

## Thursday 24<sup>th</sup> September, 1pm

**John Duncan**

University of Cambridge

### **Integrated intelligence from distributed brain activity**

**Abstract:** Human fMRI studies show a tightly-localised set of “multiple-demand” or MD regions, involved in solution of many different cognitive challenges, widely separated yet strongly functionally connected, and linked to standard measures of fluid intelligence. Multiple-demand regions are generally associated with “cognitive control”, but how should control be conceived? Using data from behavioural, imaging and single unit studies, I argue that the core role of MD regions is to solve complex problems in an integrated structure of simpler, more solvable, focused parts. With wide distribution in the brain, strong functional connectivity, modest relative specializations, and strong conjunctive coding, MD regions are well placed to act as the integrating core of complex thought and behaviour.

**Bio:** Educated at the University of Oxford (1970-1976), John Duncan spent two years at the University of Oregon working with Professor Michael Posner before taking up a research position with the Medical Research Council. He now holds positions as Programme Leader at the MRC Cognition and Brain Sciences Unit in Cambridge, and Professorial Research Fellow in the Department of Experimental Psychology, University of Oxford. Integrating across cognitive theory, neuropsychology, neuroimaging, and single cell physiology in the behaving monkey, his research addresses problems of attention, intelligence and cognitive control. For 20 years, he has managed a large patient resource for lesion-function mapping in the Cambridge community, addressing problems of recruitment, lesion definition, brain normalization and brain-behaviour correlation. He is a Fellow of the Royal Society and the British Academy, and winner of the 2012 Heineken Prize in cognitive science.

## Thursday 8<sup>th</sup> October, 2pm

**Shahzeen Attari**

Indiana University

### **Fusing facts and feelings to motivate action on climate change**

**Abstract:** Solutions to climate change rest on science, technology, political will, and public support. In this talk I will discuss efforts from our lab over the past decade that aim to address problems related to human behavior, resource use, and climate change. Using methods that have strong links to environmental and cognitive science, we have investigated questions ranging from how people think about how much energy different appliances use, how to correct

misperceptions using expert heuristics, what energy mix people want us to use in 2050, and some factors that shape the credibility of climate communicators. In this talk I will provide an overview of some of our main research findings and a taste of our current research projects. I would love to engage with you all on the path forward. Please bring questions and ideas.

**Bio:** Shahzeen Attari's research focuses on people's judgments and decisions about climate change and resource use. Some of her research has investigated how people think about energy and water use, how people conceptualize water systems, and how the carbon footprint of climate communicators affects their audience's policy support. Among other projects, she is currently studying how to use stories to fuse facts and feelings to motivate action on climate change. She is an Associate Professor at the O'Neill School of Public and Environmental Affairs (SPEA) at Indiana University Bloomington. You can find out more about her and her research here: [www.szattari.com](http://www.szattari.com)

**Thursday 29<sup>th</sup> October, 1pm**

**Ross White**

University of Liverpool

**Supporting the mental health needs of asylum seekers and refugees**

**Abstract:** The United Nations High Commissioner for Refugees (UNHCR) estimates that there are currently over 26 million refugees across the globe. Mental health difficulties have been shown to be elevated in asylum seeking and refugee (ASR) populations. Risk factors can be associated with events that occurred prior to, during, and after the migratory journey. Whilst there is recognition of the important impact that a history of traumatic events (e.g. torture, abuse and neglect) can have, social adversity in the form of 'daily stressors' (e.g. a lack of access to basic resources, isolation, lack of safety and security, family violence) is being increasingly recognised as an important determinant of the mental health of ASR populations. Concerns have been raised about the potential medicalization of social adversity faced by displaced populations. There has also been a comparative lack of research investigating approaches that may be helpful for enhancing the quality of life and subjective wellbeing of ASR populations. Psychosocial interventions and low-intensity psychological interventions can provide scalable opportunities for treating common mental disorders and promoting wellbeing. This presentation will focus on work being undertaken in the EU and in sub-Saharan Africa to evaluate the efficacy of psychosocial interventions for ASRs. These projects have involved the linguistic and cultural adaptation of interventions and assessment measures. The implications that this research has for the integration of ASR populations in the EU and beyond will be discussed. This will include a focus on conceptual frameworks that provide opportunities for situating determinants of mental health in the socio-political context in which ASR live their lives, and not just risk- and protective-factors specific to the individual.

**Bio:** Dr Ross White (PhD, DClinPsy) is an Associate Professor of Clinical Psychology at the University of Liverpool, UK. Dr White set up and directed the MSc Global Mental Health programme at the University of Glasgow. He was lead editor of 'The Palgrave Handbook of Socio-cultural Perspectives on Global Mental Health'. Dr White has research collaborations with the *World Health Organization* and *United Nations High Commissioner for Refugees* investigating the efficacy of psychosocial interventions for reducing distress experienced by refugees particularly in the context and/or

aftermath of humanitarian crises. He also has an interest in the processes involved in the linguistic/cultural adaptation of psychological therapies. Dr White is the Principal Investigator on the ESRC/AHRC funded *Community-based Socioterapy Adapted for Refugees* (COSTAR) project that is evaluating a psychosocial intervention for Congolese refugees living in Uganda and Rwanda. Dr White is also a co-investigator on the EU Horizon2020 funded *Refugee Emergency: DEFINing and Implementing Novel Evidence-based psychosocial interventions* (RE-DEFINE) project that is evaluating a group-based guided self-help intervention for refugees and asylum seekers across the EU and in Turkey.

**Thursday 12<sup>th</sup> November, 1pm**

**Christa McIntyre**

University of Texas

**Preclinical studies of vagus nerve stimulation as a potential adjunct to exposure-based therapies**

**Abstract:** Emotionally traumatic experiences can lead to maladaptive memories that are enduring and intrusive. The goal of exposure-based therapies is to extinguish conditioned fears through repeated, unreinforced exposures to reminders of traumatic events. The extinction of conditioned fear depends upon the consolidation of new memories made during exposure to reminders. An impairment in extinction recall, observed in certain patient populations, can interfere with progress in exposure-based therapies, and the drive to avoid thoughts and reminders of the trauma can undermine compliance and increase dropout rate. Development of an effective adjunctive therapy would ideally improve the tolerability of therapy and/or improve the consolidation and maintenance of the extinction memory. We have recently demonstrated in rats that, compared to exposure alone, exposure paired with vagus nerve stimulation (VNS) enhances the extinction of fear-based memories. Under stressful conditions, the vagus nerve responds to elevations in adrenaline and signals the brain to facilitate the storage of new memories while, as part of the parasympathetic nervous system, it slows the sympathetic “fight-or-flight” response. We propose that stimulation of the left cervical vagus nerve during exposure to conditioned cues signals the brain to store new memories just as adrenaline or emotional arousal would do, but bypasses the peripheral sympathetic response. In support of this hypothesis, we have found that VNS accelerates extinction, reverses extinction impairments, promotes generalization of extinction, and prevents reinstatement of conditioned fear in rats.

**Bio:** Christa McIntyre earned a PhD in Psychobiology in 2000, at the University of Virginia, where she worked with Dr. Paul Gold on studies using in vivo microdialysis to investigate the interactions of multiple memory systems. She went on to do a postdoctoral fellowship in the laboratory of Dr. James McGaugh, at the University of California, Irvine, where she used microdialysis and molecular techniques to examine the role of noradrenaline release in the amygdala as a modulator of memory consolidation. She joined the faculty in the School of Behavioral and Brain Sciences at the University of Texas at Dallas in 2006. Her current research falls into two separate but complementary lines; one is rooted in basic research and the other is more translational. The basic research question is, “*Why do we instantly store lasting memories for events that are stressful or emotionally arousing when other memories require rehearsal?*”. The more translational side of her research uses what is known about the systems of the brain that are involved in the enhancement of memory storage during

emotional arousal to drive plasticity in those systems for the purpose of treating memory and anxiety disorders. One target for manipulation is the vagus nerve, which serves as a bridge between the peripheral nervous system and the brain. The vagus nerve responds to memory enhancing doses of the stress hormone adrenaline, and vagus nerve stimulation (VNS) increases levels of noradrenaline in the amygdala and enhances memory consolidation. Dr. McIntyre's research indicates that VNS also enhances the consolidation of extinction of conditioned fear in rat models for PTSD and autism. Based on these preclinical findings, a pilot study of VNS effects on exposure therapy outcomes is currently enrolling PTSD patients.

**Thursday 26<sup>th</sup> November, 1pm**

**Sabine Hunnius**  
Radboud University

**How Young Children Learn About and From Others**

**Abstract:** Infants come into this world equipped with advanced learning mechanisms. Moreover, from early on they show an elaborate pattern of allocating attention to stimuli in a way that allows them to learn optimally from their environment. I will present a series of behavioral and neurophysiological experiments demonstrating how these mechanisms support infants' social learning. In addition, I will discuss recent research from my lab on adults' infant-directed behaviors that shows how adults skillfully adapt their teaching behaviors to the attentional preferences and learning capabilities of their infant interaction partners to optimize learning. Together, my research demonstrates how the intricate interaction of infants' basic learning mechanisms and a well-matched social environment brings about the astonishing developmental changes of early childhood.

**Bio:** Sabine Hunnius is Professor of Developmental Cognitive Neuroscience at Radboud University, Nijmegen (The Netherlands). She studied Psychology at the Freie Universität Berlin (Germany) and obtained her PhD from the University of Groningen (The Netherlands) for a longitudinal study into attention and looking behavior in infants. After conducting research at Tilburg University (The Netherlands) and Uppsala University (Sweden), she joined Radboud University in 2007 as director of the Baby and Child Research Center. Her research examines the developmental mechanisms and neurocognitive changes underlying early cognitive and social-cognitive development.

**Thursday 10<sup>th</sup> December, 1pm**

**Oliver Scott Curry**  
University of Oxford

**Morality as Cooperation: Past, present and future**

**Abstract:** What is morality, where does it come from, how does it work? According to the theory of morality-as-cooperation, morality is a collection of biological and cultural solutions to the problems of cooperation recurrent in social life. As evolutionary game theory has shown, there

are many types of cooperation, hence the theory explains many types of morality, including: family values, group loyalty, reciprocity, hawkish heroism, dovish deference, fairness and property rights. Previous research has shown that, as predicted, these seven types of morality are psychologically distinct, and cross-culturally universal. Current research is investigating their genetic, neuroanatomical, and cultural-phylogenetic bases. Future research will explore the implications of morality as a 'combinatorial system', and show how cooperation explains sexual morality. Continuing to test the many implications of the theory will help to put the study of morality on a firm scientific foundation.

**Bio:** Dr Oliver Scott Curry is Research Director for Kindlab, at [kindness.org](http://kindness.org). He is also a Research Affiliate at the School of Anthropology and Museum Ethnography, University of Oxford, and a Research Associate at the Centre for Philosophy of Natural and Social Science, at the London School of Economics. He received his PhD from LSE in 2005. Oliver's academic research investigates the nature, content and structure of human morality. He tackles such questions as: What is morality? How did morality evolve? What psychological mechanisms underpin moral judgments? How are moral values best measured? And how does morality vary across cultures? To answer these questions, he employs a range of techniques from philosophy, experimental and social psychology and comparative anthropology.