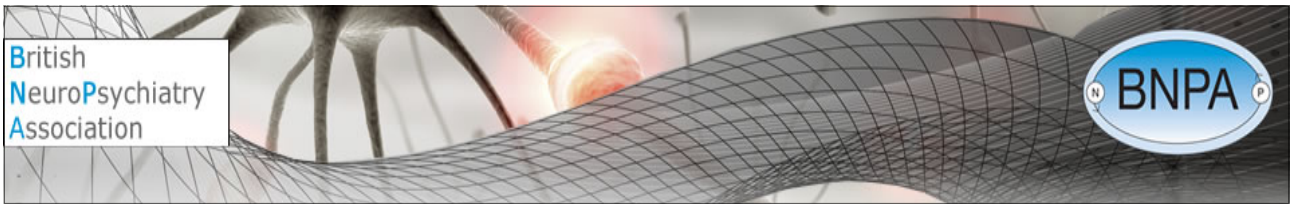

The BRITISH NEUROPSYCHIATRY ASSOCIATION 28th AGM

www.bnpa.org.uk

Joint meeting with the British Psychological Society's Division of Neuropsychology, the UK Functional Symptoms Research Group & in collaboration with the Association of British Neurologists Cognitive Special Interest Group

4th, 5th and 6th February 2015

The Royal College of Surgeons, Lincoln's Inn Fields, London

PROGRAMME AND ABSTRACT BOOK

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4th, 5th and 6th February 2015

DAY 1

The 'How' and 'Why' of functional neurological symptoms and what to do about them
JNNP lecture: John Duncan "The Neural Basis of general intelligence"
Diagnostic Masterclass on Cognition
Alwyn Lishman Prize - Platform Presentations
BNPA Neuropsychiatry Research Update

DAY 2

Body Image and the Self
BNPA Medal Lecture:
John Hodges "The frontotemporal dementias: a neuropsychiatric perspective"
Diagnostic Masterclass on Functional Disorders
May 2015 General Election Special: Darren Schrieber "Neuropolitics"

DAY 3

Memory Disorders - not just about Alzheimer's Disease
Plenary: Anthony David "What do Imaging studies tell us about functional symptoms"
The Debate: "Talk of Functional Neurological Symptoms (or Disorder) at best avoids the issue and at worse misrepresents it."

Welcome to the 28th annual meeting of the British Neuropsychiatry Association

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DAY 1 **Wednesday 4th February**

The 'How' and 'Why' of functional neurological symptoms and what to do about them

Chairs: *Alan Carson and Jon Stone*

0830 ***Registration and refreshments***

0930 **A Bayesian Theory explaining functional sensory motor symptoms**
Mark Edwards

1005 **The role of stress, childhood trauma and personality in the development of functional neurological symptoms**
Selma Aybek

1040 ***Refreshments***

1110 **Physiotherapy for functional disorders**
Glenn Nielsen

1145 **Psychotherapy for functional disorders**
Trudie Chalder

1220 **JNNP Plenary**
Chair: *Fiona Ashworth*

Journal of NEUROLOGY, NEUROSURGERY & PSYCHIATRY with Practical Neurology

The Neural Basis of general intelligence
John Duncan

1300 ***Lunch and poster viewing***

1400 **Diagnostic Masterclass**
Chair: *Valerie Voon*

Cognition (video session) - ABN Cognitive Special Interest Group

1530 ***Refreshments***

1600 **MEMBERS' PLATFORM PRESENTATIONS**
Chair: *David Skuse*

Diagnosing Frontotemporal Dementia in Outpatients: An Audit of Radiological Reports and Review of Diag nostic Criteria. Bethan Dewer, Patrick Rogers, James Ricketts, William Mukonoweshuro, Adam Zeman

Fowler's syndrome of Urinary Retention: a Retrospective Study of Co-morbidity
Ingrid Hoeritzauer, Jon Stone, Clare Fowler, Sohier Elneil, Alan Carson, Jalesh Panicker

Sensory attenuation assessed by sensory evoked potentials in functional movement disorders
Macerollo A, Chen JC, Pareas I, Kassavetis P, J. Kilner, Edwards MJ

1700 **BNPA - Neuropsychiatry Research Update**
Chair: *Valerie Voon*

Jerky movements , *Borderland between Neurology and Psychiatry* - Marina Tijssen

1730 ***Close Day 1***

Speakers Short Biographies and Abstracts Day 1

The 'How' and 'Why' of functional neurological symptoms and what to do about them

Chairs: Alan Carson and Jon Stone

A Bayesian Theory explaining functional sensory motor symptoms

Dr Mark Edwards is a Senior Lecturer in Neurology at the UCL Institute of Neurology and an Honorary Consultant Neurologist at the National Hospital for Neurology and Neurosurgery. He has a clinical and research background in Movement Disorders, and the use of neurophysiological techniques to investigate their pathophysiology. He has a particular interest in functional motor symptoms, and runs a research program exploring their pathophysiology and treatment as well as a specialist clinical service for patients with functional movement disorders.

Abstract

Functional neurological symptoms are common and disabling. Historically there has been significant interest in why such disorders might occur, in particular focussing on the role of psychological trauma. However, there has been less interest in how the specific kinds of symptoms seen in patients can arise from the brain given our knowledge of functional architecture. In this talk I will explore the application of a theory of brain function based on Bayesian inference to the understanding of functional neurological symptoms, and how this provides one way forward to generate testable hypotheses on how functional neurological symptoms arise from the brain.

The role of stress, childhood trauma and personality in the development of functional neurological symptoms

Dr Selma Aybek completed her Medical training and Neurology residency in Lausanne, Switzerland. After she received her specialist title in 2007, she did a 3-year fellowship at the Institute of Psychiatry in London (King's College University) where she trained in Neuroimaging and in Cognitive Neuropsychiatry with Professor Anthony David. Her main research and clinical interest focuses on Conversion Disorder (Functional neurological Symptom), a paradigmatic neuropsychiatric disorder. She currently runs a clinic dedicated to patients suffering from Conversion Disorder at Geneva University Hospital in Switzerland and leads a research program aimed at underpinning the neural correlates if this disorder, in collaboration with the Laboratory for Behavioral Neurology and Imaging of Cognition (Geneva University). She authored several clinical and neurosciences papers in the field and has been awarded the Lishman Prize from the British Neuropsychiatry Association in 2010 and 2013 as well as the Boursière d'Excellence award from Geneva University in 2013.

Abstract

Functional Neurological Symptoms (FNS) are now considered as a consequence of cerebral dysfunction but two main previous explanations have been hypothesized in the course of human medicine: first a role of an unstable uterus and then of a psychological trauma being responsible for- or converted into- the physical manifestation. If the theory of the uterus has been abandoned more than a century ago, the hypothesis of a major role for psychological trauma is still debated. Many epidemiological data support a link between psychological stressor and FNS with systematic reviews and meta-analysis reporting a 3-fold increase rate of childhood and recent life adverse events in FNS patients compared to various control groups (other neurological or psychiatric conditions). However, what emerges from this literature is that a percentage (even is small) of patients still do not report any kind of trauma. The model of a trauma acting as a cause, therefore, doesn't hold and the term "psychogenic" (suggesting the origin has to be found in psychological factors) should be abandoned. If it is now clear in the in the clinical setting that the importance of psychological factors in FNS should be downgraded (which is reflected by the new DSM-5 definition, which deleted in 2013 the B. criteria "the presence of a psychological factor"), it is still relevant, in the research setting, to try and refine the link between such stressors and physical symptoms.

Several recent studies in FNS have highlighted a dysfunction in emotion regulation, in threat responses and in traumatic memories recall. Among them, some fMRI studies suggest an abnormal limbic-motor interaction in these patients as anomalous functional connectivity has been found between the amygdala and the premotor cortex (supplementary motor area). Moreover, abnormal automatic motor responses, known to correspond in animals to defence mechanisms to threat (such as the freeze response), have been observed in a study in FNS patients, alongside increased activity in the periaqueducal gray area (a key region for the freeze response) under negative emotions in another. These preliminary work suggest that the physical symptoms of FNS may have correlates of automatic defence mechanisms and further research need to establish why certain individuals are more prone to others to display this -usually physiological- pattern in an abnormal way. In particular, the role of genetic factors and/or gene-environment interaction should be clarified so that we may be able to integrate psychological factors as predisposing risk factors or modulating factors in our understanding of FNS and no longer as causal factors.

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Speakers Short Biographies and Abstracts Day 1

Physiotherapy for functional disorders

Glenn Nielsen is a NIHR Clinical Doctoral Research Fellow at the Sobell Department of Motor Neuroscience and Movement Disorders, UCL Institute of Neurology and a Physiotherapist at the National Hospital for Neurology and Neurosurgery. Working with Dr Mark Edwards, he has set up specialist physiotherapy service for functional motor disorders (FMD). His research is concerned with developing physiotherapy treatments for FMD and a feasibility study of specialist physiotherapy intervention for FMD.

Abstract
Patients with functional motor disorders are commonly referred to physiotherapists. There is growing evidence for the efficacy of physical treatments, but there is limited information in the literature on how this should be delivered and the role of physical treatments may seem ambiguous when symptom explanations stress the importance of psychological factors. Recent theories seeking to explain functional symptoms on a neurobiological level have provided a clearer rationale for physiotherapy and a framework to help plan and deliver specific treatment. This talk will explore the idea that a specific physiotherapy approach can target mechanisms responsible for functional motor symptoms. The outcomes of a physiotherapy service based on this approach will be presented.

Psychotherapy for functional disorders

Trudie Chalder is Professor of Cognitive Behavioural Psychotherapy at King's College London. She has worked as a clinician and a researcher in the area of long term conditions such as chronic fatigue syndrome and irritable bowel syndrome for about 25 years. She develops specific cognitive behavioural models for understanding and treating these conditions and evaluates the approaches within the context of randomised controlled trials in primary and secondary care. Her recent research involves investigating not only whether treatment works but how it works using mediational analyses.

Trudie has published approximately 200 articles. She is currently the Past President of the British Associa-

Abstract
Symptoms without identifiable organic pathology have been referred to by a variety of more specific labels: irritable bowel syndrome, chronic fatigue syndrome and fibromyalgia to name but a few. Everyone experiences physical symptoms, unrelated to specific aetiology from time to time. However, when the symptoms become the focus of an individuals attention the severity of the symptom often increases and varying degrees of disability results. The aims of this lecture are a) to describe a generic cognitive behavioural model of understanding the psycho-physiology of somatic symptoms b) to describe cognitive and behavioural interventions which can be adapted to the needs of the individual c) to describe ways of engaging patients in the therapeutic process by using a language which is acceptable to the patient and which is likely to engage rather than alienate the patient d) to examine some of the evidence for cognitive behavioural interventions for these disorders.

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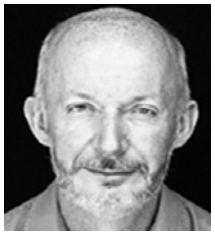
Speakers Short Biographies and Abstracts Day 1

Journal of Neurology, Neurosurgery & Psychiatry Guest Speaker
Chair: Fiona Ashworth

The Neural Basis of general intelligence



Professor John Duncan. Educated at the University of Oxford (1970-1976), John Duncan spent two years at the University of Oregon working with Michael Posner before taking up a research position with the Medical Research Council. Currently he is a Programme Leader at the MRC Cognition and Brain Sciences Unit in Cambridge, with an adjunct appointment at the University of Oxford. Trained in cognitive psychology and physiology, he now has research programmes in neuropsychology, neuroimaging, and single cell electrophysiology, addressing problems of attention, intelligence, cognitive control, impairment and recovery following brain damage, and frontal lobe functions. He is a Fellow of the Royal Society and the British Academy, and winner of the 2012 Heineken Prize in Cognitive Science.

Abstract
Deficits in psychometrically-measured “intelligence” and in “executive functions” are common in neurological and neuropsychiatric diseases. In this talk I shall address a number of interrelated questions. What is the link between intelligence and executive function? How should executive functions be defined, differentiated and measured? What do executive tests measure, and which are likely to be useful in research and clinical practice?

Evidence from functional imaging suggests a core network of frontal and parietal regions, active during many different types of cognitive demand. Included among these “multiple-demand” or MD regions are cortex along the inferior frontal sulcus, in the anterior insula/frontal operculum, dorsomedial frontal cortex including dorsal anterior cingulate, and along the intraparietal sulcus. In all organized cognition, I suggest, the MD system breaks complex problems into simpler parts, resulting in a structured series of attentional episodes. Importance in all kinds of behaviour is reminiscent of the psychometric concept of Spearman’s g, and indeed, conventional tests of fluid intelligence produce strong MD activity. Loss of fluid intelligence, furthermore, is predicted by volume of damage within the MD system.

Following focal frontal lobe lesions, many conventional tests of executive function show deficits that are entirely explained by loss of fluid intelligence. Once fluid intelligence is partialled out, all deficit compared with healthy controls is removed. Included in this list are Wisconsin card sorting, Trails B, verbal fluency and more. These tests, I suggest, measure only the common MD function of structuring any complex behaviour, with little importance attaching to their specific surface form. A second group of tests behaves differently, with frontal lobe deficits remaining even after partialling fluid intelligence. Included are tests of social cognition and complex multitasking. Plausibly, such tests concern frontal lobe regions outside the MD system, with some evidence, for example, linking multitasking to the frontal pole.

The dissociation between these two groups of executive tasks applies very widely, with replications in Parkinson’s Disease, frontotemporal dementia, and schizophrenia. The results suggest a principled, empirical basis for distinguishing different kinds of executive deficit, and for linking these to separate frontal lobe systems. Acknowledging the core role of psychometric intelligence and the MD system, I suggest, may clarify much thinking in the study and measurement of frontal lobe functions.

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Speakers Short Biographies and Abstracts Day 1

Diagnostic Masterclass
Association of British Neurologists Cognitive Special Interest Group
Chair: Valerie Voon

Cognition (Video Session)

The assessment and diagnosis of cognitive disorders offers unique challenges to the clinician. In this session, representatives from the ABN Cognitive Neurology special interest group will present cases from their own practice with the intention of stimulating discussion and debate from the floor.

Chris Butler is an MRC Clinician Scientist fellow and honorary consultant neurologist in Oxford. He coordinates the Oxford Clinic for Cognitive Disorders. His research interests centre upon human memory and its impairment in neurological disease.

Boyd Ghosh, Neurology Consultant**,** University Hospital Southampton NHS Foundation Trust
His sub specialist interests are early onset or atypical dementia and Parkinson's plus disorders such as progressive supranuclear palsy, corticobasal degeneration and multiple system atrophy.

Paresh Malhotra Faculty of Medicine, Department of Medicine, Imperial College, London
I am a HEFCE Senior Clinical Lecturer in the Division of Brain Sciences and Consultant Neurologist at Imperial College Healthcare NHS Trust. My research work focuses on the cognitive deficits that are caused by Neurological conditions such as stroke and degenerative diseases, and developing treatments for these impairments.

Catherine Pennington
BSc, MBChB, MD, MRCP, MRCP (Neurology)
Clinical Lecturer in Dementia Neurology
University of Bristol

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MEMBERS' PLATFORM PRESENTATIONS

Chair: David Skuse

Diagnosing Frontotemporal Dementia in Outpatients: An Audit of Radiological Reports and Review of Diagnostic Criteria.

Authors *(presenter first):* Bethan Dewer, Patrick Rogers, James Ricketts, William Mukonoweshuro, Adam Zeman

Objective: The Frontotemporal Dementias (FTDs) comprise a clinically and pathologically heterogenous group of disorders which usually have in common selective degeneration of the frontal and temporal lobes. They account for 10-20% of cases of dementia occurring before the age of 65. On review, it was observed that subtle but relevant changes on initial brain imaging were often not mentioned in the initial radiological report and only came to light during the neuroradiology review meeting.

Method: We audited a series of 39 consecutive patients seen by a single cognitive neurologist (AZ) in whom the initial diagnosis was of a form of FTD.

Results: 38 sets of notes were available for review. Two patients progressed in a manner suggestive of Alzheimer's Disease and were excluded. 22 of the remaining 36 patients satisfied formal diagnostic criteria for forms of FTD (6 behavioural variant FTD (BvFTD), 5 semantic dementia (SD), 3 non-fluent primary progressive aphasia (PNFA), 4 progressive supra-nuclear palsy (PSP), 4 corticobasal syndrome (CBS). We compared the initial non-specialist radiological reports of the MRI scans performed in these 22 patients with the reports of a radiologist who specifically examined the scans with the possibility of an atypical dementia in mind. We found that 6/22 of the original reports provided a full and accurate description of the radiological findings, while 2/22 provided a fully accurate interpretation.

Conclusion: We conclude that in this group of patients, with early-onset dementia, valuable diagnostic information may be missed unless clinicians and radiologists jointly review and discuss the brain imaging. We review the diagnostic criteria for this family of disorders and provide illustrative examples of the typical brain imaging findings. It may be advisable to apply standardised scales to facilitate the radiological reporting of scans performed to investigate cognitive disorder.

Fowler's syndrome of Urinary Retention: a Retrospective Study of Co-morbidity

Authors *(presenter first):* Ingrid Hoeritzauer[1], Jon Stone, Clare Fowler, Sohier Elneil, Alan Carson, Jalesh Panicker
[1]Dept. Neurosciences, Royal Victoria Hospital, Belfast BT12 6AB

Objective: Fowler's syndrome describes chronic urinary retention in young women characterised by a primary failure of urethral sphincter relaxation and unique urethral sphincter EMG findings in the absence of any structural pathology. We aimed to systematically study the frequency of pain, psychological or functional disorders in patients with Fowler's syndrome.

Method: We carried out a retrospective chart review of patients with a diagnosis of Fowler's syndrome attending the Uro-Neurology centre at the National Hospital for Neurology and Neurosurgery between 2009-2013 looking at triggering events, physical and psychological comorbidities.

Results: Of 62 patients with clinical and electromyographic diagnosis of Fowler's syndrome, 31 (50%) had unexplained chronic pain syndromes, 12 (19%) of these were taking opiates. 15 (24%) had "functional" neurological symptoms. Abdominopelvic surgery with general anaesthesia was the leading trigger (n=21, 35%.

Conclusion: We found high levels of co-morbidity with patients having some form of pain (50%), a probable functional disorder (24%) or psychological symptoms (31%). There are several potential explanations for this association including the effect of developing an apparently unexplained distressing condition, confounding effect of opiate use or referral bias. The findings suggest a need for prospective systematic study of comorbidity for this disabling condition.

Sensory attenuation assessed by sensory evoked potentials in functional movement disorders

Authors *(presenter first)***:** Macerollo A[1], Chen JC, Parees I, Kassavetis P, Kilner J, Edwards MJ
[1]Sobell Department, 33 Queen Square, London

Objective: Functional (psychogenic) movement disorders (FMD) have features associated with voluntary movement (e.g. distractibility) but patients report movements to be out of their control. One explanation for this phenomenon is that sense of agency for movement is impaired. The phenomena of reduction in the intensity of sensory experience when movement is self-generated and a reduction in sensory evoked potentials (SEPs) amplitude at the onset of self-paced movement (sensory attenuation) have been linked to sense of agency for movement. Here, we report the results of a study examining suppression of sensory evoked potentials (SEPs) at the onset of self-generated movements in healthy participants and FMD patients. We hypothesised that patients with FMD would have less SEPs suppression at the onset of movement compared to healthy controls.

Method: Seventeen patients with FMD affecting body parts excluding upper limbs were recruited from outpatient clinics at The National Hospital for Neurology and Neurosurgery, Queen Square, London, UK. They had documented or clinically established FMD following Fahn and Williams criteria. Patients with sensory abnormalities were excluded. Seventeen healthy volunteers matched with respect of gender, age and handedness were studied as the control group. We compared amplitude of SEPs from median nerve stimulation at rest and at the onset of a self-paced movement of the thumb in both groups.

Results: Patients showed lack of attenuation of SEPs at the onset of movement compared to reduction in amplitude of SEPs in controls. Indeed, FMD patients had significantly different ratios of movement onset to rest SEPs than did healthy controls in each electrode: 0.79 in healthy controls and 1.35 in patients at F3 ($p<0.001$, $t=-4.22$), 0.78 in healthy controls and 1.12 in patients at C3 ($p=0.004$, $t=-3.15$) and 0.77 in healthy controls and 1.05 in patients at P3 ($t=-2.88$, $p=0.007$). **Conclusion**: Patients with FMD have reduced sensory attenuation as measured by SEPs at onset of self-paced movement. This finding can be plausibly linked to impairment of sense of agency for movement in these patients. The measurement of sensory attenuation in this relatively simple paradigm is an interesting candidate biomarker for FMD which could be explored in future work.

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NEUROPSYCHIATRY RESEARCH UPDATE
Chair: Valerie Voon

Jerky movements , *Borderland between Neurology and Psychiatry*

Professor Marina A. J. de Koning-Tijssen (http://www.rug.nl/staff/m.a.j.tijssen/) is a clinical expert in the area of hyperkinetic movement disorders. Following her residency in neurology, during which she worked at Johns Hopkins University, Baltimore, MD, USA, and at the Institute of Neurology and Neurosurgery, University College London, UK, she established what has become an internationally renowned group working on movement disorders. The group was initially in based Amsterdam, but since 2012 it has been hosted by the University Medical Centre Groningen, Netherlands. She supervises PhD students performing genetic and translational research into dystonia syndromes and jerky movements, and her research covers the whole field from basic to clinical research. She has strong collaborative links in the Netherlands, which have led to the Dutch network 'DystonieNet'. Internationally, she leads the clinical line of the European COST dystonia platform and is a member of several of the Movement Disorder Society's committees.

Abstract

Patients with hyperkinetic jerky movements can suffer from mycolonus, functional jerks, or a tic disorder. Differential diagnosis can be difficult in this borderland between neurology and psychiatry and even experienced movement disorder specialists only moderately agree on the clinical diagnosis of these jerky movements [1].

Clinical diagnosis is mainly based on positive clinical symptoms. Electrophysiological tests, like electromyography (EMG), polymyographic-EMG and Readiness Potentials can be supportive for one of the diagnoses, but sensitivity and specificity of these tests is lacking.

Symptom characteristics, disease course, psychopathology and supportive neurophysiologic tests in organic and functional jerks can discriminate between the types of jerks. Supportive features of a functional jerk are: sudden onset, precipitation by a physical event, variable, complex and inconsistent phenomenology, suggestibility, distractibility, and entrainment. With electrophysiological testing the presence of a readiness potential is supportive [2]. It should be noted that functional jerks and tics present with many overlapping features. Specific symptoms supporting the diagnosis of a tic are: symptom onset in childhood, waxing and waning, presence of a premonitory urge, rostro-caudal development of the tics, and the ability to suppress the tic to a certain degree [3]. Organic forms of myoclonus have a broad phenotypic spectrum. The clinical and electrophysiological features are mainly based on the anatomical origin of the myoclonus: cortical, subcortical, spinal and peripheral. Supportive for the diagnosis myoclonus are the insidious onset, simple and consistent phenomenology, and response to medication like Clonazepam [4]. Specific features with electrophysiological tests include short burst duration, consistent pattern with polymyographic-EMG and a cortical correlate.

1. van der Salm SM, de Haan RJ, Cath DC, van Rootselaar AF, Tijssen MA. The eye of the beholder: inter-ater agreement among experts on psychogenic jerky movement disorders. J Neurol Neurosurg Psychiatry. 2013 Jul;84(7):742-7.

2. van der Salm SM, Tijssen MA, Koelman JH, van Rootselaar AF. The bereitschaftspotential in jerky movement disorders. J Neurol Neurosurg Psychiatry. 2012 Dec;83(12):1162-7.

3. Cath DC, Hedderly T, Ludolph AG, Stern JS, Murphy T, Hartmann A, Czernecki V, Robertson MM, Martino D, Munchau A, Rizzo R; ESSTS Guidelines Group. European clinical guidelines for Tourette syndrome and other tic disorders. Part I: assessment. Eur Child Adolesc Psych. 2011 Apr;20(4):155-71.

4. Dijk JM, Tijssen MA. Management of patients with myoclonus: available therapies and the need for an evidence-based approach. Lancet Neurol. 2010 Oct;9(10):1028-36. Review.

5. van der Salm SM, Erro R, Cordivari C, Edwards MJ, Koelman JH, van den Ende T, Bhatia KP, van Rootselaar AF, Brown P, Tijssen MA. Propriospinal myoclonus: clinical reappraisal and review of literature. Neurology. 2014 Nov 11;83(20):1862-70.

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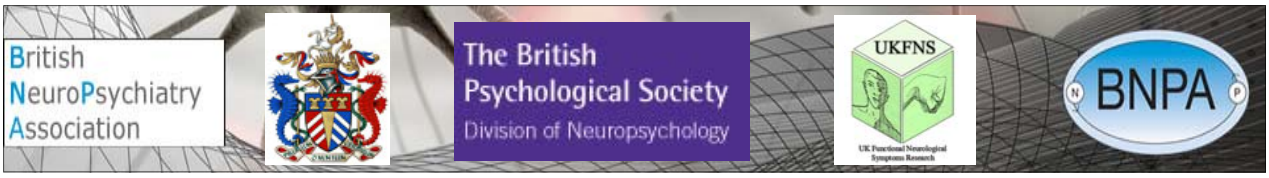

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DAY 2 **Thursday 5th February**

Body Image and the Self

Chairs: *Kieran O'Driscoll and David Linden*

0830	***Registration and refreshments***
0930	**The conceptual history of body image and the self** Michael Trimble
1005	**Phantom Phenomena** Peter Brugger
1040	***Refreshments***
1110	**Spatial Neglect** Giuseppe Vallar
1145	**Cortico basal degeneration and alien limb** James Rowe
1225	**Bodily Sense and Sensibility: Anosognosia, Asomatognosia and Anorexia** Katerina Fotopoulou
1300	***Lunch and poster viewing***
1400 *Chair:*	**Plenary BNPA Medal Lecture** *Adam Zeman* **The Frontotemporal Dementias: A neuropsychiatric perspective** John Hodges
1500	***Refreshments***
1530 *Chair:*	**Diagnostic Masterclass** *Markus Reuber* **Functional Disorders (video session)** Marina Tijssen
1700 *Chair:*	**May 2015 General Election Special** *Markus Reuber* **Neuropolitics - Your Brain is Built for Politics** Darren Schreiber
1745	***Close Day 2***
1900	***BNPA Evening Reception - Museum of Comedy***

Speakers Short Biographies and Abstracts Day 2

Body Image and the Self
Chairs: Kieran O'Driscoll and David Linden

The conceptual history of body image and the self

Professor Michael R Trimble Emeritus Professor of Behavioural Neurology at the Institute of Neurology, Queen Square, London, and Honorary Consultant Physician to the Department of Psychological Medicine at The National Hospital for Neurology and Neurosurgery, Queen Square, London.
Interests: Neuropsychopharmacology with special reference to neuropsychiatric disorders: epilepsy, its relationship to disturbances of behaviour and its treatment, and the effects of antiepileptic drugs and other treatment for epilepsy on the brain and behaviour. Other research and clinical interests include movement disorders and their treatment, especially the development of psychiatric disorders in Parkinson's disease and Gilles de la Tourette Syndrome. Psychiatric disorders following accidents, including head injuries, dementia and the clinical interface between pseudodementia and dementia: and the spectrum of presentations in neurology and psychiatry of patients with medically unexplained neurological symptoms. Many such patients turn out to have one or other form of somatoform disorder.

Fellow of the Royal College of Physicians, Fellow of the Royal College of Psychiatrists, and a Member of the Association of British Neurologists. Fellow of the American Psychiatric Association and a member of the American Neurological Association. Three Research degrees: MD (in medicine), Bsc (in neuroanatomy), and MPhil (in psychiatry). Past council member of the British Association of Psychopharmacology, council member of the CINP between 1998 and 2001, Chairman of the British Neuropsychiatry Association 2001-2004, and currently Vice President of the World Federation of Societies of Biological Psychiatry.

His publications include two editions of Biological Psychiatry (1988 and 1996), John Wiley & Sons, Chichester, and six other single author titles dealing with the interface between neurology and psychiatry, especially in the field of epilepsy. He has edited 25 books covering similar areas.

His books include Somatoform Disorders – a medico-legal guide, Cambridge University Press 2004, the Neuropsychiatry of Epilepsy edited with Professor B Schmitz, Cambridge University Press and Psychiatrische Epileptologie, Thieme, written with Professor B Schmitz. He is an Ambassador for epilepsy (International League Against Epilepsy Award), and received a life time achievement award from the International Neuropsychiatry Association. His new book is entitled "Why Humans Like to Cry – Tragedy, Evolution and the Brain", Oxford University Press 2012.

Abstract
Disturbances of the **body image** have been rather neglected over the years and there is much confusion in terminology. Thus, our **physical bodies**, (the actual body in extended space) differs significantly from our **body image**, (the body as viewed in a mirror) or from the **body image** in the brain. The latter would represent neuronal activity coincident in space with the **perceived body**, namely the collection of somatic sensations present at any one moment in consciousness.

Much confusion may have been brought to the topic by the term **"Body Schema"**, a term used by Head and Holmes, which initially became associated in particular with the parietal cortex. A further category namely the **body concept** relates to our beliefs concerning our **physical bodies**.

Disturbances of the **body image** are central to neuropsychiatry since they cover a broad spectrum from the obviously neurological (such as phantom phenomena) to the **body image** disturbances noted in schizophrenia, and disorders such as anorexia nervosa or gender dysphoria.

The presentation will try to unravel some of these problems and finish by emphasising the concept of embodiment and the now interesting areas of motor cognition interlinked with such concepts as intentionality.

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Speakers Short Biographies and Abstracts Day 2

Phantom Phenomena

Peter Brugger, born 1957 in Zurich, Switzerland. Acquired a teacher's Diploma for Elementary and High School levels before studying biology at Zurich University. Dissertation on Subjective Randomness: Implications for Neuropsychology and Parapsychology. Postdoctoral training at UCSD San Diego and University of Victoria (Canada). Currently head of Neuropsychology Unit of University Hospital Zurich. Main research interests: neuropsychology of paranormal beliefs and "schizotypy"; representation of body and space (Pfizer Prize for Medical Research in 2001 for work on phantoms of congenitally missing limbs); simulation of randomness by living organisms.

Abstract
I will provide an introduction into "phantomology" (Stanislaw Lem) as the science of the virtual reality of body parts and the body as a whole. Phantom limb phenomena comprise a first category to be discussed. Most well-known is the phantom limb after amputation. I will focus on one neglected aspect, that is, the way amputees react when the phenomenal space of their phantom limb is invaded by a solid object. For some, the phantom percept ceases ("obstacle shunning"), some others just experience the phantom in superposition with the object, not mixing physical and virtual realities in their brain. Phenomena like obstacle shunning are important for understanding individual differences in adaptation to a prosthesis. Phantom sensations are also experienced by a minority of persons born without a limb. These congenital phantom limbs are only briefly touched and described as an "animation without incarnation".

Conceptualized as such, they help understand a neuropsychiatric condition, which may be conceived of as the mirror image, i.e. an "incarnation with animation". This alludes to xenomelia (aka body integrity identity disorder), the desire for amputation of a physically normally developed limb. Such an apparently bizarre desire (per definition in the absence of psychosis or other significant psychiatric disorders) can be viewed as arising from a "negative phantom experience". This means that the affected limb has not been properly integrated into the schema of the body as a whole and is thus not experienced as belonging to one's bodily self. I review latest developments in the research in xenomelia, focusing on structural and functional alterations in the sufferers' brain, but emphasizing that an exclusively neurological view cannot explain the full range of symptoms described by xenomelic individuals.

In another category of phantom phenomena one's entire body is experienced as a phantom. After mentioning the hemiplegic twin (MacDonald Critchley) as a transition between phantom limb and phantom body, some variants of autoscopic phenomena are discussed. These involve the feeling of a presence, the experience of seeing a mirror image of oneself (autoscopic hallucination), the experience of a reduplication of body and self (heautoscopy) and out-of-body experiences. The differentiation between different types of autoscopic phenomena is clinically important, as each type is associated with a distinct pattern of lesions in occipito-parieto-insular networks subserving the integration of body and self.

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Speakers Short Biographies and Abstracts Day 2

Spatial Neglect

Giuseppe Vallar, MD, specialty in Neurology, Italian, was born in Milan. Department of Psychology, University of Milano-Bicocca, & IRCCS Italian Auxological Institute, Milan, Italy Email: giuseppe.vallar@unimib.it

Giuseppe Vallar is currently, since 1999, Professor of Psychobiology and Physiological Psychology and, since 2009, the Director of the Specialty School in Neuropsychology, of the Department of Psychology of the University of Milan-Bicocca-Milan, Italy. Since 2005 Giuseppe Vallar is the Head of the Neuropsychological Laboratory, of the Italian Auxological Institute, Saint Luca Hospital, Milan, Italy. Previously, Giuseppe Vallar has been: i) Professor of Psychobiology and Physiological Psychology in the Faculty of Psychology, Department of Psychology, of the University of Rome "La Sapienza", Rome, Italy (1995–1999); ii) Associate Professor of Psychology in the same University; iii) Assistant Professor (Research) in the Faculty of Medicine, of the II Neurological Clinic of the University of Milan, Italy (1980–1992). Previous main institutional responsibilities include: i) Dean of the Faculty of Psychology of the University of Milan-Bicocca (2001-2007), ii) President of the Conference of the Deans of the Italian Faculties of Psychology (2006), iii) Coordinator of the Phd Program in Psychology, Linguistics, and cognitive Neurosciences of the Department of Psychology of the University of Milan-Bicocca (2001-2006), (iv) Founding President of the Società Italiana di Neuropsi-

Abstract

The syndrome of unilateral spatial neglect is one of the most disabling neuropsychological deficits caused by brain damage, most frequently in the right cerebral hemisphere. Neglect affects over 60% of right-brain-damaged patients, particularly in the acute phase after stroke. The manifestations of neglect are manifold, and may occur independent of each other, but all of them share a divide, which distinguishes the neglected (namely, not explored, where events are undetected) from the non-neglected side of space. Clinical manifestations include not only "deficits" (such as impaired search and report of events), but also gratuitous (not required by the environmental set) productions, as perseveration behaviour of varying complexity. Different sectors of space may be selectively affected: one main distinction concerns extra-personal vs. personal, bodily space.

Patients may neglect the side of the body contralateral to the lesion, hence, after right-brain damage, the left side. Neglect for the left side of the body includes simple "defective" impairments (personal hemi-neglect, hemi-asomatognosia), and more "complex" productive delusional belief (somatoparaphrenia) concerning left body parts (most frequently, though not exclusively, the left hand). These delusions may be variably florid, ranging from the mere disownership of the left hand, to the misattribution of its ownership to another person, with a variety of arguments. These patients may be also unaware of left-sided sensori-motor deficits (anosognosia for hemiplegia, hemianesthesia, hemianopia), and this unawareness may occur independent of hemi-asomatognosia and somatoparaphrenia.

Notwithstanding the prima facie higher-level (cognitive) features of these disorders of body knowledge, the relevant neuro-functional representation of the body is mostly, though not exclusively, based on the continuous integration and updating of multisensory signals, as revealed by the effects of direction-specific sensory stimulations (e.g., vestibular caloric) on these bodily manifestations of the neglect syndrome. Also, conditions, in which a conflict between senses (i.e., somatic sensation and vision, as in the Rubber Hand Illusion) is artificially created, may modulate the disownership symptom of somatoparaphrenia in brain-damaged patients, as well as shedding light into the neurofunctional mechanisms supporting the sense of ownership of body parts, and, more generally, of the bodily self, in unimpaired individuals.

The view that putatively lower-level processes, as multisensory integration, play a most important role in different aspects of the representation of the body, and of its parts, is in line with the increasing evidence that some basic homeostatic variables are modulated by cerebral cortical activity, and by sensorimotor information known to affect spatial and bodily representations.

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Speakers Short Biographies and Abstracts Day 2

Cortico basal degeneration and alien limb

Dr James Rowe, Consultant Neurologist
BA (Cantab) BM BCh (Oxon) PhD (Lond) CCST FRCP (Lond)
I lead regional specialist clinics for patients and carers with dementia, including fronto-temporal dementia (also called Picks disease, Semantic dementia and Primary progressive aphasia), Progressive supranuclear palsy (PSP) and corticobasal degeneration (CBD), and the Cambridge Memory Clinic supporting people with mild cognitive impairment and Alzheimers disease.
These clinics are supported by a dedicated team of doctors, nurses, psychologists and scientists, providing the very highest standards of care for patients and families, as well as advising community services and general practitioners. The clinics aim to help in accurate diagnosis, investigations, treatment and support throughout. We also offer many opportunities to take part in our internationally recognised research programs.

Abstract
The alien limb is a favourite theme of Hollywood films, but the reality of this enigmatic neurological phenomena is very different from its cinematic portrayal.

Here we review the clinical phenomena and try to bring order to the often confusing and conflicting nomenclature of the last 100 years. We place the alien hand in a broader framework of voluntary control and agency, providing new psychological paradigms and computational methods to understand the disorder.

Brain imaging has also provided new insights into the functional anatomy of disorders of agency.

We identify goals for future research and clinical practice: to clarify the clinical phenomenology and operationalisation of alien limb; to determine how action awareness is altered by neurological disease; and to use this knowledge to guide better treatment for patients affected by alien limb.

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Speakers Short Biographies and Abstracts Day 2

Bodily Sense and Sensibility: Anosognosia, Asomatognosia and Anorexia

Aikaterini (Katerina) Fotopoulou, PhD, is a Reader in Psychodynamic Neuroscience at the Psychology and Language Sciences Division, University College London. Funded by a Starting Investigator Grant from the European Research Council for the project 'Bodily Self', she runs KatLab, a group of researchers and students that conduct studies on topics and disorders that lie at the borders between neurology and psychology. See here for publications and our Lab's Campaign on further funding on 'Body Image' Neuroscientific Research: http://www.fotopoulou.com

Katerina is also the Director of the London Neuropsychoanalysis Centre and runs the London Neuropsychoanalysis Group on: 'Psychodynamic Neuroscience and Neuropsychology'. She is the editor of the volume: Fotopoulou, A. Conway, M.A. Pfaff, D. From the Couch to the Lab: Trends in Psychodynamic Neuroscience. Oxford University Press, 2012. She is a founding member of the new International Association for the Study of Affective Touch. See www.neuropsa.org.uk for the inaugural congress of this society. UCL, 20 - 22 March 2015.

Abstract

According to the 'embodied cognition' approach several facets of awareness are causally related to the physical body and its properties. Primary sensorimotor signals are integrated and re-represented in various levels of the neurocognitive hierarchy to form a number of neurocognitively distinct bodily representations, including unconscious and conscious facets of the bodily self such as body agency, ownership and image. However, the precise mechanisms by which bodily signals are integrated and re-mapped in the brain, as well as the relation between bottom-up and top-down factors in each of these hierarchical levels remain unknown.

In this talk, I will discuss empirical studies on neuropsychiatric disorders of body awareness, including anosognosia for hemiplegia and somatoparaphrenia following right hemisphere stroke, as well as anorexia nervosa. Specifically, we have applied a number of neuroimaging and experimental paradigms from cognitive neuroscience in which simple psychophysical 'tricks' are used to systematically manipulate sensorimotor signals, promote their integration, or generate conflicts and illusions, and hence study their role in body awareness.

Our results highlight that these disorders can be described as different aberrations of a core antagonism between bottom-up sensory and emotional signals, and top-down motor and higher-order signals at different hierarchical levels. I will particularly focus on some unique, motor planning, spatial and social cognition deficits that deprive patients from the means to update their perception of certain sensory states. I will further highlight the unique role of 2nd-person and socio-affective signals in such updating, and ultimately in the treatment of such symptoms and the characterization of body awareness.

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Speakers Short Biographies and Abstracts Day 2

BNPA Medical Lecture
Chair: Adam Zeman

The Frontotemporal Dementias: A neuropsychiatric perspective

Professor John Hodges MD, FRCP, FRACP, F Med Sci
John is Professor of Cognitive Neurology at the University of New South Wales based at the Neuroscience Research Australia where he co-directs the Frontotemporal Dementia Research Group (FRONTIER www.ftdrg.org).

John qualified in Medicine from London University with honours (1975) and undertook periods of psychiatric and neurological raining in Southampton, Oxford and San Diego and obtained his MD in 1988. From 1997 to 2007 he was the MRC Professor of Behavioural Neurology with a joint appointments in the Department of Clinical Neuroscience at Addenbrooke's Hospital and the MRC Cognition and Brain Sciences Unit Cambridge where he lead a multidisciplinary research group. He has a longstanding interest in many aspects of cognition particularly in the context of neurodegenerative disorders. His current research focuses on aspects of frontotemporal dementia. He is the author of over 400 journal articles and five books including Cognitive Assessment for Clinicians (OUP 2007), Early Onset Dementia (OUP) Frontotemporal Dementia Syndromes (CUP, 2007). His real pas-

Abstract
Frontotemporal Dementias (FTD) is a complex disorder with various presentations and a range of underlying pathologies. The symptomatology of FTD depends on the initial distribution of pathological changes in the brain. Those with orbitomesial frontal changes present changes in social cognition and behaviour (**behavioural variant FTD**) while those with anterior temporal lobe involvement manifest the syndrome of **Semantic Dementia**. Others with perisylvian pathology have **Progressive Nonfluent Aphasia**. A recently recognised variant is termed **Logopenic Progressive Aphasia** reflects pathology at the angular gyrus region.

There is also considerable overlap at a clinical and pathological level between FTD and both motor neuron disease and the Parkinsonian disorders. Up to a quarter of cases are inherited and unlike Alzheimer's disease, the pathology of FTD is heterogeneous involving a number of protein abnormalities including tau and TDP-43. The last decade has witnessed an explosion of knowledge concerning the pathology and genetics especially since the discovery of the C9orf72 mutation associated with both familial FTD and MND. The later is also associated with a high rate of psychosis.

Advances in neuropsychology and in brain imaging have facilitated the early diagnosis and differentiation of these disorders. The assessment of patients with potential FTD, and related disorders, depends upon a comprehensive evaluation of behavioural symptoms, cognition and language changes as well as brain imaging and ancillary investigations.

The talk will present an overview of FTD stressing the genesis of symptoms, such as impaired emotion and recognition and theory of mind, and will place this knowledge in the context of the genetics and biology of FTD.

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Speakers Short Biographies and Abstracts Day 2

Diagnostic Masterclass
Chair: Markus Reuber

Functional Disorders (video session)

In this session, representatives from the UK Functional Symptoms Research Group will present cases from their own practice with the intention of stimulating discussion and debate from the floor.

The session will be lead by Professor Marian Tijssen.

Professor Marina A. J. de Koning-Tijssen (http://www.rug.nl/staff/m.a.j.tijssen/) is a clinical expert in the area of hyperkinetic movement disorders. Following her residency in neurology, during which she worked at Johns Hopkins University, Baltimore, MD, USA, and at the Institute of Neurology and Neurosurgery, University College London, UK, she established what has become an internationally renowned group working on movement disorders. The group was initially in based Amsterdam, but since 2012 it has been hosted by the University Medical Centre Groningen, Netherlands. She supervises PhD students performing genetic and translational research into dystonia syndromes and jerky movements, and her research covers the whole field from basic to clinical research. She has strong collaborative links in the Netherlands, which have led to the Dutch network 'DystonieNet'. Internationally, she leads the clinical line of the European COST dystonia platform and is a member of several of the Movement Disorder Society's committees.

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Speakers Short Biographies and Abstracts Day 2

May 2015 General Election Special
Chair: Markus Reuber

Neuropolitics - Your Brain is Built for Politics

Darren Schreiber's research centers on emergence and complexity in political systems. He studied Politics, Philosophy, and Economics as an undergraduate at Claremont McKenna College. After college he attended UC Davis School of Law, where he focused on civil rights litigation and had his first federal jury trial at age 23. He then specialized in federal litigation at the 100 year-old law firm of Neumiller and Beardslee. Unsatisfied with the intellectual life of a lawyer, Darren moved to academia. While earning his Ph.D. in Political Science at UCLA, Darren developed an agent-based computer simulation of the formation and dynamics of political parties. He has pioneered the subfield of neuropolitics with the first use of functional brain imaging (fMRI) to study the neural foundations of politics.

His first book, Your Brain is Built for Politics, synthesizes a decade of research and develops novel insights into political sophistication, partisanship, racism, and voting behavior using neuroscience tools such as functional imaging and neural network models. His long-term objective is to integrate his agent-based models of macro political dynamics with his computational model of political cognition in individuals in order to illuminate the emergence of political ideology in mass publics. Darren's previous appointments were at Central European University in Budapest, Hungary; University of California, San Diego; the Center of Excellence in Cancer Communication Research at Annenberg School, University of Pennsylvania; and the Solomon Asche Center for Ethnopolitical Conflict at the University of Pennsylvania.

Abstract
The book argues that Your Brain is Built for Politics, drawing from an extensive body of research in biology and politics. Negotiating increasingly complex and shifting coalitions drove the human brain to evolve a set of mechanisms that modern humans now engage when they participate in national politics. The book synthesizes results from six brain imaging experiments, a large-n response latency study, and a computational model of the visual cortex to explore how these brain mechanisms underpin phenomena such as political sophistication, political attitudes, racial attitudes, and moral reasoning. Predictions of party affiliation with 82% accuracy, election results with 65-75% accuracy, and both egalitarian attitudes and behaviors are achieved with surprisingly simple models accounting for brain function. The product is a new view of human nature. Biology is shown to be subservient to the demands of human politics. Rather than a reductionist or deterministic argument, I contend the shifting coalitions of human society require that we are hardwired to not be hardwired.

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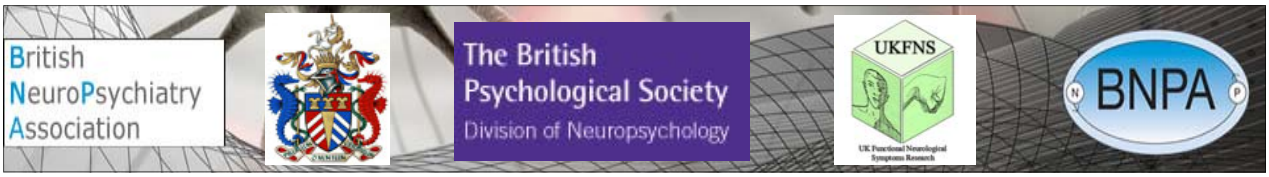

BNPA 28th AGM - Joint meeting with the British Psychological Society's Division of Neuropsychology, the UK Functional Symptoms Research Group & in collaboration with the Association of British Neurologists Cognitive Special Interest Group

4th, 5th and 6th February 2015

The Royal College of Surgeons, Lincoln's Inn Fields, London

DAY 3 **Friday 6th February**

Memory Disorders - not just about Alzheimer's Disease

Chairs: *Boyd Ghosh and Chris Butler*

0830 Registration and refreshments

0930 **Functional memory symptoms**
Jon Stone

1000 **New theories of memory systems and networks**
Adam Zeman

1030 Refreshments

1100 **Transient Global Amnesia**
Thorsten Bartsch

1130 **Pathological Intrusive memories: déjà vu, flashbacks and other phenomena**
Markus Reuber

1200 **Plenary**
Chair: *Hugh Rickards*

What do Imaging studies tell us about functional symptoms
Anthony David

1245 BNPA AGM 1245-1330 (Members only) Lunch and poster viewing

1415 **THE DEBATE - This house believes that.....**

Talk of Functional Neurological Symptoms (or Disorder) at best avoids the issue and at worse misrepresents it.

Proposed by: Allan House and Chris Bass
Opposed by: Alan Carson and Mark Edwards

1530 Close

Speakers Short Biographies and Abstracts Day 3

Memory Disorders - not just about Alzheimer's Disease
Chairs: Boyd Ghosh and Chris Butler

Functional memory symptoms

Dr Jon Stone is an NHS Consultant Neurologist and Honorary Senior Lecturer in Neurology in Edinburgh. He has had a research interest in functional disorders in neurology since 1999 starting with his PhD thesis - a case control study of patients with functional limb weakness.
He has published widely in the area including systematic reviews, large cohort studies, imaging studies and treatment studies. He has contributed to new diagnostic criteria for DSM-5 and ICD-11 and been involved in promoting functional disorders in training and research.

He has made a website for patients at www.neurosymptoms.org which has been translated by other neurologists in to 12 other languages. He runs a weekly functional disorders clinic and as of August 2012 is a National Research Strategy (NHS Scotland) Career Research Fellow.

Abstract
Memory and cognitive 'symptoms' exist at high levels in the general population. Around one third of young adults forget why they came in to a room, what they had for breakfast the day before and regularly lose their car keys.

There is an emerging awareness of those patients, especially in the 'early onset dementia' clinic who do not have dementia, or any other 'organic' cause for their genuine memory symptoms. Studies in Liverpool and Sheffield suggest these patients are anything from 40-80% of attendees. Greater diagnostic accuracy for dementia, increasing public awareness of dementia diagnosis and political/financial incentives for making the diagnosis all arguably make the study of this group increasingly important. The risk of harm in overdiagnosing dementia or not giving any diagnosis to someone with these symptoms is often discussed but rarely studied.

Much of the literature in this area has focused on Subjective Memory Impairment and on Mild Cognitive Impairment with follow up studies mainly interested on how to detect the subgroup who go on to get dementia, not all the rest who stay the same or even improve. This talk will cover what this 'Non-Dementia' is in the memory clinic including the following overlapping categories :

1) Memory symptoms as part of anxiety and depression;
2) Isolate functional memory symptoms that are in excess of normal but occur in the absence of anxiety and depression;
3) Memory symptoms that are normal for the population but have become a focus for concern, sometimes with "dementia phobia"
4) Functional memory symptoms occurring in the context of another functional disorder such as chronic fatigue syndrome
5) Memory symptoms related to prescription drugs, especially opiates
6) Retrograde/Functional/Psychogenic Amnesia
7) Prodromal stages of dementia/other neurodegenerative disorders but too early to be diagnosed.

Just as functional motor disorders and seizures are best defined by their positive features there have been attempts to do the same for functional memory disorders[1][2]. I will review what we do know and what we don't and how the field might move forward.

[1] Schmidtke K, Pohlmann S, Metternich B. The syndrome of functional memory disorder:definition, etiology,and natural course. Am J Ger Psych 2008;16:981–8.
[2] Blackburn DJ, Wakefield S, Shanks MF, Harkness K, Reuber M, Venneri A. Memory difficulties are not always a sign of incipient dementia: a review of the possible causes of loss of memory efficiency. Br Med Bull 2014:1–11.

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New theories of memory systems and networks

Professor Adam Zeman. I trained in Medicine at Oxford, after a first degree in Philosophy and Psychology. I worked as a consultant neurologist in Edinburgh, from 1996, and, from 2005, in Exeter. My specialised clinical work is in cognitive and behavioural neurology, including neurological disorders of sleep. My research interests include amnesia associated with epilepsy and disorders of visual imagery. I have an active background interest in the science and philosophy of consciousness, writing an accessible introduction to the subject, intended for a general readership (Consciousness: a user's guide, Yale University Press, 2002). I have written an introduction to the brain, 'A Portrait of the Brain' (Yale, 2008), and recently edited 'Epilepsy and Memory' (OUP, 2012) with Marilyn Jones-Gotman and Narinder Kapur. I was Chairman of the British Neuropsychiatry Association from 2007-2011.

Abstract

The underlying argument of this talk is simple: just as cognition can be divided into a number of domains (eg language, executive function), so several types of memory can de distinguished (eg episodic, semantic, procedural) and tested clinically; these domains depend on somewhat distinct neuronal systems or networks within the brain; several established subtypes of dementia are distinguished by their early involvement of one or other of these cognitive domains and neural systems. Thus recent research, particularly using resting state studies and graph theoretical descriptions of key neuronal networks, is helping to make sense of the taxonomy of cognition, memory and dementia. This talk aims to provide a clinically helpful guide to this fascinating but potentially confusing territory.

Transient Global Amnesia

Thorsten Bartsch, MD. Currently, I am a board-certified Cognitive Neurologist and Consultant at the Dept. of Neurology of the University Hospital Schleswig Holstein in Kiel and Professor for Memory Disorders and Plasticity at the University of Kiel. I was initially trained in Physiology (1993-1998) before pursuing my clinical training in Neurology (1998-2007). Additionally training was in emergency medicine, pain therapy, clinical neurophysiology (EEG, EP, EMG, ENG), neurological ultrasound, geriatrics.
My area of clinical expertise is memory disorders, in particular hippocampal dysfunction, dementias, imaging, neurophysiology, aging, neurophysiology, brain stimulation. My research interests include the hippocampus and memory disorders (physiology, pathophysiology, neurophysiology and imaging) as well as cortical plasticity. From 2000-2002, I worked as a fellow at the Institute of Neurology and the National Hospital at Queen Square.

Abstract

More than 50 years after its initial description, transient global amnesia (TGA) remains one of the most enigmatic syndromes in clinical neurology and neuropsychiatry. A TGA is characterized by an abrupt onset of an anterograde and retrograde amnesia that lasts up to 24 h. In the recent years, clinical and neuropsychological facets of this syndrome have been characterised and putative pathophysiological factors, such as migraine-related mechanisms, stress-related mechanisms, focal ischemia, venous flow abnormalities, and epileptic phenomena, have been studied. Recent MRI data suggest that a transient perturbation of hippocampal function is the functional correlate of TGA as an acute affection of the hippocampus can be detected in MR-imaging - however, the factors triggering the emergence of these lesions are still elusive. In this talk, I will discuss clinical aspects, new imaging findings, and recent neuropsychological data with regard to the phenotype and functional anatomy of TGA.

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Speakers Short Biographies and Abstracts Day 3

Pathological Intrusive memories: déjà vu, flashbacks and other phenomena

Professor Markus Reuber, MD PhD FRCP

I am a Professor of Clinical Neurology and Honorary Consultant at the University of Sheffield and the Royal Hallamshire Hospital in Sheffield, United Kingdom. My clinical work focuses on the treatment of patients with complex seizure disorders. In terms of research, I am particularly interested in the phenomenology and treatment of epileptic and non-epileptic seizure disorders and in communication between doctors and patients. I grew up and started by undergraduate medical course in Germany but completed my medical course in Nottingham and my general neurological training in Leeds. However, I returned to Germany for two years of my time as a trainee neurologist to work in the Department of Epileptology at the University of Bonn, the largest epilepsy surgery unit in Europe. I have been working as a Consultant or Honorary Consultant Neurologist in Sheffield for the last 12 years and have helped to build up the epilepsy surgery and neuropsychotherapy services there.

Abstract

This talk will begin with a review of previous and current ideas about the definition and pathophysiology of intrusive memory phenomena such as déjà vu and flashbacks; and consider to what extent such phenomena can be considered pathological.

Next I will explore the phenomenology of déjà vu and flashbacks and the challenges the variability and the difficulties with capturing these memory symptoms cause for researchers. Using patient interview data, I will show how déjà vu experiences in temporal epilepsy are materially different from “normal” déjà vu. I will discuss how the terms “flashback” or “pathological memory” may be understood differently by patients, psychotherapists and neuroscientists.

Finally (and bearing in mind the limitations raised by the considerations above) I will explore the relationship between déjà vu, other dissociative phenomena and anxiety in patients with Nonepileptic Attack Disorder. I will draw on research findings but also illustrate how intrusive memory phenomena may become pathological by introducing a patient complaining of a range of different flashbacks and blackouts.

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Speakers Short Biographies and Abstracts Day 3

Plenary - What do Imaging studies tell us about functional symptoms

Chair: Hugh Rickards

Professor Anthony David. Anthony David graduated in medicine from Glasgow University in 1980 and trained in neurology before entering psychiatry at the Maudsley Hospital, London. He also has a Masters degree in Cognitive Neuropsychology. He has been an honorary consultant at the Maudsley since 1990 and was awarded a personal chair from the Institute of Psychiatry, King's College London in 1996. He was appointed Vice Dean for Academic Psychiatry in 2013.

Professor David has a wide and diverse range of research interests including schizophrenia, neuropsychiatry, medically unexplained syndromes and neuroimaging – both structural and functional. He is especially interested in the concept of insight in schizophrenia and how this relates to treatment compliance. Professor David is a Fellow of the Royal College of Physicians, the Royal College of Psychiatrists and the Academy of Medical Sciences. He is a member of the Experimental Psychology Society and a founder member of both the British Neuropsychological Society and British Neuropsychiatry Association and was Chairman to the latter from 2004-7.

Abstract

Understanding functional neurological or 'conversion' symptoms is a challenge, largely because of two persistent mysteries. The first is whether the symptoms are consciously intended and the second is how such symptoms, particularly in the motor domain, relate to cogent lived experiences and memories. Neuroimaging studies have been used to explain the first mystery by being put in the service of answering a number of explicit questions. For example, "Is there a difference in brain activation when attempting to move a paralysed limb due to conversion disorder compared with the 'good' limb?" Similar contrasts may be made between brain activation when a person pretends to try to move a limb or attempts to overcome hypnotically induced paralysis, or when a patient says they can't see in contrast to a person who can. To some extent the underlying implicit question is: "Is functional imaging a good lie detector?"

An alternative approach which is more aimed at the second mystery is to trace the brain events which follow the recall of a key life event or the perception of an emotion. Taking this approach leads to the surprising finding that such events are treated (by the brain) differently to other similar events, in a way that is somewhat analogous to experimentally supressed memories in laboratory studies. Further, there are patterns of connectivity which suggest, perhaps, a closer than healthy alignment between: emotional memories, perceptions and the motor system, in people with functional neurological disorders. This may come about as a cause or a consequence of the condition and there may be other neurological vulnerabilities, detectable with structural neuroimaging.

Our interpretation of neuroimaging data at this relatively early phase of scientific research, is however liable to reflect our underlying assumptions about the brain (and mind), cognition and emotion and so on, and we should acknowledge this as we move towards more precise and hypothesis testing approaches.

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THE DEBATE - This house believes that .....

Talk of Functional Neurological Symptoms (or Disorder) at best avoids the issue and at worse misrepresents it.

Proposed by: Allan House and Chris Bass
Opposed by: Alan Carson and Mark Edwards

Professor Allan House
Professor of Liaison Psychiatry
Allan House is a Professor of Liaison Psychiatry, the sub-specialty of psychiatry concerned with psychiatric practice in non-psychiatric settings. He is interested in applied health research.

Dr Christopher Bass*,* is consultant in liason psychiatry, John Radcliffe Hospital, who has worked in general hospitals and pain clinics since the 1970s and has assessed many patients given a diagnosis of type 1 complex regional pain syndrome (CRPS).

Dr Alan Carson MBCHB, MPHIL, MD, FRCPSYCH
Consultant Neuropsychiatrist, Robert Ferguson Unit, Royal Edinburgh Hospital and Department of Clinical Neurosciences, Western General Hospital, Edinburgh

Dr Mark Edwards is a Senior Lecturer in Neurology at the UCL Institute of Neurology and an Honorary Consultant Neurologist at the National Hospital for Neurology and Neurosurgery.

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POSTER LIST

1. Title: Serotonergic drugs for management of behavioural symptoms of Frontotemporal dementia: A systematic review.
Authors: Dr Nik Bhandari, MRCPsych, MBBS

2. Title: Why do people record their criminal activity?
Authors: Dr Marta Elian

3. Title: Cognitive behavioural therapy vs standardised medical care for adults with Dissociative non-Epileptic Seizures(CODES) : An RCT protocol.
Authors: LH Goldstein, T Chalder, AJ Carson, S Landau, P McCrone, N Magill, N Medford, J Murray, M Reuber, M Richardson, J Stone, JDC Mellers.

4. Title: Predicting Psychiatric Outcome Following Temporal Lobe Epilepsy Surgery: A Longitudinal Study
Authors: Jacqueline Foong, Rebecca Anne Pope, Pamela Jane Thompson, Khadija Rantell, Jason Stretton, Mary Anne Wright.

5. Title: Selection of treatment targets for patients with Tourette Syndrome
Authors: McNulty RKF, Stern JS, Simmons H, Robertson MM

6. Title: Differences in relatives' and patients' illness perceptions in functional neurological symptom disorders compared to neurological disease
Authors: Kimberley Whitehead, Jon Stone, Paul Norman, Michael Sharpe, Markus Reuber,

7. Title: Validation of the IDEA cognitive screening tool for older adults in hospital inpatient, outpatient and rural community settings in Tanzania
Authors: S-M Paddick, W. K. Gray , C. Dotchin ,Mr. A. Kisoli, Mr. G. Mbowe, J. Kisim, S. Mkenda, F. Lwezaula, D. Mushi, A. Teodorczuk, A. Ogunniyi, R. Walker.

8. Title: Prevalence of delirium in older hospitalised adults in Tanzania. The IDEA (Identification and Interventions for Dementia in Elderly Africans) study.
Authors: S-M Paddick,W. K. Gray, C. Dotchin , A. Kisoli, G. Mbowe, J. Kisima, F. Lwezaula, S. Mkenda, D. Mushi, A. Teodorczuk, A. Ogunniyi, R. Walker.

9. Title: A case of synaesthetic Tourette syndrome
Authors: Martins SRN, Stern JS, Simmons H

10. Title: The great imitator
Authors: R.Nair, researcher,.P.Reading, Ms.Karen Killilea

11. Title: Differential Association of Schizotypal Traits with Strategy Formation, General Psychopathology and Quality of Life in the Schizophrenia Spectrum: Findings from the PreMES study
Authors: Chrysoula Zouraraki, Leda Karagiannopoulou, Penny Karamaouna, Eva-Maria Tsapakis, Ismini Kopsahili, Panos Bitsios, Stella G. Giakoumaki

12. Title: Manifest HD is associated with increased irritability towards oneself and others compared to premanifest HD and control groups
Authors: Dr. Sophie Green, Dr. Hugh Rickards

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Authors: Ratko Radakovic, Laura Stephenson, Siddharthan Chandran, Robert Swingler, John M. Starr and Sharon Abrahams

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Authors: Barbora Novakova, Peter Harris, Athi Ponnusamy, Jefferson Marques, Markus Reuber

15. Title: Factors influencing the presence of behavioural symptoms in Huntington's Disease
Authors: Sophie Fitzsimmons, Lesley Jones, Peter Holmans

16. Title: The experiences of diagnosis for adults with Tourette syndrome.
Authors: Ms Anekea Ross, Dr. Hugh Rickards

17. Title: What factors account for internalisation of the content of pro-ana web sites
Authors: Judi Homewood, Maral Melkonian,

18. Title: I get this feeling like grapes bubbling through and I try hard to press them in'. A qualitative study of premonitory urges in children with tic disorders.
Authors: Takon I, Rickards H, Chowdhury U and Sharma S.

19. Title: Risk taking, response inhibition and the right inferior frontal gyrus.
Authors: Muhlert, Nils Boy, Frederick Lawrence, Andrew D

20. Title: Interface prescribing issues at St George's tic disorder clinic
Authors: John Emberton, Jeremy Stern

21. Title: Employment in Tourette Syndrome
Authors: Palmer ER, Stern JS

22. Title: Motor versus vocal tics
Authors: Omar AY, Stern, JS, Simmons H, Robertson M

23. Title: Emotion-Motion interactions in Conversion Disorder: an fMRI study
Authors: Timothy R. Nicholson, Selma Aybek, Owen O'Daly, Fernando Zelaya, Richard A. Kanaan, Anthony S. David

24. Title: Antidepressants for people with epilepsy and depression
Authors: Melissa J Maguire, Jennifer Weston, Jasvinder Singh, Anthony G Marson

25. Title: Development of obsessive compulsive disorder (OCD) secondary to traumatic brain injury- review of literature and comparison with sample of patients from Lishman Unit, Maudsley Hospital
Authors: Remi Guillochon, Michael Dilley

26. Title: Sleep-deprivation Amnesia
Authors: Sonali Dharia, Adam Zeman

27. Title: A three dimensional neuro-CBT model for mild- moderate brain injury
Authors: Dr Joanna Iddon

28. Title: Perspective Taking and Personal Distress in Tourette syndrome
Authors: Clare M. Eddy, Davide Martino, Andrea E. Cavanna

29. Title: Subthalamic nucleus deep brain stimulation and apathy in patients with Parkinson's disease
Authors: Andrea E. Cavanna, Isabel Hindle Fisher, Hardev S. Pall, Rosalind D. Mitchell, Jamilla Kausar

30. Title: Pre-surgical neuropsychiatric evaluation in Epilepsy surgery
Authors: Bruno Silva, Bernardo Barahona Correa

31. Title: Research Trends in Neuropsychiatry in the New Millennium
Authors: Andrea E. Cavanna, Harry Srirathan

32. Title: An audit of the management of epilepsy in children and young people with intellectual disabilities
Authors: Dr Ashley Liew

33. Title: The Neuroanatomy of Secondary Bipolar Disorder
Authors: Bernardo Barahona-Correa, Ricardo Ribeiro

34. The Role of Novelty in Risk Seeking Behaviour
Authors: Dr Simon Mitchell, Dr. Jennifer Gao, Dr. Mark Hallett, Dr Valerie Voon

35. Title: Disrupted complex brain network properties in obese subjects
Authors: Kwangyeol Baek, Laurel Morris, Valerie Voon

36. Title: Neural Correlates of Waiting Impulsivity: A Dimensional Approach to Alcohol Misuse
Authors: Laurel S Morris, Prantik Kundu, Kwangyeol Baek, Michael A Irvine, Daisy J Mechelmans, Jonathan Wood, Neil A Harrison, Trevor W Robbins, Edward T Bullmore, Valerie Voon

37. Title: Cautious decision making in Obsessive Compulsive Disorder: the role of perceptual uncertainty and implicit incentives
Authors: Paula Banca, Martin D Vestergaard, Vladan Rankov, Kwangyeol Baek, Simon Mitchell, Tatyana Lapa, Miguel Castelo-Branco and Valerie Voon

Members' Posters

1.Serotonergic drugs for management of behavioural symptoms of Frontotemporal dementia: A systematic review.

Authors: Dr Nik Bhandari, MRCPsych, MBBS

Objective: In the last 2 decades, data from neuroimaging and post-mortem studies has consistently demonstrated that postsynaptic receptor deficits in Frontotemporal dementia (FTD) specifically affect the serotonergic system. This contrasts with multi-receptor pathology seen in other types of dementia.

Further, the behavioural symptoms of FTD are similar to the ones seen in functional psychiatric disorders such as depression and obsessive-compulsive disorder. The neural pathways linked to such behavioural symptoms rely on serotonin, and hence a decrease in serotonin system function is associated with decreased frontal activity and mood dysfunction, while serotonergic drugs tend to improve these symptoms. Thus, there is a need to systematically study the evidence for the drugs which explicitly target the dysfunctional serotonergic system in FTD, and which have shown improvement in functional psychiatric disorders presenting with similar behavioural symptoms.

The systematic review aims to assess the efficacy and safety of serotonergic drugs for treatment of behavioural symptoms of FTD.

Method: A systematic review of all available primary data on the topic was done. Records from health care databases, ongoing trials and grey literature were checked, and relevant articles reviewed. The data was collected and analysed using RevMAN software tool from the Cochrane Collaboration.

Results: All the 10 studies included in the review were prospective studies, of which 4 were placebo-controlled and 3 had double blind and cross-over study design. The 10 studies trialled 6 serotonergic drugs, on a total of 214 subjects. 9 of the 10 studies showed improvement in FTD symptoms, with statistically significant improvement in total NPI score recorded in 7 studies. Trazodone showed improvement in all 4 studies in which it was tested, though significant improvement was noted in 3 of the studies. Paroxetine showed significant improvement in 2 out of the 3 studies. Fluvoxamine and Citalopram showed significant improvement in the 1 study each. The overall effect size for serotonergic drugs (Paroxetine and Trazodone) in comparison with placebo was not significant, with value of -2.38 (-5.21, 0.45). The serotonergic drugs were well tolerated in all the included trials.

Conclusion: The systematic review provides evidence for use of serotonergic drugs for management of behavioural symptoms of FTD, though the overall effect size for the drugs was found to be statistically non-significant. There is paucity of research data on the topic, and scope for evidence from large pragmatic randomised controlled trials, to further inform clinical practice.

2. Why do people record their criminal activity?

Authors: Dr Marta Elian

Objective: To raise awareness of a new trend: serial recording of own criminal activity.

Method: Examples recruited: newspapers and my own Medico-legal practice.

Results: Increasing number of crimes are self-recorded over weeks or months including rape and child abuse resulting in death thus ensuring an inevitable conviction when discovered.

Conclusion: The underlying motivation of self-recorded crime is not clear. One can cite several non-conclusive hypotheses. Self-punishment, cry for help, boasting to friends, relive the exhilaration when watching the crime again. A number of hypotheses will be offered each non conclusive. Viewer contribution to solve the underlying enigma will be more than welcome.

3. Cognitive behavioural therapy vs standardised medical care for adults with Dissociative non-Epileptic Seizures(CODES) : An RCT protocol.

Authors: LH Goldstein(1), T Chalder(1), AJ Carson(2), S Landau(1), P McCrone(1), N Magill(1), N Medford(3), J Murray(1), M Reuber(4), M Richardson(1), J Stone(2), JDC Mellers(5).

1= Institute of Psychiatry, Psychology and Neuroscience, King's College London, UK;

2= University of Edinburgh, UK, 3= Brighton and Sussex Medical School, UK, 4= University of Sheffield, UK , 5= South London and Maudsley NHS Foundation Trust

Objective: Our overall aim is to evaluate the clinical and cost effectiveness of specifically adapted Cognitive Behavioural Therapy (CBT) (plus Standardised Medical Care - SMC) in comparison to SMC alone for outpatients with dissociative seizures (DS), within a pragmatic, multi-centre UK-based RCT. This will redress the limited evidence base for psychotherapy in this patient group.

Method: Adults with DS but without currently active epilepsy will receive their diagnosis and information from a neurologist/epilepsy specialist and their seizure occurrence will be monitored. Three months post diagnosis they will be reviewed by a psychiatrist with interest and expertise in DS who will represent the diagnosis and deliver an information leaflet. Those continuing to experience DS in the previous 8 weeks and meeting other inclusion criteria will, if willing, be consented, undergo baseline assessments and be randomised to receive either 12 sessions of CBT (plus a booster session) as well as SMC or SMC alone. We aim to randomise 298 patients (149 to each arm). DS frequency will be monitored fortnightly and follow-ups will occur at 6 and 12 months post randomisation. An intention to treat analysis will evaluate effectiveness in outcomes relating to seizure frequency severity and freedom, mood and psychological state, quality of life and health service use. A qualitative study will investigate participants' experiences of the interventions and barriers to participation that might affect subsequent implementation in the NHS.

Results: Multiple sites in England, Wales and Scotland have been enlisted. Recruitment in neurology clinics has commenced. Training for service user advisors, research workers and CBT therapists has been delivered.

Conclusion: The design and progress will be described. This is the largest planned trial for patients with DS to date. See ISRCTN05681227 for further details. FUNDING: NIHR HTA reference 12/26/01

Members' Posters

4. Predicting Psychiatric Outcome Following Temporal Lobe Epilepsy Surgery: A Longitudinal Study

Authors: Rebecca Anne Pope, Pamela Jane Thompson, Khadija Rantell, Jason Stretton, Mary Anne Wright, Jacqueline Foong. The National Hospital for Neurology and Neurosurgery
Queen Square, London WC1N 3BG.

Objective: Neurosurgery is an effective therapy for selected individuals with medically refractory temporal lobe epilepsy (TLE). Following TLE surgery, however, affective symptoms (depression/anxiety) can worsen or develop for the first time (de novo), even in patients rendered seizure free. Predictors of psychiatric outcome have proved elusive and represent a current challenge in the practice of TLE surgery. We investigated whether indicators of more diffuse cerebral dysfunction are predictive of poorer psychiatric outcomes.

Method: Forty-nine unilateral TLE surgical patients (25 RTLE; 24 LTLE) were assessed using the Beck Depression Inventory-Fast Screen (BDI-FS) and Beck Anxiety Inventory (BAI) preoperatively and 6 and 12 months postoperatively. All patients underwent neuropsychological assessments that included additional measures of executive function. Patients and family members also completed the Dysexecutive Questionnaire (DEX). A mixed-model repeated measures analysis was performed on each outcome (BDI-FS and BAI).

Results: Preoperatively, 8 (16%) were mildly depressed, 2 (4%) were moderately depressed, and 6 (12%) reported severe depressive morbidity. Eighteen patients (37%) were mildly anxious, 6 (12%) were moderately anxious and 2 (4%) patients reported severe anxiety symptoms. We found that anxiety symptoms significantly improved within the first 6 months following TLE surgery, with no further improvement (i.e. between 6- and 12m follow-up). Depressive morbidity did not improve during the 12 month postoperative period. However, the magnitude and direction of mood change was significantly moderated by preoperative extra-temporal lobe dysfunction, with preoperative executive dysfunction indicators predicting increased depression and anxiety symptoms following surgery. There was no relationship between preoperative BDI-FS or BAI scores and seizure outcome (ILAE 1 vs 2-6) at 12 months (OR: 1.15, 95%CI: 0.84-1.56, p=0.38, OR: 1.04, 95%CI: 0.91-1.20, p=0.57, respectively), or change in affective morbidity and seizure outcome (BDI-FS: OR: 0.92, 95%CI: 0.76-1.10, p=0.34; BAI: OR: 0.84, 95%CI: 0.66-1.60, p=0.14).

Conclusion: Pre-surgical cognitive and behavioural indices of executive dysfunction were predictive of poorer psychiatric outcome following TLE surgery. We found that anxiety symptoms improved in the early postoperative period, but depressive morbidity remained unchanged compared to preoperative levels. In addition, our findings have highlighted the clinical utility of the Dysexecutive Questionnaire (DEX-S). Examination of executive functioning in pre-surgical evaluations may lead to an increase in the power of prognostic models used to predict the psychiatric outcome of TLE surgery.

5. Selection of treatment targets for patients with Tourette Syndrome

Authors: McNulty RKF, Stern JS, Simmons H, Robertson MM

Objective: Identify the primary therapeutic targets selected for a large cohort of patients with Tourette Syndrome.

Method: Clinical records of 446 patients seen consecutively between 2004-2013 were reviewed. Various features were collated, including clinician-rated severity and treatment outcome at first visit.

Results: 48% of patients had multiple treatment targets. Tics were a target for treatment in 45% of cases (adults: 57%, children 36%). Comorbidities (particularly ADHD, OCD, depression and anxiety) were selected as targets for treatment in 55% of cases. In 18% of adult cases and 30% of children, immediate management did not include any new drug or behavioural intervention - the main outcome was psychoeducation and reassurance. Patients with more severe tics were more likely to have tics selected as the target.

Conclusion: These findings emphasise clinicians' impression of the importance of identification of comorbidities. Children were less likely than adults to have an active management target chosen at first visit, reasons could include a higher threshold for drug prescription, fewer severe cases and the lack of availability of specialised psychology therapies.

6. Differences in relatives' and patients' illness perceptions in functional neurological symptom disorders compared to neurological disease

Authors: Kimberley Whitehead, Jon Stone, Paul Norman, Michael Sharpe, Markus Reuber

Objective: The illness perceptions of the relatives of patients with functional neurological symptom disorders (FNSD) and the relation to patients' illness perceptions have been little studied. We aimed to compare illness perceptions of relatives of patients with FNSD to those held by patients themselves. We used control pairs with neurological diseases (ND) to examine the specificity of the findings to FNSD.

Method: Patients with FNSD (functional limb weakness and psychogenic non-epileptic seizures) and patients with ND causing limb weakness and epilepsy, and their relatives, completed adapted versions of the Illness Perception Questionnaire Revised (IPQ-R).

Results: We included 112 pairs of patients with FNSD and their relatives and 60 ND patient and relative pairs. Relatives of patients with FNSD were more likely to endorse psychological explanations and, in particular stress as a causal factor than patients with FNSD (p
<.001). Relatives of FNSD patients were also more pessimistic about the expected duration of the disorder and perceived a greater emotional impact than patients themselves (p ><.001). However, the latter two differences between patients and relatives were also found in ND pairs. >

Conclusion: The main difference in illness perceptions between relatives and patients with FNSD was a tendency for relatives to see psychological factors as more relevant than patients. Some other differences were observed between FNSD relatives and patients but the same differences were also seen in ND pairs. These other differences were therefore not specific to FNSD. Discussion about possibly relevant psychological factors with patients suffering from FNSD may be helped by including relatives.

Members' Posters

7. Validation of the IDEA cognitive screening tool for older adults in hospital inpatient, outpatient and rural community settings in Tanzania

Authors: Dr S-M Paddick1,2, Dr W. K. Gray PhD2, Dr C. Dotchin MD1,2,Mr. A. Kisoli3,5 , Mr. G. Mbowe4,5 , Dr. J. Kisima3, Mrs. S. Mkenda4,5, Dr. F. Lwezaula4, Dr. D. Mushi 5, Dr. A. Teodorczuk 1, Prof A. Ogunniyi7, Prof R. Walker 2,8 , 1. Institute of Ageing and Health, Newcastle University, UK
2. Northumbria Healthcare NHS Foundation Trust, North Tyneside General Hospital, North Shields, UK, 3. Hai District Hospital, Boma'ngombe. Kilimanjaro, Tanzania. , 4. Mawenzi Regional Hospital, Kilimanjaro, Tanzania. , 5. Tumaini University, Kilimanjaro Christian Medical College, Tanzania, 6. Kilimanjaro Christian Medical Centre, Tanzania, 7. Institute of Health and Society, Newcastle University, Newcastle upon Tyne, UK, 8. University College Hospital, University of Ibadan, Ibadan, Nigeria

Objective: The IDEA study cognitive screening tool was developed for identification of dementia in low-resource settings and populations with low levels of formal education. The aim of this study was to formally validate the tool as a screen for dementia and also delirium in hospitalised older adults and outpatient attendees alongside a lower prevalence community setting to assess usefulness in primary care.
Method: The screening instrument was administered to 100 consecutive older adults admitted to medical wards of a Government hospital in Tanzania alongside 108 consecutive geriatric medicine attendees. A rural community sample of 530 older adults were also screened. All inpatients were subsequently fully assessed by a research doctor who was blind to the screening tool results. In the outpatient and community samples all those of high and intermediate probability and a random sample of low probability individuals were assessed by the same method. Assessment included psychiatric and cognitive examination, informant history and neurological examination. Dementia and delirium were diagnosed according to DSM-IV and ICD-10 criteria.
Results: In hospital inpatients the area under the ROC curve (AUROC) for the IDEA cognitive screen was 0.903(95% CI 0.84-0.965) for dementia and delirium combined. In the outpatient and rural community samples the AUROC values for dementia were 0.931 (95% CI 0.865-0.996) and 0.854 (95% CI 0.793-0.915) respectively
Conclusion: This six-item brief cognitive screening instrument performed well in this low-literacy population and should prove useful in screening for dementia in varied healthcare settings in Tanzania. Further testing in other low-resource settings is required.

8. Prevalence of delirium in older hospitalised adults in Tanzania. The IDEA (Identification and Interventions for Dementia in Elderly Africans) study.

Authors: Dr S-M Paddick1,2,Dr W. K. Gray PhD2, Dr C. Dotchin MD2,Mr. A. Kisoli3,5 , Mr. G. Mbowe4,5 , Dr. J. Kisima3, Dr. F. Lwezaula4, Mrs. S. Mkenda5, Dr. D. Mushi PhD5, Dr. A. Teodorczuk MD1, Prof A. Ogunniyi7 Prof R. Walker MD2,8., 1. Institute of Neuroscience, Newcastle University, UK, 2. Northumbria Healthcare NHS Foundation Trust, North Tyneside General Hospital, North Shields, UK, 3. Hai District Hospital, Boma'ngombe. Kilimanjaro, Tanzania. , 4. Mawenzi Regional Hospital, Kilimanjaro, Tanzania., 5. Tumaini University, Kilimanjaro Christian Medical College, Tanzania, 6. Kilimanjaro Christian Medical Centre, Tanzania. , 7. University College Hospital, University of Ibadan, Ibadan, Nigeria. 8. Institute of Health and Society, Newcastle University, Newcastle upon Tyne, UK

Objective: In sub-Saharan Africa (SSA), little is currently known of the prevalence or causes of delirium. To date, only one study has reported prevalence in older adults in SSA, despite the known vulnerability of this group to delirium and the associated adverse outcomes. Validated screening tools are also lacking. We aimed to identify the prevalence of delirium in 100 new inpatient medical admissions aged 65 and over in a public hospital in Tanzania.
Method: Participants were screened for cognitive impairment using the IDEA brief cognitive screening tool, previously validated for dementia in SSA. All participants were subsequently assessed by a research doctor. This assessment included the Confusion Assessment Method (CAM) alongside cognitive assessment, neurological examination and informant history. DSM-IV and ICD-10 criteria were used for dementia and delirium diagnosis
Results: Three patients were excluded because they did not fully complete the assessment before discharge. Of the remaining 97 patients, 17 (17.53%) met criteria for delirium when assessed. Of these, 10 (10.31%) had a history suggestive of dementia with superimposed delirium. **Conclusion:**Delirium was common in this group of hospitalised older adults in Tanzania, but prevalence was lower than that reported in high income country studies. Our prevalence estimate of delirium may be a conservative one, since patients were assessed only once during hospital admission. The IDEA screening tool appeared effective in identifying delirium in this group and further validation is suggested.

Members' Posters

9. A case of synaesthetic Tourette syndrome

Authors: Martins SRN, Stern JS, Simmons H, Department of Neurology, St George's Hospital Atkinson Morley's Wing, Blackshaw Road, London, SW17 0QQ

Objective: We present the case of a 48 year old woman with co-occuring synaesthesia and Tourette syndrome.

Method: A 48 year old lady was referred for her Tourette syndrome. She had experienced mild typical simple motor and vocal tics from age 6, which by age 17 had improved to only a throat clearing tic. At age 44 the tic disorder gradually became more florid with multiple complex tics and intrusive non-obscene socially inappropriate behaviours. At assessment other characteristic comorbidities were identified; obsessive compulsive disorder and probably attention deficit disorder as a child. In addition symptoms of lifelong synaesthesia were elicited.

Results: As is often the case, the patient was not aware that synaesthetic experiences are not common to us all. There was interaction in her symptomatology between the two conditions, probably partly driven by obsessionality. For instance, the stimulus of another person swearing leads to echocoprolalic urges that elicit the synaesthetic percept of a ginger cat which in turn precipitated the utterance of the phrase "ginger cat" instead of repeating the swear word. For each different swear word, the patient experiences a different image e.g. a pink flip-flop. When the patient smells cooking, it elicits a strong sensation of burnt apple pie which then triggers off motor and vocal tics. In noisy environments she sees swirling coloured numbers which she feels cause her to tic. A similar effect can accompany her premonitory urge to tic. Orange is an especially prominent colour in these experiences, and one of her socially inappropriate tics is to shout "ginger kids".

Conclusion: This is a unique case of Tourette syndrome coincidentally comorbid with synaesthesia with the latter interacting, provoking and being driven by tics and obsessionality. The putative neuroanatomy of colour-grapheme synaesthesia is debated (abnormal activation in visual colour association V4/V8 / fusiform areas) but probably does not overlap with the proposed substrate of Tourette syndrome (basal ganglia / thalamocortical circuits). It is suggested that in this patient the interaction of the two conditions is mediated at a higher cognitive level over the four year course since the late exacerbation of her Tourette syndrome, in itself an atypical evolution.

10. The great imitator

Authors: Dr.R.Nair consultant psychiatrist and associate clinical researcher, Dr.P.Reading, consultant neurologist, Ms.Karen Killilea, medical physicist

Objective: We aim to present a 45 year-old PVC plant worker with no prior history of mental illness who was admitted to a psychiatric ward with complex neuropsychiatric symptoms. He initially presented to a neurology clinic with a progressive four month history of striking personality change and associated mild cognitive decline, gait ataxia and weight loss. Within a few weeks of presentation, his behaviour had deteriorated, necessitating admission to a psychiatric unit where additional signs of apraxia, dysarthria, visual hallucination, hyper salivation, and profound sleep impairment were noted. After admission, episodes of physical aggression necessitated intensive care treatment. He lacked insight into his abnormal behaviours which included sexual disinhibition

Method: Initial neuropsychology assessment revealed significant impairment in his short-term memory, language, visuospatial orientation and fluency. ACE III score was 61/100.

Results: MRI brain normal

Cerebral SPECT scan - moderate hypoperfusion in occipital and temporal regions bilaterally, worse on left. Syphilis IgM antibody detected, Serodia Particle aggn REACTIVE >=1:1280

VDRL reactive 1:32, Treponemal ABS positive, CSF : protein 1.2 g/dl, white cells 8 (lymphocytes)

EEG: minor changes suggesting diffuse cortical disturbance

Conclusion: He was given a four week course of oral Doxycycline and started empirically on maxepa. He remained compliant with initial significant improvement in verbal fluency, ataxia and apraxia. He continued to exhibit signs of elation with grandiose plans and sexual disinhibition. He was started on 25 mg of lamotrigine which coincided with improvement in mood control allowing discharge home. Two month follow-up revealed an improvement of ACEIII to 87/100. SPECT also showed significant improvement in cerebral perfusion. A repeat lumbar puncture revealed acellular CSF with a marginally raised protein (0.6 g/dl). Functionally, 8 months after presentation, he is back at work full-time. His wife reports only minor residual changes in his personality characterised by a more benign disposition and a mild obsession with household tasks.

This case highlights the need to remain vigilant for atypical presentations of neurosyphilis in subjects with complex progressive neuropsychiatric symptoms and behavioural change. A good response to treatment can be anticipated if an early diagnosis is made.

Members' Posters

11. Differential Association of Schizotypal Traits with Strategy Formation, General Psychopathology and Quality of Life in the Schizophrenia Spectrum: Findings from the PreMES study

Authors: 1.Chrysoula Zouraraki, Department of Psychology, University of Crete, Rethymno, Crete, Greece, 2.Leda Karagiannopoulou, Department of Psychology, University of Crete, Rethymno, Crete, Greece, 3.Penny Karamaouna, Department of Psychology, University of Crete, Rethymno, Crete, Greece, 4.Eva-Maria Tsapakis, Aghios Charalambos Mental Health Center, Heraklion, Crete, Greece, 5.Ismini Kopsahili, Aghios Charalambos Mental Health Center, Heraklion, Crete, Greece.
6.Panos Bitsios, Department of Psychiatry, Faculty of Medicine, University of Crete, Heraklion, Crete, Greece, 7.Stella G. Giakoumaki, Department of Psychology, University of Crete, Rethymno, Crete, Greece.

Objective: Schizotypy may be a forerunner of schizophrenia-spectrum disorders (SSD).
In this study we examined for the first time the association between schizotypy and prefrontal function, quality of life (QoL) and general psychopathology (GenPsych) in 27 healthy subjects with no family history of SSD and 50 unaffected first-degree relatives of SSD patients, taking into consideration the clinical profile of their affected relative.
Method: Participants completed the Schizotypal Personality Questionnaire, Quality of Life Enjoyment/Satisfaction Questionnaire, Symptom-Checklist-90-Revised (SCL-90R) and a Spatial Working Memory/Strategy (SWM) task. Clinical loading for the relatives was estimated as a continuous variable (0 score for controls) based on the average of Z-scores of age at illness-onset, illness-severity, Global Assessment of
Functioning and number of hospitalisations of their affected relative.
Associations between clinical loading, paranoid, negative, cognitive/perceptual schizotypy and
metrics from QoL, SCL-90R and SWM outcome variables were examined with separate univariate regressions controlling for age and smoking habit.
Results: Low QoL and high SCL-90R scores (all metrics) were predicted by high Negative (R2 range: 0.469-0.677) and Paranoid (R2 range: 0.434-0.695) Schizotypy (Ps < 0.001). >High Cognitive Perceptual Schizotypy predicted only higher SCL-90R metrics (P values <0.05; R2 range: 0.508-0.309). Poor strategy was predicted by high negative schizotypy and clinical loading together (Ps
<0.05; R2:0.269). >
Conclusions: These findings suggest a dissociable role of different schizotypy types in psychopathology development, impoverishment of social context and prefrontal function in the schizophrenia-spectrum; also that different early-intervention approaches for psychosis should be considered, depending on the prevalent schizotypal traits of the individual at-risk.

Members' Posters

12. Manifest HD is associated with increased irritability towards oneself and others compared to premanifest HD and control groups

Authors: Dr. Sophie Green, Dr. Hugh Rickards

Objective: Snaith et al (1978) divide irritability into that directed externally and that directed internally (towards oneself). A previous study demonstrated that neither self- nor other-directed irritability could distinguish between pre-manifest HD and control groups, but extrovered hostility did (Vassos et al., 2007). To our knowledge however there has been no comparison of self- and other- directed irritability in manifest HD groups compared to pre-manifest HD and control groups. Here, we aimed to compare these groups on these measures. We hypothesized that manifest HD would show the highest levels of irritability and that this would be skewed towards other-directed irritability relative to self-directed irritability. We expected that impairments on tasks probing the ability to handle conflicting and interfering sources of information (Stroop interference) may correlate with increased irritability.

Method: Data was obtained from the REGISTRY study from the European Huntington's Disease Network (EHDN) on participants with manifest HD (N=2311) pre-manifest HD (N=666) and a healthy control group without the HD gene (N=226). We tested for between group differences in total irritability, and self- and other-directed irritability as measured by the Snaith Irritability Scale. Outliers with scores of SD +/- 3 on overall irritability were excluded from all analyses, and outliers on self-directed and other-directed irritability and Stroop interference were excluded from analyses that employed these variables. Analyses were performed using IBM SPSS 21. In order to see whether there was more self-directed or more other-directed irritability within the separate testing groups, Wilcoxon-signed rank tests were performed. Then, to investigate whether differences exist between the groups in the amount of other-directed irritability relative to self-directed irritability, a difference score was created. Kruskal-Wallis tests were followed by pair wise comparisons using Mann-Whitney U tests to compare the groups to one another on irritability and difference scores. Correlations were performed using Spearman rank tests.

Results: Overall, irritability was greatest in the manifest HD group, followed by pre-manifest HD group, then control participants (manifest HD group: mean rank=1664.84, mean=6.02Â±SD4.63; pre-manifest HD mean rank=1502.23, mean=5.04Â±3.74; control group mean rank: 1253.45, mean: 4.08Â±3.73; X2(2)=50.84, p <0.001, all pair wise comparisons with Mann-Whitney U, significant at p><0.05). This same pattern in group order was seen for self-directed irritability and other-directed irritability (SELF-DIRECTED IRRITABILITY: manifest HD mean rank=1653.0, mean=2.50Â±2.45, greater than pre-manifest HD, mean rank=1469.2 mean=1.89Â±1.84, greater than controls mean rank: 1258.43, mean=1.44Â±1.68, X2(2)=53.53, p><0.001, all pair wise comparisons p><0.05; OTHER-DIRECTED IRRITABILITY: manifest HD mean rank=1641.9, mean=3.43Â±2.74 greater than pre-manifest HD mean rank=1549.6, mean=3.04Â±2.27, greater than controls mean rank=1326.3, mean=2.53Â±2.40, X2(2) = 26.98, p><0.001, pair wise comparisons significant at p><0.05). Wilcoxon-signed rank revealed that all groups showed significantly more irritability towards others than towards themselves (manifest HD: Z=-15.88, p><.001; pre-manifest HD: Z=-12.87, p><0.001; controls Z=-7.23, p><0.001). Mann-Whitney U revealed that the difference score of other- minus self-directed irritability was significantly greater in the pre-manifest HD group (mean rank=1560.7, mean=1.15Â±2.01) compared to manifest HD group (mean rank=1449.1 , mean=0.90Â±2.60, U=695283.5, p=0.003) , however neither group differed significantly to controls (1.08Â±2.03;vs. Pre-manifest HD U=70695.5, p=0.43; vs. manifest U=243386.0, p=0.243). Stroop interference measures did not show any convincing correlations with irritability in HD groups (Stroop interference controlling for word reading:- manifest HD: rs= -0.005 (N=2303) p=0.823, pre-manifest HD rs=0.074 (N=663) p=0.056; Stroop interference controlling for colour naming:- manifest HD: rs=0.002(N=2290)p=0.942, pre-manifest HD=0.027(N=658)p=0.493). >

Conclusion: Out of all the groups, manifest HD show the highest levels of total irritability, other-directed irritability and self-directed irritability followed by the pre-manifest HD group then the control group. All groups were significantly more irritable towards others than themselves. However, counter to our hypothesis, the group that showed the greatest skew towards other-directed irritability relative to self-directed irritability was the pre-manifest HD group. This was significantly greater than the manifest HD group, however neither group differed significantly to controls. This finding was likely driven by sub-threshold reductions in levels of self-directed irritability in pre-manifest HD compared to manifest HD. The role of executive function and management of cognitive interference in increased irritability in HD is unclear.

Members' Posters

13. Exploring the Dimensions of Apathy in ALS: Validation of the DAS

Authors: Ratko Radakovic, Laura Stephenson, Siddharthan Chandran, Robert Swingler, John M. Starr and Sharon Abrahams, Psychology-School of Philosophy, Psychology & Language Sciences, University of Edinburgh, UK, Alzheimer Scotland Dementia Research Centre, University of Edinburgh, UK, Anne Rowling Regenerative Neurology Clinic, University of Edinburgh, UK, Euan MacDonald Centre for MND Research, University of Edinburgh, UK

Objective: To explore the multidimensionality of apathy in ALS, To validate the Dimensional Apathy Scale (DAS) in ALS patients and their carers

Method: This was a Scotland- wide questionnaire based study where 83 ALS patients, 75 of their informants and 83 gender-age-education level matched controls were recruited.

Control, patient and carer participants completed a standard apathy scale- the Apathy Evaluation scale (AES), the Geriatric Depression Scale-Short form (GDS-15) and the DAS, which is composed of 3 subscales assessing Executive, Emotional and Initiation apathy subtypes. The ALS Functional Rating Scale-Revised (ALSFRS-R) scores were acquired to measure disease related disability.

Results: ALS patient (self rated) and carer rated comparison on the DAS showed no significant difference on each of the subscales. There was a significant between-subscale dissociation for both the patients and their carers, $F(2,296)= 160.30$, $p< .001$.

ALS patient (self rated) and control responses to the DAS subscales were found to be significantly different, $F(2,328)= 13.86$, $p< .001$. Further post-hoc t-tests showed that patients ($M= 12.5$, $SD= 5.1$), compared to controls ($M= 10.2$, $SD= 4.3$), were significantly more impaired on the Initiation subscale, $t(64)= 3.22$, $p< .01$. Additionally, controls were slightly more Emotionally apathetic ($M= 8.9$, $SD= 3.2$) compared to patients ($M= 7.7$, $SD= 3.3$), $t(164)= 2.28$, $p< .05$.

The psychometrics of the DAS were found to be favourable. The Cronbach's standardized alpha values were high, with the carer (0.90) being slightly higher than the patient (0.86). DAS subscales correlated more highly with the AES compared to the GDS-15, again with that of the carers being slightly higher and better discriminating Emotional apathy against depression. The ALSFRS-R was not significantly correlated with any of the DAS subscales.

Conclusion: Using a multidimensional approach to apathy assessment, our study determined that ALS patients showed an apathy profile, characterised by difficulties in initiation of behaviour and cognition. The DAS was found to be a valid and reliable measurement of the dimensions of apathy, independent of disease related disability. Future research will investigate the relationship of these apathy dimensions and cognitive functioning in ALS and further validate the DAS in other neurodegenerative populations.

14. Stress and Seizures: Exploring the patterns of cognitive, self-perceived and physiological stress responses in patients with epilepsy and psychogenic non-epileptic seizures

Authors: Barbora Novakova, Peter Harris, Athi Ponnusamy, Jefferson Marques, Markus Reuber

Objective: To examine cognitive responses to stress-related stimuli in patients with seizures and to explore whether the response patterns differ in patients with epilepsy, patients with psychogenic non-epileptic seizures (PNES) and healthy individuals.

We also aimed to investigate self-perceived and physiological stress responses in patients with epilepsy and those with PNES, compared to healthy individuals, and to examine the relationships between the cognitive, self-perceived and physiological stress responses in patients with seizures.

Method: A group of 54 patients with refractory seizures admitted for diagnostic video-telemetry assessment (epilepsy n=21, PNES n=26) and 21 healthy volunteers completed self-report questionnaires and performed an emotional Stroop test. Cognitive responses were investigated by exploring attentional biases in responses to neutral versus threatening stimuli comprising generally and socially threatening as well as somatic and seizure-related words. Heart rate variability (HRV) parameters were extracted from resting electrocardiogram recordings taken prior to the Stroop test and used as physiological stress markers.

Results: Patients with seizures, particularly those with epilepsy, showed greater attentional biases towards threatening information than healthy individuals across all word categories (ps
< .05). >Both patient groups also reported greater levels of self-perceived stress than healthy individuals (ps< .01) and showed a different HRV pattern, characterised by reduced variability and a significantly lower parasympathetic nervous system (PNS) tone than controls (p=.002). >In patients with epilepsy, the attentional bias towards somatic words was negatively correlated with the HRV measure of PNS tone (r=-0.59). Self-reported stress was not related to any of the cognitive or physiological stress measures in any of the patient groups.

Conclusion: Many patients perceive stress as the commonest trigger of their seizures; however, the relationship between psychological and physiological processes relating stress and seizures has been poorly understood. Our findings show that patients with seizures are characterised by a pattern of abnormal attentional vigilance to threatening stimuli, high self-perceived stress and an altered autonomic nervous system responses. The relationships between attentional biases and HRV in patients with epilepsy suggest there may be a reciprocally causative relationship between cognitive responses, PNS tone and seizures. The long-term experience of stress and seizures could lead to a diminished PNS tone, which could exacerbate patients' attentional responses to stressors. In turn, the biased attentional responses could trigger more frequent physiological stress responses, causing further alterations of the autonomic nervous system and further increasing patients' vulnerability to stress and seizures.

Members' Posters

15. Factors influencing the presence of behavioural symptoms in Huntington's Disease

Authors: Sophie Fitzsimmons (1), Lesley Jones (2), Peter Holmans (2), (1) Brighton and Sussex University Hospitals NHS Trust, (2) Cardiff University School of Medicine

Objective: Huntington's Disease (HD) is a degenerative disease with characteristic motor and behavioural symptoms, caused by an autosomal-dominant CAG repeat expansion mutation. Behavioural symptoms are important features of HD they contribute to functional decline and affect quality of life more than motor symptoms. The factors affecting the presence or absence of behavioural symptoms are complex and it is unclear to what extent behavioural symptoms are caused by underlying pathology. This study aimed to see which factors (CAG repeat length, gender, disease burden score (DBS), and age of onset) best predict the presence of 8 different neuropsychiatric symptoms.

Method: Participants: Participants were taken from the European Huntington's Disease Network Registry study, which is an observational study of 1835 HD patients. 991 participants were given a clinical characteristics questionnaire, which recorded the presence and age of onset of motor symptoms and 8 common behavioural symptoms experienced by HD patients (depression, cognitive problems, irritability, apathy, obsession, aggression, psychosis and family history (FH) of psychosis). Statistics: A logistic regression model was used to analyse the predictive power of CAG length, gender, age of motor onset and DBS for the presence of each of these symptoms. Variables were chosen on the basis of preliminary comparisons of means and were entered into the model simultaneously.

Results: Depression, cognitive problems, irritability, and apathy are all present in more than 50% of patients. The average onset of depression, irritability, and aggression is within 3 years of motor onset. Logistic regression analysis revealed that CAG length and age of disease onset significantly predict the presence of obsessive symptoms; these factors (along with DBS) also predict the presence of cognitive problems. Gender was a predictor of the presence of depression, while age of onset and gender predicted the presence of irritability and aggression.

Conclusion: Psychiatric symptoms are highly prevalent in the HD population, and their presence can be predicted both by factors present in the general population (e.g. gender) and by disease specific factors (CAG length, age of disease onset). These findings could aid in the prognosis of HD and help anticipate symptoms in individual patients. Future work will involve distributing the clinical characteristics questionnaire to more participants in the EHDN database and further modelling of the time course and co-occurrence of these behavioural symptoms.

16. The experiences of diagnosis for adults with Tourette syndrome.

Authors: Ms Anekea Ross, Dr. Hugh Rickards

Objective: The aim of this research was to find out the experiences of those with Tourette syndrome (TS), specifically what having a diagnosis means and whether it this is useful for patients with TS.

Method: Nine adult participants with TS were recruited through a Tourette syndrome charity. Semi-structured interviews were completed either face to face or via telephone and the resulting transcripts were analysed using thematic analysis.

Results: There were three main themes resulting from the data: Diagnosis helps with coping, Dissatisfaction with the diagnostic process and Feelings about TS and Diagnosis. Participants felt that diagnosis was useful for self-understanding, accessing support and having an explanation for the behaviour, but expressed disappointment with many stages of the diagnosis. Most felt that clinicians lacked proper knowledge of TS and that there was minimal support after diagnosis. Many had experienced stigma as a result of their TS, and felt that TS was misunderstood and misrepresented by the media. Participants felt that TS played a role in their character or identity.

Conclusion: The findings suggest that a diagnosis of TS is useful for those with the disorder but indicate a gap in services for those with TS post diagnosis. Results indicate that increased knowledge of TS for clinicians and improved support post-diagnosis will be useful in continuing to help those with TS to cope with the disorder.

Members' Posters

17. What factors account for internalisation of the content of pro-ana websites

Authors: Judi Homewood and Maral Melkonian

Objective: Pro-anorexia, or pro-ana websites advocate the development, continuation and normalisation of an eating disordered life style. Typical content includes the Ana Creed and/or the Thin Commandments which are the central beliefs of pro-ana members; Thinspiration, a collection of prose or images to inspire weight loss; tips and tricks, which includes instructions displayed as facts to guide individuals to engage in eating disordered behaviours; and forum or chat room. This research investigated what factors account for internalisation of the different types of content of two pro -ana websites

Method: Two existing scales the Multidimensional Media Influence Scale and the Internalisation of Pro-anorexia web-site Content scale were adapted into a 30-item questionnaire called the Pro-anorexia Internalisation Scale (PAIS) to measure internalisation of the thinspiration, tips and tricks and chat room content. An online survey was hosted on two pro-ana sites. It contained this measure and a measure of disordered eating behaviours the Eating Disorders Inventory-3 Referral (EDI-3 R) form; the NEO Five Factor Inventory 3, which is a brief measure of the five major domains of personality; a measure of obsessive compulsiveness from the Dimensional Obsessive Compulsive Scale; the Perfectionism Subscale of the Eating Disorders Inventory 3; the Paulhus Deception Scale, a measure of an individual's tendency to give socially desirable responses on self report inventories; and measures of frequency and duration of visits to the different sections of the website, and demographic measures including weight, weight history and perception of current weight measured on a five point Likert-like scale with anchor points Very Underweight and Very Overweight.

Results: A complete data set was obtained from 75 participants (all female, mean age 22.68 years, SD = 6.15). All respondents met the criteria for eating disorder risk and referral according to the behavioural questions on the EDI-3 R. Forty four (59%) reported that they did not have a clinically diagnosed eating disorder. Only 20 met the criteria for being underweight (BMI< 18.50). The Cronbach's alpha for the PAIS scale was Î±=0.90, higher than the two existing scales. Data analysis comprised a model reduction strategy via step-wise backward regression between the scores on the personality and demographic items with the PAIS scores for the three component of the web site content. Scores measuring internalisation of thinspiration content showed a statistically significant relationship with only one personality measure the agreeableness scale on the NEO-FFI-3 but explained only a small proportion of the variance (R2=7.34%). Measures of frequency of visits and duration were better predictors, explaining R2 =16.30 and R2=11.40% of the variance respectively. Highest weight had a significant negative association (r=-0.22) explaining R2 = 7.34% of the variance after adjustment for agreeableness, frequency, duration and perception of current weight.

For the measures of internalisation of tips and tricks sections, there was a significant relationship with scores on only one personality variable obsessive compulsiveness but again, this accounted for only a small proportion of the variance (R2= 7.30). Frequency of visits was a significant and large predictor (R2=45.60). Scores on the deception impression management subscale of the Paulhus Deception Scale had a significant, negative and moderate sized effect on scores of internalisation of chat room content (R2=23.90%). Agreeableness significantly contributed to chat room internalisation, after adjusting for deception impression management but accounted for only a small amount of the variance (R2=8.30%).

Conclusion: The study benefitted from recruiting participants from a particularly understudied, private and rapidly growing community. The finding that frequency and duration of visits to pro-ana websites is associated with internalisation of thinspiration and tips and tricks content is consistent with predictions from Cultivation theory (Gerbner & Gross, 1976). Clinicians might benefit from asking clients about internet use. The data provide preliminary evidence for a relationship between the personality trait of agreeableness and internalisation of the content of pro-ana websites.

18. 'I get this feeling like grapes bubbling through and I try hard to press them in'. A qualitative study of premonitory urges in children with tic disorders.

Authors: Takon I, Rickards H, Chowdhury U and Sharma S.

Objective: To explore whether children affected by tic disorders experience, recognise and are able to describe premonitory urges.

Method: Semi-structured interviews were carried out with children to unearth their experiences of living with a tic disorder, alongside exploration of how tics are experienced and whether or not children recognise and are able to describe associated premonitory urges. Participants included 10 children (M= SD= ; 4 male and 6 female) referred to the Paediatric Department at the Queen Elizabeth II Hospital, Hertfordshire. All children presented with motor and/ or vocal tics that had been present for at least one year at the time of the study. NHS Research Ethics approval was obtained for the study, alongside written consent from the children involved and their parents. Interviews were digitally recorded, transcribed verbatim, and analysed using thematic analysis. Children also completed the Premonitory Urge in Tic Scale (PUTS) to allow further exploration of self-reported urges. Child data was supplemented by parents completing the Yale Global Tic Severity Scale.

Results: The mean PUTS score was 24(SD=9). Parent reports from the YGTSS showed that 50% of the study sample experienced a combination of motor and vocal tics, 30% vocal tics only, and 20% predominantly vocal tics. Parent reports further revealed that 60% of participants had moderate impairment from their tics. Qualitative findings identified two overarching themes relating to (1) awareness of and descriptions of tics and (2) lived experience of premonitory urges. The majority of participants (90%) had an awareness of sensory urges before actual tics and were able to link the sensory urges to the tics. Child age did not influence ability to report the presence of premonitory urges, with all children providing vivid descriptions of feelings of discomfort from the sensory urges.

Conclusion: The presence of premonitory urges remains a very important feature in differentiating tic disorders from other movement disorders and there is a need to consider age appropriate methods of obtaining information on premonitory urges in children. Using a qualitative methodology, the current study demonstrates that children younger than 10 years of age have the ability to describe, in detail, the presence of premonitory urges.

Members' Posters

19. Risk taking, response inhibition and the right inferior frontal gyrus.
Authors: Muhlert, Nils, Boy, Frederick, Lawrence, Andrew D.
Objective: The ability to inhibit motor responses has recently been linked to risk-taking behaviour, including gambling. This suggests that those with high trait levels of sensation seeking, the major personality determinant of risk taking, may have poorer response inhibition. We provide converging evidence to support this: first by testing whether performance on a stop-signal response inhibition task is related to levels of sensation seeking, and second, by assessing whether variation in sensation seeking is associated with variation in grey matter volumes of a brain region causally implicated in response inhibition, the right inferior frontal gyrus.
Method: For study one, 87 healthy subjects (25 males) completed a measure of sensation seeking together with a stop -signal task. For study two, 152 healthy subjects (45 males) completed the sensation seeking measure and underwent T1-weighted MRI at 3 T. We carried out a voxel-based morphometry analysis using diffeomorphic anatomical registration through exponentiated lie (DARTEL) algebra to examine grey matter volumes, with a region of interest centred on the right inferior frontal gyrus.
Results: UPPS Sensation Seeking, but not other impulsivity facets, correlated with performance on the Stop-Signal task, with higher sensation seeking associated with poorer response inhibition, indexed by larger mean stop signal reaction time. The DARTEL analysis revealed significant negative associations between sensation seeking and grey matter volumes in the right inferior frontal gyrus, as well as the right orbitofrontal cortex and right middle temporal gyrus.
Conclusion: These findings provide converging evidence to support the link between risk taking and motor inhibition, both at a psychological level and at a biological level. These findings may explain why individuals with disinhibitory disorders sharing genetic variation with sensation seeking show poor response inhibition and suggest a key role of the right inferior frontal gyrus in self-control.

20. Interface prescribing issues at St George's tic disorder clinic
Authors: John Emberton, Dr Jeremy Stern
Objective: This study attempted to quantify and analyse the prescribing issues experienced by patients of the St George's tic disorder clinic since 2005 and highlight any particular problem areas which could be improved in the hope of improving prescribing practices for the future.
Drugs given for Tourette syndrome (TS) are frequently unlicensed or off-label for the condition and in some cases not licensed for use in children at all. Pharmaceutical companies have not yet applied for marketing licences for the condition. This can cause problems in the transfer of prescribing from specialist to primary care (family medicine, general practice) due to unfamiliarity of non-specialists with the drugs even where continued usage appears safe and unproblematic.
The two most relevant drugs in the UK were felt to be aripiprazole and melatonin. For this reason the study prioritised the data concerning the continuation of these drugs by including patients prescribed one or the other who had a diagnosis of Tourettes syndrome. A further inclusion criterion was the refusal of any other drug.
Method: We reviewed a sample of 500 patients' notes both adult and paediatric - from the clinic in order to collect raw data. Any issues in the transfer of their prescriptions were recorded as well as patient age, year of prescription and the primary care trust to which the GP practice belonged.
In addition to this, the clinical outcome of any included patient was qualified to determine the consequence of any prescribing issues.
Results: In brief, results based on location of a GP practice and the year in which the prescription was requested were unremarkable. The study showed that GPs refuse to prescribe aripiprazole far more than any other medication for the treatment of Tourette syndrome (13 out of 19 drug refusals in the sample) and refused to continue 8.6% of all aripiprazole prescriptions made by the clinic.
Of theSE 13 incidents where a prescription of aripiprazole was not continued, 8 were adults (11% of all adults prescribed aripiprazole) and 5 were children (6.3% of all children prescribed aripiprazole).
Of these 13 patients: 3 eventually received no prescription while 2 were prescribed alternatives to aripiprazole.
Conclusion: Transfer of prescribing to primary care of a currently widely used drug for tics in the UK has been problematic in a small minority of cases.

21. Employment in Tourette Syndrome
Authors: Palmer ER, Stern JS
Objective: To establish if the severity of the Tourette's Syndrome, the existence of co-morbidities or other factors impact on the likelihood of having a problematic employment history.
Method: Clinical records of 152 patients with TS over the age of 18 were reviewed. Occupation at time of first assessment was categorised according to the UK National Statistic Socio-economic Classification Score (NSSEC) which ranges from 1.1 (higher managers and professions) to 8 (out of employment). Problematic employment histories over more than one time point were assessed including prolonged periods of past unemployment, multiple short employment, disciplinary issues etc. Severity of TS was recorded by YGTSS, MOVES and clinician impression and comorbidities were noted. **Results:** Little relationship between tic severity and NSSEC score was seen. However, problematic employment history was assigned in 52% and associated with comorbidities (13% for pure TS v. 57%), clinician-rated severity- (48% for mild/moderate v. 69% for severe, NS), MOVES score (47% score <30, 69% score >30). Coprophenomena were also associated with employment difficulties.
Conclusion: Adults who attend a tertiary specialist centre are employed across the whole spectrum from higher management to unemployment. The presence of more severe tics, comorbidities and coprolalia make a problematic employment history more likely. These comparisons were made within TS patients on the background of rising general unemployment due to economic factors and it should be noted that in this classification students (n=18) are in the same group as jobless people although are likely to have a different future socioeconomic level.

Members' Posters

22. Motor versus vocal tics

Authors: Omar AY, Stern, JS, Simmons H, Robertson M

Objective: Some patients with Tourette syndrome present with predominant motor or vocal tics rather than a more balanced combination. We looked at the distribution of the two tic types in a large cohort and also at the clinical characteristics of outliers.

The aim was to compare the balance of motor and phonic tics in Tourette's syndrome patient and to assess whether having a significant difference between the motor and phonic tics has any effect on co-morbidity.

Method: The Yale Global Tic Severity Scale (YGTSS) scores of 315 patients taken at first visit were reviewed and motor and vocal tic scores plotted graphically. A visual cut-off for outliers with unbalanced tic severities was selected as a difference of 9 or more points.

Results: 31 patients had predominantly motor tics with a range of severity, 2 had more vocal tics and the remaining 282 were considered "balanced". There was a trend to reduced rate of ADHD in the predominant motor group (p=0.054). Values for the YGTSS impairment component were equally spread in the unbalanced group.

Conclusion: Most patients have fairly balanced motor and vocal tics, unbalanced presentations seem far more likely to be motor than vocal and the trend to less ADHD in this situation may relate to the gradient of comorbidity rates in TS compared to chronic vocal and chronic motor tics seen in epidemiological samples which are lower for motor tics.

23. Emotion-Motion interactions in Conversion Disorder: an fMRI study

Authors: Timothy R. Nicholson, Selma Aybek, Owen O'Daly, Fernando Zelaya, Richard A. Kanaan, Anthony S. David

Objective: To evaluate the neural correlates of implicit processing of negative emotions in motor conversion disorder (CD) patients compared to healthy controls. We predicted increased amygdala responses in CD patients with a failure to habituate normally.

Method: An event related fMRI task was completed by 12 motor CD patients and 14 matched healthy controls using standardised visual stimuli of emotional faces ("Ekman faces") with negative (fearful and sad) emotional expressions. This was compared to faces with neutral expressions. Temporal changes in the sensitivity to stimuli were also modelled and tested in the two groups. Images were acquired with a 3T scanner and analysed using SPM-8 with both 'region of interest' (ROI) analyses on the amygdala and 'whole brain' analyses.

Results: We found increased amygdala activation to negative emotions in CD compared to healthy controls in ROI analyses, which persisted over time consistent with previous findings using emotional paradigms. Furthermore during 'whole brain' analyses we found significantly increased activation in CD patients in areas involved in the "freeze response" to fear (periaqueductal grey matter), and areas involved in self-awareness and motor control (superior frontal gyrus and supplementary motor area). Anxiety scores were not significantly different between the two groups.

Conclusion: This study provides evidence that CD patients have abnormal emotion regulation with the amygdala becoming relatively more responsive (i.e. sensitized) following repeated exposure to negative emotional cues. Patients with CD also activated midbrain and frontal structures that could reflect an abnormal behavioural-motor response to negative, including threatening, stimuli. This suggests a mechanism linking emotions to motor dysfunction in CD.

24. Antidepressants for people with epilepsy and depression

Authors: Melissa J Maguire , Jennifer Weston, Jasvinder Singh, Anthony G Marson

Objective: We aimed to review and synthesise evidence from randomised controlled trials and prospective non-randomised studies of antidepressants used for treating depression in patients with epilepsy. The primary objectives were to evaluate the efficacy and safety of antidepressants in treating depressive symptoms and the effect on seizure recurrence.

Method: A search of the databases was carried. There were no language restrictions. RCTs and prospective non randomised cohort controlled and uncontrolled studies investigating children or adults with epilepsy treated with an antidepressant for depressive symptoms were included. Data were extracted on trial design factors, patient demographics, and outcomes for each study. The primary outcomes were changes in depression scores and change in seizure frequency. Secondary outcomes included the number of patients withdrawing from the study and reasons of withdrawal and also any adverse events. Binary outcomes were presented as risk ratios and 95%CI. Continuous outcomes were presented as the standardised mean differences and 95%CI. Risk of bias was assessed using a version of the extended Cochrane Collaboration's tool for assessing risk of bias in both RCTs and non randomised studies.

Results: Eight studies, three RCTs and five prospective cohort studies including 471 patients with epilepsy treated with an antidepressant were included. The RCTs were all single centred studies comparing antidepressant versus active control, placebo or no treatment. The five non randomised prospective cohort studies reported on outcomes mainly in partial epilepsy treated for depression with a selective serotonin reputable inhibitor(SSRI).

We were unable to perform any meta analysis for the proportion with a >50% improvement in depression scores because the studies reported on different treatment comparisons. For the mean depression in depression score we were able to perform a limited meta analysis of two prospective cohort studies of citalopram including a total of 88 patients. The effect estimate was 1.17(CI 0.96 - 1.38) for the mean difference in depression scores. Seizure frequency data were not reported in any RCTs. The treatment group on three prospective studies didn't report any significant increase in seizure frequency. Patients given an antidepressant were more likely to withdraw due to adverse events than inefficacy.

Conclusion: Current evidence suggests antidepressants of various classes are effective in treating depressive symptoms associated with epilepsy. However we have no high quality evidence of informing on the best choice of antidepressant drug or class of drug in treating depression in patients with epilepsy. This review provides low quality evidence that SSRIs are not associated with seizure exacerbation, but there are currently no data comparing antidepressant classes.

Members' Posters

25. Development of obsessive compulsive disorder (OCD) secondary to traumatic brain injury- review of literature and comparison with sample of patients from Lishman Unit, Maudsley Hospital

Authors: Remi Guillochon, Michael Dilley

Objective: To review the literature of organic OCD and establish what links can be made between brain injury and secondary OCD. Then to compare this with sample of patients from Lishman Unit.

Method: The relevant articles were reviewed and findings compared with neuroradiological analysis of brain injury patients on unit with secondary OCD

Results: There was some consistency in noting that OCD developed after injury to the orbitofrontal region and basal ganglia. However several other areas have been implicated including mesial prefrontal cortex, temporal lobe, and thalamus, albeit on smaller scale. There are also contradictory reports of OCD development and imaging results- some report increase in caudate nucleus volume, others a decrease. The general lack of uniformity in areas of brain injury is reflected in the wide variety of brain diseases that are sometimes associated with secondary OCD such as Temporal Lobe Epilepsy, Huntington's Chorea, Parkinson's Disease. This variety of differing pathologies suggests that secondary OCD can not be easily localised and suggest a more diffuse pathology. Furthermore, differing results from the studies can be attributed to the different imaging used: CT, MRI, functional MRI and SPECT.

Some of the studies include neuropsychological testing, but as with imaging, testing is not consistent in conclusions but does suggest that dysexecutive factors play a factor in aetiology of organic OCD.

On some occasions, OCD developed despite no abnormalities noted on imaging, nor loss/ change in consciousness at time of injury. Interestingly syndrome often develops many weeks or months after injury, which could be related to pathogenesis. Or perhaps other psychosocial factors in recovery may be impacting.

Conclusion: The main focus of organic OCD seems to be from disruption to the OFC and basal ganglia but other areas have been implicated as has been reflected in the literature as well as the patients on the Lishman brain injury unit, Maudsley Hospital.

26. Sleep-deprivation Amnesia

Authors: Sonali Dharia, Adam Zeman, Royal Devon and Exeter Hospital Foundation trust

Objective: Recognised causes of transient amnesia include transient global amnesia, transient epileptic amnesia, psychogenic amnesia and posterior circulation TIAs. Here we describe a previously unrecognised cause in otherwise healthy individuals: transient amnesia induced by sleep deprivation. We report four cases and suggest an explanation in terms of Tononi's Sleep Homeostasis Hypothesis.

Method: Four physicians reporting the phenomenon were interviewed using a semi-structured questionnaire. They were asked to describe the episode as they remember it now, explain how the event came to light, detail the background of fatigue and sleep deprivation and provide a history of any similar events, and of drug or alcohol use.

Results: Three participants described episodes of successful, complex patient care, undertaken at night, at times of sleep deprivation, which they documented in medical notes but for which they had no recollection on the following day. The fourth reported memory loss for a complex decision. No participant reported any other similar episodes, use of alcohol or other medications or other cause of memory loss. Thus despite responding appropriately in complex situations, with evidence of short-term recollection from the medical notes, these doctors failed to form new lasting memories in the context of marked sleep-deprivation.

Conclusion: Sleep deprivation can lead to a selective transient anterograde amnesia. This phenomenon may be explained by the SHY (Sleep Homeostasis Hypothesis) proposed by Tononi et al. This proposes that during sleep synaptic weights are renormalized with selective weakening of synapses that constitute "noise" and preservation of the synaptic weights corresponding to "signal". This creates "space" in the brain to allow memorisation of new experiences during wakefulness. Exhaustionof synaptic plasticity by prolonged wakefulness might thus give rise to anterograde amnesia as exemplified by the cases we describe.

27. A three dimensional neuro-CBT model for mild-moderate brain injury

Authors: Dr Joanna Iddon, HCPC Registered Clinical Psychologist, PhD (Cantab) Clinical Neuropsychology/ Neuroscience, BABCP Accredited Cognitive Behaviour Therapist

Objective (i) To introduce a Neuro-Cognitive-Behavioural assessment framework and formulation model to guide the treatment of concussion, mild-moderate brain injury. (ii) To present the potential of these as automated, interactive computerised models, positively impacting on treatment quality and accessibility.

Method: A theoretical framework and three dimensional model integrating neuropsychological and cognitive behavioural principles and techniques have been developed by the author, initially as part of her CBT Diploma at King's College London. These have been used and developed within her own private clinical practice in formulating and treating patients and within the context of sports concussion assessments/treatment.

Results: The potential for the approach is illustrated through a number of single case examples. A RCT is being planned and funding / collaboration sought.

Conclusion: This novel, dimensional integrative approach highlights the future bidirectional potential of integrating neuroscientific and cognitive behavioural principles and techniques. This concept has broader potential in the context of improved treatments in neurological disorders and medically unexplained symptoms.

Members' Posters

28. Perspective Taking and Personal Distress in Tourette syndrome
Authors: Clare M. Eddy, Davide Martino, Andrea E. Cavanna
Objective: In Tourette syndrome (TS), multiple motor and vocal tics are frequently accompanied by complex tics with social significance, including imitation (echophenomena), and urges to perform socially inappropriate behaviours. Furthermore, previous studies have highlighted differences in the way individuals with TS reason about social and emotional information. In this study we explored whether TS may be characterised by differences in the tendency to adopt alternative perspectives and to relate emotionally to others in everyday life.
Method: We administered the Interpersonal Reactivity Index to a total of 155 adults, of whom 95 had TS and the remainder were healthy controls. Between-group comparisons were conducted separately for males and females, and within-group analyses explored whether any clinical features (tics, premonitory urges, symptoms of common co-morbid disorders) were linked to scale ratings.
Results: Both males and females with TS were found to exhibit a different Interpersonal Reactivity Profile to healthy gender-matched controls, which consisted of a reduced tendency to take the perspective of others, and elevated personal distress when faced with other people in crises. There were no group differences for the fantasy or empathic concern subscales. Personal distress ratings were strongly associated with tic severity and weakly related to attention problems.
Conclusion: The pattern of interpersonal reactivity ratings suggests that an elevated distress response to witnessing highly emotive situations may encourage a defensive strategy of reduced perspective taking in TS. These findings provide further evidence that TS is associated with changes in social cognition, as reflected in patients' self-reported everyday behaviour.

29.Subthalamic nucleus deep brain stimulation and apathy in patients with Parkinson's disease
Authors: Isabel Hindle Fisher, Hardev S. Pall, Rosalind D. Mitchell, Jamilla Kausar, Andrea E. Cavanna
Objective: Apathy has been reported as a possible adverse effect of deep brain stimulation of the subthalamic nucleus (STN-DBS). We investigated the prevalence and severity of apathy in 22 patients with Parkinson's disease (PD) who underwent STN-DBS and the effects on quality of life (QOL).
Method: All patients were assessed with the Lille Apathy Rating Scale (LARS), the Apathy Scale (AS) and the Parkinson's Disease Questionnaire and were compared to a control group of 38 patients on pharmacotherapy alone. The relationship between apathy and clinico-demographic variables was explored through correlation analysis.
Results: Apathy was reported by a similar proportion of patients in the two groups: 18.4% in the DBS group and 22.7% in the control group according to LARS ratings; 45.5% in the DBS group and 42.1% in the control group according to AS ratings. There was no significant difference in apathy or QOL ratings between the two groups. Significant correlations were observed between poorer QOL and degree of apathy, as measured by the LARS ($p < 0.001$) and AS ($p = 0.021$). PD-related disability also correlated with both apathy ratings ($p >< 0.001$ and $p = 0.017$, respectively). >
Conclusion: Our findings suggest that STN-DBS is not associated with changes in apathy in the PD population, as there was no difference in prevalence or severity of apathy between patients who had undergone STN-DBS and those on pharmacotherapy alone. More severe apathy was associated with a higher level of disability due to PD and worse QOL in PD but no other clinico-demographic characteristics.

30. Pre-surgical neuropsychiatric evaluation in Epilepsy surgery
Authors: Bruno Silva, Bernardo Barahona Correa
Objective: To describe a sample of patients being considered for Epilepsy surgery, in terms of psychopathology and quality of life.
Method: Sample: patients being considered for Epilepsy surgery and subjected to a pre-surgical neuropsychiatric assessment in the last 12 months, at Hospital Egas Moniz in Lisbon, Portugal.
Evaluation: unstructured psychiatric interview and history; MINI International Neuropsychiatric Interview; SCL-90-R Symptom Checklist; QOLIE-31 Quality of Life in Epilepsy Inventory; SDS Sheehan Disability Scale.
Results: 17 patients were included in this study, 7 male and 10 female. All patients had complex partial seizures. The most common etiology associated with refractory Epilepsy in this group was Mesial Temporal Sclerosis, as evidenced by neuroimaging studies. 9 patients were diagnosed with at least one mental disorder. The most common diagnostic groups were mood disorders and anxiety disorders. One patient was diagnosed with Delusional Disorder and two were diagnosed with a personality disorder. We found higher mean SCL-90-R scores for the Obsessive-Compulsive, Depression and Paranoid Ideation dimensions, and lower mean scores for the Phobic Anxiety, Psychoticism and Hostility dimensions. Lower mean scores were found in the Seizure Worry and Medication Effects dimensions of the QOLIE-31. The SDS revealed greater dysfunction in the Work domain.
Conclusion: Interictal psychopathology is frequent in patients with refractory Epilepsy: 24-35% develop mood and anxiety disorders and 6% develop psychotic disorders. 18-22% are diagnosed with a personality disorder. The prevalence of these disorders depends on the type of Epilepsy and associated brain lesions psychotic disorders, for instance, are more common in temporal lobe epilepsy. A pre-surgical neuropsychiatric evaluation is essential for the timely diagnosis and treatment of these disorders, which can influence the surgery outcomes and the successful management of the epileptic seizures. A possible association between certain psychopathological phenotypes and the anatomy of structural lesions in epilepsy remains understudied.

Members' Posters

31. Research Trends in Neuropsychiatry in the New Millennium

Authors: Harry Srirathan, Andrea E. Cavanna

Objective: Neuropsychiatry is a dynamic medical discipline, which is constantly evolving through emerging research. This study examined the research trends in neuropsychiatry as described by original research studies published since the new millennium in the most relevant journals in this field.

Method: A total of n=14,587 articles published between 2000 and 2013 were systematically screened from 10 neuropsychiatry journals, selected based on impact factor ranking. These included a total of n=7,395 relevant articles which were classified into three categories (Clinical Studies; Laboratory Studies; Service Evaluation, Classification and Historical Studies). Clinical Studies and Laboratory Studies were further classified into 13 domains according to research areas, and trends in each category and domain were analysed.

Results: Clinical Studies accounted for the highest proportion of neuropsychiatry research articles published since the new millennium (n=5,097; 68.9%), followed by Laboratory Studies (n=1,824; 24.7%) and Service Evaluation, Classification and Historical Studies (n=474; 6.4%). The most represented domains were Clinical Evaluation (n=3,093; 41.8%), Epidemiological (n=836; 11.3%) and Neuroimaging (n=764; 10.3%) studies. The proportion of Clinical Studies significantly increased between 2000 and 2013 (p=0.006), whereas the proportion of Laboratory Studies significantly decreased over the same time period (p=0.001).

Conclusion: This study confirms that neuropsychiatry is a quintessentially clinical discipline, with ever-increasing focus on phenomenological aspects, reflecting the centrality of clinical observations to the diagnostic process. Treatment domains were less well represented, possibly indicating unmet needs of the development of new therapeutic options. Further qualitative research will be most valuable in evaluating the research trends identified in this study.

32. An audit of the management of epilepsy in children and young people with intellectual disabilities

Authors: Dr Ashley Liew, Consultant Paediatric Neuropsychiatrist, Birmingham Children's Hospital NHS Foundation Trust

Objective: To assess the management of epilepsy in children and young people with intellectual disabilities, against quality standards published by the National Institute for Health and Care Excellence (NICE) and the International League against Epilepsy (ILAE).

Method: 276 case notes from a large CAMHS Learning Disabilities service were audited to identify patients with a current diagnosis of epilepsy. Data collected included: (a) demographics, (b) epilepsy type, (c) seizure control, (d) prescribed medication, (e) professionals involved, and (f) psychiatric diagnoses. Descriptive statistics were computed.

Results: 38 patients from the service were identified as having epilepsy. 21 (55%) patients were of male gender. The predominant seizure type was focal seizures affecting 26 patients (68%). 28 (74%) patients were on 1 anti-epileptic medication, but notably there were 6 (16%) patients on 3 or more anti-epileptic medications. 26 (68%) patients had more than 1 psychiatric diagnosis, and 34 (89%) patients were prescribed psychotropic medication. 24 (63%) patients were reviewed regularly by a Paediatric Neurologist. It was unclear which professional was reviewing the epilepsy management in 2 (5%) patients. 4 (11%) patients had a joint Neurology and Psychiatry review within the last 12 months.

Conclusion: Children and young people with intellectual disabilities have higher rates of epilepsy compared to the general population. The nature of their epilepsy tends to be more difficult to diagnose and treat. Despite both NICE and ILAE guidelines recommending that care be delivered for this group of patients in a tertiary neurology centre, preferably with joint management between a neurologist and psychiatrist; this was a rarity in the audited population. Several actions are proposed to improve the quality of epilepsy care in this group of patients.

33. The Neuroanatomy of Secondary Bipolar Disorder

Authors: Bernardo Barahona-Correa, Ricardo Ribeiro

Objective: Bipolar disorder (BPD) is an affective disorder marked by recurrent episodes of depressive or euphoric mood. It affects 1.5% to 4.5% of the population and has a heritability of 60-80%. The neurobiology of BPD appears to revolve around a disconnection between ventral prefrontal cortical areas and the amygdala and other subcortical limbic structures. Although secondary BPD is classically attributed to predominantly right-sided, ventral frontal lesions, there is surprisingly little evidence supporting this well-established notion. The current work aims at mapping the neuroanatomy of secondary BPD and finding anatomical "hotspots" common to all or most secondary BPD cases.

Method: Subjects: patients with a clear cut history of bipolar mood swings starting after or concomitantly with a focal brain insult. Patients must have suffered at least one discrete episode of mood elevation that meets DSM-V criteria for manic or hipomanic episode.

Data collection: all subjects will undergo structural 1.5 T MRI. Images from all the patients will be matched to a healthy subject's brain and will then be loaded into a specific computer software for 3-D brain reconstruction.

Results: This is an ongoing project. Eight patients have been studied so-far. Four of them had right-hemisphere lesions involving dorsal fronto-parietal areas. The other patients had more extensive right-hemisphere lesions involving this and other more frontal and ventral areas.

Conclusion: Secondary BPD patients may reveal brain areas with an important role in the pathophysiology of primary BPD. The study of these patients provides a clear chronological link between structural change and behavioural change, and may revel potential targets for non-invasive neuromodulatory treatment in primary BPD

Members' Posters

34. The Role of Novelty in Risk Seeking Behaviour

Authors: Dr Simon Mitchell, Dr. Jennifer Gao, Dr. Mark Hallett, Dr Valerie Voon

Aims: Novelty preference or sensation seeking is an important trait related to initiating and maintaining risky behaviours, including substance abuse. Here we introduce a novel or familiar prime (image) preceding a risk choice and focus on behavioural and imaging correlates to the prime that might predict risk seeking in healthy volunteers. We aim to investigate whether novel or familiar primes affect judgments of risk. We hypothesize that subjects would be more risk seeking following a novel relative to familiar stimulus and that subjects who are more novelty seeking will have increased striatal and hippocampal activity to the novel stimulus.

Methods: We adapted a risk-taking task involving acceptance or rejection of a 50:50 choice of gain or loss which was preceded by a familiar (pre-test familiarization) or novel face prime. Neutral expression faces of males and females from The Karolinska Directed Emotional Faces database were used as primes. Subjects were tested behaviourally and scanned using functional MRI as they were performing a different version of the same task.

Results: Twenty-four healthy volunteers were recruited for the behavioral study and eighteen for the fMRI study. We show enhanced risk taking following novel relative to familiar images and particularly for the low gain condition. Subjects had faster reaction times to the prime when accepting rather than rejecting the risky choice. We further show that right putamen activity to novel versus familiar primes were positively correlated with risk taking choices

Conclusions: Novelty appears to have a contextually enhancing effect on augmenting risky choices possibly mediated via putaminal activity. These findings highlight the role of context in risk taking and have important implications for a wide range of behaviours including substance abuse.

35.Disrupted complex brain network properties in obese subjects

Authors: Kwangyeol Baek, Laurel Morris, Valerie Voon
Department of Psychiatry, University of Cambridge

Objective: Obesity and binge eating disorder have been suggested to be associated with impulsivity and disruption on the cortico-striatal brain network. Here we aimed to examine global network structure in resting state brain of obese subjects with and without binge eating disorder (BED) compared to healthy controls.

Method: Multi-echo resting state BOLD fMRI scans were taken from 42 obese subjects (including 21 patients with BED; BMI > 30) and 42 age-matched healthy controls in normal range of BMI for 10 minutes using 3T Siemens MRI scanner. Non-BOLD noises in the resting stat fMRI data was removed using Multi-Echo Independent Component Analysis (ME-ICA) pipeline, and functional connectivity in 90 ROIs of the Anatomical Automatic Labeling template was estimated using zero-lag cross-correlation. The functional connectivity weights were binarized with the density threshold (5~30%) and complex network properties such as local and global efficiency, assortativity and modularity was computed.

Results: Both obese subjects with and without binge eating disorder were significantly different from healthy controls in normal BMI ranges in complex brain network properties, but did not differ from each other. Both obsese groups are collapsed in the subsequent analysis and compared to healthy controls. Obese subjects were significantly reduced local and global efficiency compared to healthy controls, implying disrupted small-world network properties in brain networks of obese subjects. Modularity of resting state brain network was also decreased in obese subjects. Among regions of a priori interests, bilateral putamen exhibited reduced functional connections (degree) and local efficiency in obese subjects. Local efficiency was also deceased in bilateral insula in low density network (< 15% density). Right caudate and putamen showed increased betweeness-centrality in obese subjects, implying their augmented role as connecting hubs in the resting state brain network. In Region-to-Region functional connectivity, obese subjects exhibited reduced functional connectivity in the putamen, pallidum, thalamus and caudate

Conclusion: Small-world and modular structure of resting state brain network was disrupted in obese subjects compared to healthy subjects, suggesting less functional segregation and integration in their brains. Disrupted cortico-striatal network is implicated in these global change of resting state brain in obese subjects.

Members' Posters

36. Neural Correlates of Waiting Impulsivity: A Dimensional Approach to Alcohol Misuse

Authors: Laurel S Morris, Prantik Kundu, Kwangyeol Baek, Michael A Irvine, Daisy J Mechelmans, Jonathan Wood, Neil A Harrison, Trevor W Robbins, Edward T Bullmore, Valerie Voon Addenbrooke's Hospital, Cambridge CB20QQ

Objective: Why do we "jump the gun", speak out of turn, or run a red light? Waiting and stopping are fundamental mechanisms of behavioural control. Here we assess waiting impulsivity, or anticipatory premature responding before target onset, dimensionally across social drinkers, binge drinkers, and alcohol use disorders. We further focus on the characterization of neural correlates underlying waiting impulsivity in healthy volunteers. Special interest falls on the subthalamic nucleus (STN), a major relay structure within the indirect inhibitory pathway of striatal circuitry which also receives hyper-direct projections directly from cortical regions. This rich convergence of cortical inputs together with its principal gating of basal ganglia output implicates the STN as a crucial mediator of more complex control of motor and cognitive function.

Method: Towards a multi-faceted investigation of waiting impulsivity, we examined its neural correlates using a novel 4-choice serial reaction time task (4-CSRT), tested off-line, and differentiated that network from another underlying well-characterized form of motor impulsivity measured using the stop-signal task. To examine the intrinsic neural correlates of waiting and stopping, we use multi-echo resting state fMRI sequence and independent components analysis (ME-ICA) which has been shown to have up to four-fold enhancements in signal-to-noise ratio relative to conventional fMRI scans. Using machine learning classification, we explored the extent to which STN network connectivity would allow for classification of binge drinkers (BD) and those with alcohol use disorders (AUD) from healthy volunteers. For robust data-driven classifications between groups, we used a support vector machine. Supervised machine learning methods such as support vector machines provide robust characterizations at the individual rather than group level. Its use in classification of neuroimaging data is emerging, with studies demonstrating applications based on structural and functional data, supporting its potential as a diagnostic tool with high translational relevance.

Results: We show that greater premature responding in humans using the novel 4-CSRT task is associated with decreased intrinsic connectivity in a network involving bilateral STN, bilateral subgenual cingulate and right ventral striatum. These findings are dissociable from motor response inhibition or action cancellation as captured by the SSRT, which was associated with lower connectivity between hyper-direct projections of the right pre-SMA and left STN along with dorsal caudate and STN connectivity. We further show translational potential of these findings in alcohol misuse. In young adult BD subjects at greater risk for subsequent alcohol use problems, there was enhanced premature responding relative to matched healthy volunteers. Furthermore, in healthy social drinkers (healthy volunteers), we show that the degree of alcohol severity correlates negatively with connectivity between the bilateral STN and subgenual cingulate. Using machine learning predictive classification, the degree of STN connectivity predicted the differentiation of BD and AUD from social drinkers (healthy volunteers).

Conclusion: Our findings implicate dissociable parallel functional systems of the corticostriatal pathway and hyper-direct connections in modulating waiting and stopping. Our findings support a dimensional approach towards alcohol misuse from heavy social drinking to young adult binge drinkers to AUD and suggest the neural correlates of premature responding may be endophenotypic markers of alcohol misuse.

37. Cautious decision making in Obsessive-Compulsive Disorder: the role of perceptual uncertainty and implicit incentives

Authors: Paula Banca, Martin D Vestergaard, Vladan Rankov, Kwangyeol Baek, Simon Mitchell, Tatyana Lapa, Miguel Castelo-Branco and Valerie Voon

Department of Psychiatry, University of Cambridge, Addenbrooke's Hospital

Objective: The compulsive behaviour underlying Obsessive-Compulsive Disorder (OCD) may be related to abnormalities in decision-making. The inability to commit to ultimate decisions, e.g. patients unable to decide whether their hands are sufficiently clean, may reflect failures in accumulating sufficient evidence prior to a decision. Here we investigate the process of evidence accumulation in OCD in perceptual discrimination, hypothesizing enhanced evidence accumulation relative to healthy volunteers.

Method: Twenty-eight OCD patients and 35 healthy control subjects were tested with a low-level visual perceptual task (random dot motion task), whereby different coherent levels for motion were defined to measure high and low uncertainty, and two response conflict tasks as control tasks (flanker task and probabilistic selection task). Logistic regression analysis across all coherence levels (which accounted for visual detection threshold) and hierarchical drift diffusion modelling (HDDM) were used to characterize response strategies between patients with OCD and healthy controls in the random dot motion task.

Results: Patients required more evidence under high uncertainty perceptual contexts, as indexed by longer response time and higher decision boundaries. HDDM, which defines a decision when accumulated noisy evidence reaches a decision boundary, further showed slower drift rate towards the decision boundary reflecting poorer quality of evidence entering the decision process in patients under low uncertainty. With monetary incentives emphasizing speed, patients decreased the decision thresholds relative to controls, accumulating less evidence in low uncertainty. These findings were unrelated to visual perceptual deficits and response conflict.

Conclusion: This study provides evidence for impaired decision-formation processes in OCD, with a differential influence of high and low uncertainty contexts on evidence accumulation (decision threshold) and on the quality of evidence gathered (drift rates). It further emphasizes that OCD patients are sensitive to monetary incentives heightening speed in the speed-accuracy tradeoff, improving evidence accumulation and shifting away from pathological internal monitoring. These findings may have relevance for therapeutic approaches.

Members' Abstracts

Why authors use Multiple Sclerosis in novels, plays and short stories?

Marta Elian MD

Bellers- Letters (fiction) reflects a real life- a concept widely accepted.
MS is a relatively new disease probably first described in 1843 by an English aristocrat Sir Augustus C'Este'. Earlier description of symptoms typical of MS such as Lidwina Von Schiedan of Holland 1880-1933 are considered doubtful.
In order to indentify fictional characters suffering from MS I have first – in 1996- used literary works similar to me; later the internet was searched.
After locating fictional people with MS I have written to the authors themselves or to their publishers inquiring the reason they used MS.
Several of my enquiry letters remained unanswered possibly undelivered- (attempts are now made to obtain the authors correct personal addresses). Sadly one playwright died before answering.
It was encouraging to have received several detailed answers including from some quite famous authors. One took the initiative and telephoned me personally a wonderful opportunity for meaningful discussion.
It emerged that several authors have personally known a family member or a close friend suffering from MS and found it convenient to use first- hand information.
Other authors admitted when a chronic non-fatal disease was needed for a plot- MS was the obvious choice of our times.
A century ago Tuberculosis and Gout were fashionable diseases used in literature when a chronic non-fatal condition was needed. Tuberculosis and Gout are now treatable. Is Multiple Sclerosis more suitable for our times and replaced them?
Started at the end of the first millennium this work is still in progress.

A positive diagnosis of functional (psychogenic) tics

Authors: Benedetta Demartini, Lucia Ricciardi, Isabel Parees, Christos Ganos, Kailash P Bhatia, Mark J Edwards

Objective: Functional tics, also called psychogenic tics or pseudo-tics, are difficult to diagnose because of the lack of diagnostic criteria and their clinical similarities to organic tics. The aim of the present study was to report a case series of patients with documented functional tics and to describe their clinical characteristics, risk factors and psychiatric comorbidity. We also suggest clinical tips which might help the differential diagnosis in clinical practice.
Method: All the patients diagnosed with functional tics between January 2011 and October 2013 in the movement disorders clinic and in the Tourette clinic of the National Hospital for Neurology and Neurosurgery (NHNN), London were reviewed.
Results: We included 11 patients (mean age at onset 37.2, SD 13.5; three females) with a documented or clinically established diagnosis of functional tics, according to consultant neurologists who have specific expertise in functional movement disorders or in tic disorders. Adult onset, absent family history of tics, inability to suppress the movements, lack of premonitory sensations, absence of pali-, echo- and coprophenomena, presence of blocking tics, the lack of the typical rostrocaudal tic distribution and the coexistence of other functional movement disorders were common in our patients.
Conclusion: Our data suggest that functional tics can be differentiated from organic tics on clinical grounds, though we also accept that this distinction can be difficult in certain cases. Clinical clues from history and examination described here might help to identify patients with functional tics.

Misinterpretation of emotional facial expressions in patients diagnosed with Dissociative Seizures: experimental evidence

Authors: Susannah Pick, John D.C. Mellers & Laura H. Goldstein

Objective: Research has shown that individuals with Dissociative Seizures (DS) disproportionately allocate attention to angry faces. Behavioural avoidance of such stimuli has also been reported. Previous studies have included emotional faces that are processed implicitly, or at a preconscious level. However, as yet there have been no specific experimental studies of subjective/explicit responses to consciously perceived facial emotion. The aim of this study was to examine subjective responses to consciously perceived emotional facial expressions in patients with DS, using experimental methods.
Method: The study employed a cross-sectional between-groups design. The performance of 40 patients with DS was compared to that of a non-clinical control group (n = 43). Participants completed a computerised test of facial expression recognition, in which standardised pictures of facial emotion (happiness, anger, disgust, fear, neutral) were presented individually and participants were required to select the matching emotion label (from those listed above). Each face was also rated for the intensity of the emotion displayed on a Likert scale (0-7).
Results: After controlling for possible confounding variables (e.g. education, anxiety, depression), there was an overall effect of group on accuracy, with the DS group performing significantly worse than the control group. However, a lack of group by expression interaction suggested that the deficit was not specific to any single emotion in the DS group. No group effect was observed for ratings of intensity. The observed deficit in recognition accuracy could not be accounted for by group differences in IQ, general facial processing abilities or short-term visual memory.
Conclusion: The findings indicate that individuals who experience DS find facial emotional cues difficult to interpret and categorise, despite perceiving the intensity of the emotion accurately. This could lead to instances in which the emotional states of others could be misinterpreted. Such a difficulty may be linked to problems in interpersonal relationships, and therefore, could play an important aetiological role in triggering individual seizures and/or perpetuating the disorder.

Members' Abstracts

Symptom severity in patients with functional (psychogenic) movement symptoms: patient's perception and doctor's clinical assessment.

Authors: Ricciardi Lucia, Demartini Benedetta, Morgante Francesca, Parees Isabel, Nielsen Glenn, Edwards Mark.

Objective: Beliefs and expectations about symptoms and an abnormal direction of attention towards the body have been proposed as important mechanistic factors in the pathophysiology of functional motor symptoms (FMS). We therefore aimed to evaluate patients' awareness/perception of the presence and severity of their own symptoms before and while watching themselves in a video and to compare this with doctors' assessment of the presence and severity of FMS, based on video evaluation.

Method: We evaluated 16 patients affected by FMS. Patients were invited to give a "subjective evaluation" of their symptoms. Afterwards, patients were invited to watch a video of themselves and to judge the presence of symptoms in the different body parts, the presence of gait and speech disorders and, if so, to rate the severity. Patients' videos were also assessed by a rater with expertise in FMS (the rater was asked to evaluate the symptoms and to judge the presence of FMS in different body parts).

Results: A significant difference between the patient's pre-video and the video-based evaluations as for total severity score ($p=0.002$; $t=3.656$) was found. In addition, patients scored higher in total severity score to their own symptoms ($p<0.001$, $t=4.860$) as compared to the rater. No significant difference was revealed between the total severity score of the patient's video-based subjective evaluation and the total severity score assigned by the rater ($p=0.017$, $t=2.962$ with p set at 0.016) according to Bonferroni correction.>

Conclusion: Our study shows that patients with FMS tend to overestimate the severity of their symptoms compared to the doctor's esteem. However, when their symptoms were presented in a video and they were asked to rate them, their rates did not differ from the doctor views.

Resting cortical PET metabolic changes in psychogenic non-epileptic seizures (PNES)

Authors: Arthuis M, Micoulaud-Franchi JA, Bartolomei F, McGonigal A, Guedj E5

Objective: Pathophysiology of psychogenic non-epileptic seizures (PNES) is poorly understood. Functional neuroimaging data in various functional neurological disorders increasingly support specific neurobiological dysfunction. However to date no studies have been reported of positron emission tomography in patients presenting PNES. We aimed to examine resting state cerebral metabolism using 2-deoxy-2-[fluorine-18]fluoro-D-glucose positron emission tomography (18FDG-PET) in patients presenting PNES.

Method: Sixteen patients being evaluated in a specialist epilepsy centre underwent18FDG-PET because of suspected intractable epileptic seizures. However in all patients the diagnosis was subsequently confirmed to be PNES with no co-existing epilepsy. 18FDG-PET was also performed in 16 healthy controls. A voxel by voxel inter-group analysis was performed to look for significant differences in interictal (resting state) cerebral metabolism. In addition, metabolic connectivity was studied using voxel-wise interregional correlation.

Results: In comparison to healthy subjects, group analysis of patients with PNES exhibited significant PET hypometabolism within the right inferior parietal and central region, and within bilateral anterior cingulate cortex. Significant increase in metabolic correlation was found in patients with PNES, in comparison to healthy subjects, between right inferior parietal/central region and bilateral cerebellum, and between bilateral anterior cingulate cortex and left parahippocampal gyrus.

Conclusion: This is the first study describing FDG-PET alterations in PNES patients. Although we cannot exclude that our data reflect changes due to co-morbidities, they may indicate dysfunction of neural systems in patients with PNES. Hypometabolism regions might relate to two of the pathophysiological mechanisms that may be involved in PNES, i.e. emotional dysregulation (anterior cingulate hypometabolism) and dysfunctional processes underlying consciousness of self and environment (right parietal hypometabolism).

Members' Abstracts

A brief psycho-education intervention for patients with non-Epileptic Attack Disorder (NEAD)

Authors: Wiseman, H; Brown R; House, A; Howlett, S; Reuber, M

Objective: We describe the roll-out of a brief psycho-education intervention for individuals with non-Epileptic Attack Disorder (NEAD), which has been developed for healthcare professionals with limited experience in delivering psychological treatments.

Method: The psycho-education package is comprised of four one-to-one sessions. The first session provides an explanation of the NEAD diagnosis and introduces the patient to idea that mind and body are linked. The second session teaches behavioural strategies for controlling seizures, including sensory grounding, relaxation and imagery. The third session focuses on identifying and reducing avoidance behaviours that may have been adopted due to seizure symptoms. The final session focuses on values and going forward. Eighteen nurses and therapists attended a training to deliver this package. The two day training intervention included lectures and interactive workshops with actors. The initial roll out stage involved fourteen NHS trusts across the country. Ten months following training, therapists were asked to complete a survey to assess the extent they used this intervention and that they found it to be relevant, comprehensive, and sufficient. Patients with NEAD who attended for psycho-education were also asked to complete pre and post questionnaires including the following measures; Work and Social Adjustment scale (WSAS), Brief Illness Perception Questionnaire (Brief IPQ), Clinical outcomes in routine evaluation (CORE) and the EuroQoL-5D3L and NewQOL quality of life measures.

Results: Since the training, the package has been delivered in four centres. Recruitment and data collection are ongoing. Preliminary analysis of the pre and post participant data shows that following intervention, participants viewed their seizures as significantly less threatening (IPQ, $p = .002$), and reported significantly less distress (CORE, $p = .01$) The collection of therapist feedback about the use of the intervention is ongoing.

Conclusion: It is feasible for healthcare professionals with minimal training in psychological intervention to deliver a brief psycho-education package for individuals with NEAD. Further analysis is needed to understand the full effectiveness of this intervention but preliminary results show that this intervention may have positive effects on the way individuals view their seizures and on their overall wellbeing.

Effect of CNTNAP2 Polymorphisms on Cerebral Response to Human Voice Perception and Handedness: An fMRI Study

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Objective: Contactin-associated protein-like2 (CNTNAP2) is one of the risk markers in the pathogenesis of language impairment and thought disturbance, such as autism spectrum disorders and schizophrenia. Although recent neuroimaging studies have demonstrated that CNTNAP2 polymorphisms affect left-hemispheric function of language processing, no study has investigated the influence of these polymorphisms on right-hemispheric function involved in human voice perception, and handedness. We investigated whether CNTNAP2 polymorphisms (rs7794745 and rs2710102) affect voice-specific brain function and handedness.

Method: One hundred and eight healthy Japanese volunteers (74 right-handed and 34 non-right-handed) had their brain function examined while they were passively listening to reverse sentences (rSEN), identifiable non-vocal sounds (SND), and sentences (SEN). The study protocol was approved by Ethics Committee. After complete explanation of the study, written informed consent was obtained from all subjects. Data analysis of fMRI was performed with statistical parametric mapping software SPM8. Genomic DNA samples were extracted from peripheral blood using standard procedures. Since these SNPs are known as biological high-risk markers for ASD, epilepsy, mental retardation, schizophrenia, and cognitive impairment, we investigated the genotype of brain function in these 2 SNPs: (rs7794745 and rs2710102) in CNTNAP2. The genotyping of all subjects was determined in comparison with control DNA confirmed by sequencing in the SNP pattern. Genotype of rs7794745 is A/A, A/T, and T/T; that of rs2710102 is G/G, G/A, A/A. The genotypes were classified into A/A and A/T in rs7794745, and G/G and A carriers (G/A and A/A) in rs2710102, respectively.

Results: In full factorial design analysis, rs7794745 (A/A or A/T) Ã— rs2710102 (G/G or A carrier (A/G and A/A)) Ã— voice-specific response (rSEN or SND), the main effect of rs7794745 (A/A or A/T) was significantly revealed at the right middle frontal gyrus (MTG) and bilateral superior temporal gyrus (STG). This result suggests that rs7794745 genotype impacts on voice-specific brain function. Furthermore, interaction effect was significantly observed among MTG-STG activations by human voice perception, rs7794745 (A/A or A/T), and handedness.

Conclusion: CNTNAP2 polymorphisms could be one of the remarkable biomarkers verifying genetic influence in voice-specific brain function and handedness in psychiatric disorders.