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A window on the brain

**Wednesday 23 March 2010
6.00 - 8.30pm**

Medical Research Council
Cognition and Brain Sciences Unit
15 Chaucer Road
Cambridge CB2 7EF
Tel: 01223 355294

A free event organised as part of the Cambridge Science Festival

PROGRAMME

6-7pm

Arrival

For the first hour, there will be practical demonstrations of experiments for you to try out, and lots of other hands-on activities with many of our scientists on hand to explain their work.

Light refreshments (tea/sandwiches) will be served.

7pm

Demonstrations close and our three talks begin in the Lecture Theatre

7-7.30pm

The Autism Spectrum: Does it include you and me?

Speaker: Elisabeth von dem Hagen

The term Autism Spectrum Conditions (ASC) covers a group of neurodevelopmental conditions. One of the key features of these conditions is a difficulty in engaging in and understanding social interactions. Recent research suggests that the Autism Spectrum is a continuum that extends from clinical conditions through to the typical, non-ASC population including you and me. In this talk, we will explore the idea of an Autism Spectrum continuum by examining how the brain processes social cues, such as faces and eye gaze, and how these processes vary across the Autism Spectrum. We will look at some of our current research linking the severity of traits associated with Autism in the general population to the structure and function of 'social' brain regions.

7.30-8pm

How do we learn to read? Experiments in artificial language learning and brain imaging

Speaker: Jo Taylor

The English spelling system is notoriously complicated as this poem extract nicely illustrates:

I take it you already know
Of tough and bough and cough and dough?
Others may stumble, but not you,
On hiccough, thorough, bought and through?

We know a lot about how adults read different types of words and about the things that influence how well children learn to read. However, we know very little about the process by which we actually *learn* the complex relationships between spelling and sound. This is what we've focused on in our research. In this talk we will describe an exciting new experimental method we've developed in which adults learn to read a simplified language of novel words written in unfamiliar symbols. The experiments we've conducted using this method have shown that the systematicity and frequency of spelling-sound relationships influence how well people learn to read new words. More recently we've used a similar method to ask whether the process of learning to read, i.e. linking symbols to sounds, depends on specific brain mechanisms, or whether it recruits the same systems as other language tasks such as learning spoken vocabulary.

8-8.30pm

Barking up the right tree: how speech comprehension challenges the brain

Speaker: Matt Davis

One of the many things that your brain can do with unmatched speed, accuracy and efficiency is to understand speech. Sounds that strike the ear are heard as words and evoke the right meaning in a fraction of a second. We are unaware of the many stages involved or how they can go wrong. It's only when we try to converse in a noisy environment, struggle with a foreign language or find ourselves talking to a computer over a crackly telephone line that we realise quite how hard it is to 'wreck a nice beach' or 'recognise speech'.

In this talk, we'll describe how the brain solves a fundamental problem in recognising speech; ambiguity in the sounds and meaning of words. Using magnetic resonance imaging we can see the brain areas that work harder to make sense of distorted speech, or sentences containing words with more than one meaning like *bark*. Understanding where and how the healthy brain makes sense of ambiguous speech allows us to look for 'hidden' comprehension in people who are sedated, or with severe brain injuries. Along the way, we'll learn about how speech sounds are made, where words are stored in the brain, and why we groan at puns.

We hope you enjoy the evening. If you would like to help us with our research by becoming a member of our Volunteer Panel, please contact our Panel Manager, either at the address above, by email to panel@mrc-cbu.cam.ac.uk, or you can speak to us on the night.