Participant Information Sheet for Parents

Research title:

Combined cognitive-and-state-control training for children with and without Attention-Deficit Hyperactivity Disorder

Researchers: A/Prof. Stuart Johnstone, A/Prof. Sue Bennett, and A/Prof. Steven Roodenrys

This research is conducted by the School of Psychology at the University of Wollongong

What is the aim of the research?

The aim is to test a computer-based cognitive training program designed to improve impulse-control, working memory and attention in children. Cognitive training involves practicing tasks designed to involve a specific cognitive function, for example memory. We are interested in examining the differences in performance for both children with and without AD/HD. In our pilot study (Johnstone, Roodenrys, et al. 2010), we found that 25 sessions of working memory (WM) and inhibition training substantially reduced symptoms of inattention, impulsivity and hyperactivity in children with AD/HD. In an extended study (Johnstone, Roodenrys, et al., 2012), we found both children with and without a diagnosis of AD/HD benefited from 25 training sessions, showing some cognitive and behavioural improvements. These results were published in peer-reviewed scientific journals. Based on these results an independent software company designed a themed game to make the training more fun for children – the game is called FOCUS POCUS. The game provides a fun environment for children to exercise working memory, impulse-control and attention. Some games are controlled entirely using “brain power”, with ongoing brain activity measured via a simple comfortable device, with this type of training designed to promote awareness and control of attention and relaxation. In our 2012 study, participants’ attention levels were monitored only passively, but this software will allow us to examine how “brain power” works in combination with cognitive processes to affect performance. Therefore, in this study we would like to examine whether playing Focus Pocus can result in improvements in behaviour and learning in children both with and without AD/HD aged 8-12 years.


**What will your child do?**

Your child will complete a pre-training assessment session (at your home or at the university) where they will do a few pencil-and-paper tests, have EEG recorded from a comfortable device (the Epoc EEG headset, which takes less than 30 seconds to fit), do a few simple computer tasks, and you’ll fill in some questionnaires about them. We will install the software on a home computer. They will need to complete 25 sessions over a 4-6 week period at home, with each session taking 20-25 minutes.

The software consists of 12 simple and fun games that are very easy to play. They will use the NeuroSky EEG device while doing the training – see below). At the end of each training session children are rewarded with a “boss game” which is just for fun, where they battle a boss wizard using spells and items unlocked during training. Some screenshots from the games are shown below - for more information visit www.neurocog.com.au. After the training is complete, your child will complete a post-training session (at your home or at the university), where we do the same tests as in the pre-training session. We’ll contact you again 6 months down the track to see if you’re willing to do a follow-up assessment session for us.
Screenshots from Focus Pocus (above).

**What will you do?**

You will be asked to complete a couple of simple questionnaires about your child’s typical behaviour, at the pre- and post-training sessions. These two questionnaires should take 15-20 minutes to complete. We will also ask that you have someone close to the child (e.g. Grandparent, Aunt, Uncle, etc.) complete a simple 18 item questionnaire on their perceptions of your child’s behaviour, when they start training and when they are finished – this should only take 5 minutes to complete, with ratings made on statements such as: “Has difficulty awaiting turn”, or “Is forgetful in daily activities”.

**Are there any important considerations?**

It is important that you are aware that this is a **randomised wait list control trial**, and that your child may initially be randomly allocated to the wait list group. This means that they will start their cognitive training after a second session 4 or 6 weeks after the pre-training session. This allows us to compare children doing the neurocognitive training with a group of children who were just going about their normal lives.

Please note that the data obtained will be used only for the purposes of this study and will not be made available to any persons other than the research team. All data will be **grouped** and therefore, no individual will be identifiable.

We do not foresee any risks involved for your child in performing these tasks, but if they feel any discomfort you can contact the research staff or withdraw from the study at any time.

**What sort of equipment do we use?**

During the pre- and post-training sessions we’ll record brain electrical activity, or EEG. EEG can be recorded via various safe and non-invasive techniques. We’ll use the Epoc neuroheadset, which records from 14 locations and is quick to fit, and comfortable to wear. For the training, your child will use the NeuroSky Mindwave device (see picture below) to record EEG from one location on the forehead. These electrodes only receive signals and cannot send any electrical signals or radiation. We stress that the child experiences no discomfort. It’s just like wearing very comfortable headphones, with no wires. For the training period, those randomly allocated to the neurocognitive group will also use a MindWave during training – some of the games are controlled using “brain power” (e.g. attention level).
The NeuroSky Mindwave is worn like a set of headphones. A small dry sensor rests against the forehead and measures EEG activity.

**Benefits of Participation**

Your child will undertake neurocognitive training. The cognitive component of this training has been shown to improve behaviour in our two previous studies. Additionally, you will receive a report generated by Focus Pocus on your child’s performance across the training sessions, including performance and EEG changes. Your child will be given a certificate of appreciation, and a small chocolate bar, for their time and effort (regardless of their performance). If you have any questions relating to the report, A/Prof. Stuart Johnstone will be available to discuss the contents – see contact details below.

**If you are interested in your child participating in this research please visit this website and register your interest on this webpage**

If you have any questions, please contact A/Prof. Stuart Johnstone (02) 4221 4495 or email sjohnsto@uow.edu.au. If you have any complaints about the conduct of the study please contact the Complaints Officer, University of Wollongong/ Illawarra Shoalhaven Local Health District Human Research Ethics Committee on 4221 4457, or email rso-ethics@uow.edu.au. Your child’s participation in this research is entirely voluntary, and he/she can refuse to participate, and is free to withdraw from the research, at any time. His/her refusal to participate or withdrawal of consent will not affect any relationship with the School of Psychology.