only the researcher, Dr Joel Talcott, will have access to it. Any information (data) from your child's assessments will be kept in an anonymised form and transferred to a

password protected computer system that will not have your name on it. The information we collect is for research purposes only.

What are the risks of participation?

The MEG machine runs using an inert but very cold liquid, which at room temperature is an inert gas (Helium). In the very unlikely event that large amounts of gaseous helium escape from the equipment, special extraction fans will start automatically. (This has never happened anywhere in the world.). The high magnetic fields generated by the MR machine can cause metallic objects to become projectiles. We therefore will have you and your child complete a series of screening forms prior to this procedure. The MEG and MRI scans will be supervised by staff with considerable experience with both techniques. Both MEG and MRI are entirely non-invasive procedures and completely harmless as long as the requisite safety procedures are adhered to.

Are there any benefits of participation?

Although, there are no direct benefits to you or your child from participating in this study, we hope the information learned from this study will benefit people being diagnosed with developmental disorders in the future. We will refund travel expenses and a small reimbursement for your child's time will be made (£20).

What will happen to the results of the research study?

The results will be submitted for publication in a scientific journal. You will not be identified in any publication. You will be asked if you wish to receive a summary of the research findings once the study has been completed.

Should you wish to participate or require some more information:

Please contact researcher Joel Talcott at:

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