

# Cognitive Neuroscience and Educational Psychology Day Conference

Friday 16 July 2004 - 9:00am to 6:00pm

Westminster Institute of Education, Oxford Brookes University, Harcourt Hill Campus, Main Hall

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|-------|---|--|
| 09:15 | Dr David Langford<br><i>Westminster Institute<br/>Oxford Brookes University</i> | <b>Welcome</b>   |
| 09:30 | Prof John Geake<br><i>Westminster Institute<br/>Oxford Brookes University</i>   | <b>Neurobiology and Intelligence</b><br>Recent functional brain imaging studies have investigated the performance of subjects on high and creative intelligence tasks. The results indicate qualitative differences in the brain organisation and different neural demands in undertaking tasks that require high levels of intelligence and creativity.   |
| 10:15 | Dr Ann Dowker<br><i>Experimental Psychology<br/>University of Oxford</i>        | <b>Individual Differences in Mathematical Thinking</b><br>Converging evidence from studies, including brain imaging, of normally developing children and others with arithmetical disabilities or exceptional arithmetical talent indicates that arithmetical cognition is made up of many components. Marked individual differences in these components, and discrepancies between these components within an individual child or adult can be readily observed.          |
| 11:00 | <b>M/T</b>  |  |
| 11:30 | Marco Nardini<br><i>Psychology<br/>University College London</i>                | <b>The Development of Memory</b><br>A fun game where children have to remember where little toys are hidden provides insight into the development of short term memory related to hippocampal brain functioning in normally developing 3-7 year olds and children with developmental disorders.  |
| 12:15 | Dr Morten Kringelbach<br><i>Physiology<br/>University of Oxford</i>             | <b>Food for Thought</b><br>Food intake in humans is not only regulated by homeostatic processes but also by hedonic pleasure, as illustrated by our overindulgence in sweet foods beyond homeostatic needs, and rising obesity levels. Evidence from recent neuroimaging studies links regions of the human brain (in particular the orbitofrontal cortex) to various aspects of food intake and especially to the representation of the subjective pleasantness of foods. |

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13:00 **Lunch**

13:45 Shirley Anker  
& Prof Jan Atkinson  
*Psychology*  
*University College London*

**Attentional Disorders in Primary School Children**  
Children at 6-7 years who were identified in the Cambridge Infant Vision Screening programme as having significant visual refractive errors (long sightedness) also had a high incidence of attentional disorders: what is the connection?

14:30 Prof John Stein  
*Physiology*  
*University of Oxford*

**Visual Dyslexia**  
Dyslexics' reading problems may stem from impaired development of a system of large, 'magnocellular', brain cells. These are specialized for timing the visual and auditory transients that underlie orthographic and phonological processing. The development of these cells depends on interacting genetic, immunological and nutritional factors.

15:15 A/T

15:45 Dr Marina Rose  
*Neuroscience*  
*Aston University*

**Auditory Dysfunction in Children**  
Auditory processing deficits which mediate dyslexia are manifest across a wide range of learning tasks, most notably in reading, writing, and English spelling. Experimental work on understanding the underpinning neurophysiology raises questions with relevance to education involved identifying which problems, in a cluster requiring remediation, might be amenable to training interventions.

16:30 Prof Tony Bailey  
*Psychiatry*  
*University of Oxford*

**Autism and Adolescence**  
Teachers report that there are more children with autism spectrum disorders than five years ago and that the rate is much higher among primary than secondary pupils. Current research into autism with rapid advances in genetics, neuroimaging and postmortem studies offers the very real hope that we shall soon have a far greater understanding of these complex disorders, which can then feed through into better treatments and preventative strategies.

17:15 Sir Christopher Ball  
*Crucible Group*  
*University of West England*

**Plenary: Implications for Educational Psychology**

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**Support:** The Westminster Institute of Education, Oxford Brookes University. The Oxford McDonnell Centre for Cognitive Neuroscience, University of Oxford