AUTUMN MEETING OF THE BRITISH NEUROPSYCHOLOGICAL SOCIETY

Thursday 2nd November 2017

Clinical Neurosciences Centre, 33 Queen Square, London, WC1N 3BG

Online Registration and Payment:
To help us organise the catering, please let us know if you intend to come to the meeting. This applies both to members and non-members. Simply fill in the form here:
http://www.the-bns.org/registration.html

The meeting is FREE for members of the BNS. Non-members are requested to pay in advance preferably using PayPal (at the link above) or by cheque payable to 'British Neuropsychological Society' and sent to Dr Sarah E. MacPherson, Department of Psychology, The School of Philosophy, Psychology and Language Sciences, University of Edinburgh, 7 George Square, Edinburgh, EH8 9JZ; sarah.macpherson@ed.ac.uk). The cost is £15/€17 for students and unwaged participants, £25/€30 for all others. Early registration closes two weeks prior to the meeting but you can also pay on the door (at the higher rate of £30).

Drinks reception
A drinks reception will immediately follow the end of the meeting in the foyer outside of the lecture theatre.

Abstracts
Abstracts for all presentations at http://www.the-bns.org/meetings.html

PROGRAMME

Thursday 2nd November

8.30 **REGISTRATION OPENS**

9.10 **Welcome**
From Julie Snowden (*President, BNS*)

9.20 **A systematic review of validated screening methods for cognitive and behavioural change in Amyotrophic Lateral Sclerosis/Motor Neuron Disease**
Natalie Simon[1,2], Laura H. Goldstein[2]
[1] GKT School of Medical Education, Guy's Campus, King's College London, UK; [2] King's College London, Institute of Psychiatry, Psychology and Neuroscience, UK

9.40 **Multidimensional Apathy and Executive Dysfunction in Amyotrophic Lateral Sclerosis**
Ratko Radakovic[1]
[1] University of East Anglia and University of Edinburgh, UK

10.00 **The Influence of Family Communication on Everyday Executive Performance in 4-to-6-year-old Children**
Emma Cullen[1], Michelle Downes[1]
[1] School of Psychology, University College Dublin, Ireland

10.20 **Cross-situational word learning reduces forgetting in Mild Cognitive Impairment and Alzheimer's disease**
Gemma E. Campbell[1], Naji Tabet[2], Jessica S. Horst[1], Chris M. Bird[1]
[1] School of Psychology, University of Sussex, UK; [2] Centre for Dementia Studies, Brighton and Sussex Medical School, UK

10.40 **POSTER SESSION**
with tea and coffee

11.10 **Saying it that way makes us closer: neural measures of the role of affective prosody in empathy toward others' pain**
Federica Meconi[1], Mattia Doro, Arianna Schiano-Lomoriello, Giulia Mastrella, & Paola Sessa
[1] School of Psychology, University of Birmingham, UK

11.30 **Typical and atypical patterns of pro-social prospective memory in autism spectrum disorder: an fNIRS study**
Paola Pinti[1], D. Perpetuini[2], M. Buseman[3], J. Crum[4], L. Carnegie-Peake[1], D. Paoletti[4], A. Merla[2], A. Postma[3], A. Hamilton[4], I. Tachtsidis[1], P. Burgess[4]
[1] Department of Medical Physics and Biomedical Engineering, University College London; [2] Department of Neuroscience, Imaging and Clinical Sciences, University of Chieti-Pescara; [3] Helmholtz Institute, Experimental Psychology, Utrecht University; [4] Institute of Cognitive Neuroscience, Alexandra House, University College London

11.50 **Modulation of amygdala response by cognitive conflict in threat-reactive adolescents with conduct problems**
Catherine L. Sebastian[1], Jean Stafford[2], Eamon J. McCrory[2], Arjun Sethi[2], Stephane A. De Brito[3], Patricia L. Lockwood[4], Essi Viding[2]
[1] Royal Holloway, University of London, UK; [2] University College London, UK; [3] University of Birmingham, UK; [4] University of Oxford, UK

12.10 **Embodiment and the size-weight illusion**
Gavin Buckingham[1]
[1] Department of Sport and Health Sciences, University of Exeter, UK

12.30 **LUNCH BREAK**
Lunch is not provided

13.15 **POSTER SESSION**

14.00 **Elizabeth Warrington Prize Lecture**
Iroise Dumontheil
Department of Psychological Sciences, Birkbeck, University of London, UK

14.50 **Break and awarding of prizes**

SYMPOSIUM: Understanding cognition through its typical and atypical development

15.00 **Prof. Christopher Jarrold**, School of Experimental Psychology, University of Bristol;

15.40 **Prof. Ian Apperly**, School of Psychology, University of Birmingham;

16.20 **Prof. Francesca Happé**, MRC Social, Genetic, and Developmental Psychiatry Centre, Institute of Psychiatry, Psychology, and Neuroscience, King's College London;

17.00 **General Discussion**

17.20 **Closing remarks**

17.30 **DRINKS RECEPTION** *in the foyer*

ABSTRACTS FOR OPEN PAPERS

Oral Presentations

A systematic review of validated screening methods for cognitive and behavioural change in Amyotrophic Lateral Sclerosis/Motor Neuron Disease

Natalie Simon[1,2], Laura H. Goldstein[2]
[1] GKT School of Medical Education, Guy's Campus, King's College London, UK; [2] King's College London, Institute of Psychiatry, Psychology and Neuroscience, UK

Several screening tools have been developed to detect cognitive and/or behavioural change in Amyotrophic Lateral Sclerosis (ALS). Our systematic review set out to critically appraise published data pertaining to the validation of six ALS-specific screening tools : The Edinburgh Cognitive and Behavioural ALS Screen (ECAS), The ALS Cognitive Behavioural Screen (ALS-CBS), The Motor Neurone Disease Behavioural Scale (MiND-B), The Frontal Behavioural Inventory ALS Version, The ALS Frontotemporal Dementia Questionnaire (ALS-FTD-Q) and The Beaumont Behavioural Inventory (BBI). A MEDLINE, EMBASE and PsycINFO search yielded 14 eligible studies for review. Strongest evidence for clinical validity came from the ECAS and ALS-CBS when measuring cognitive change. For behavioural change, data suggested greater sensitivity for the BBI than the ALS-FTD-Q when detecting mild impairment.

Multidimensional Apathy and Executive Dysfunction in Amyotrophic Lateral Sclerosis

Ratko Radakovic[1]
[1] University of East Anglia and University of Edinburgh, UK

Initiation apathy (a lack of motivation for self generation of thoughts) and cognitive dysfunction are prominent symptoms of Amyotrophic lateral sclerosis (ALS). This study aimed to investigate the cognitive underpinnings of apathy subtypes in ALS. ALS patients (N = 30), and healthy matched controls (N = 29) were recruited and completed the Dimensional Apathy Scale, to quantify apathy subtypes, an ALS specific cognitive screen and a comprehensive neuropsychological battery. The results showed that increased Initiation apathy was the only significantly elevated subtype in ALS, which was found to be significantly associated with the verbal fluency deficit. This is the first study to show specific associations between apathy subtypes and cognitive dysfunction, indicating possible distinct underlying mechanisms to these demotivational symptoms.

The Influence of Family Communication on Everyday Executive Performance in 4-to-6-year-old Children

Emma Cullen[1], Michelle Downes[1]
[1] School of Psychology, University College Dublin, Ireland

Introduction: There is limited knowledge on how family functioning can influence the development of executive skills in early childhood. The present study examines the relation between family functioning and everyday executive performance in young children. Method: Children (N=103, M= 5.22, SD= 0.67) were assessed using the Preschool Executive Task Assessment, a behavioural measure of executive functioning at school. Parents completed the Systematic Clinical Outcome Routine Evaluation 28 to assess family functioning. Results: Executive performance was related to family functioning with family communication in particular driving this relation. Conclusions: Results highlight the importance of positive family communication in the development of executive skills and the need for the development of family communication interventions for at-risk children.

Cross-situational word learning reduces forgetting in Mild Cognitive Impairment and Alzheimer's disease

Gemma E. Campbell[1], Naji Tabet[2], Jessica S. Horst[1], Chris M. Bird[1]
[1] School of Psychology, University of Sussex, UK; [2] Centre for Dementia Studies, Brighton and Sussex Medical School, UK

Cross-situational learning is where new word-object associations are gradually acquired across learning events that are each individually ambiguous. The current study investigated learning and retention via (1) cross-situational learning, and (2) straightforward paired-associate learning, in a mixed group of individuals with MCI and Alzheimer's disease (AD) as well as a group of healthy age-matched controls. In both groups the learning rates and the number of associations learnt were the same under both learning conditions, although the performance of the patients was lower than the controls. After a retention period of an hour, the controls showed equivalent rates of forgetting cross both conditions.

However, the patients forget significantly fewer words that had been learnt under cross-situational learning. These findings suggest that cross-situational learning leads to improved retention for AD and MCI patients.

Saying it that way makes us closer: neural measures of the role of affective prosody in empathy toward others' pain

Federica Meconi[1], Mattia Doro, Arianna Schiano-Lomoriello, Giulia Mastrella, & Paola Sessa
[1] School of Psychology, University of Birmingham, UK

Affective prosody clarifies the intentions and the meaning of the speech. It has a dual-nature, pre-verbal on one side but accompanying semantic content on the other. Emotional communication integrates affective prosodic and semantic components of speech and speaker's facial expression. This allows powerful communication in contexts of potential urgency such as when witnessing speaker's physical pain. We recorded event-related potentials (ERPs) elicited by neutral/painful faces preceded by utterances varying as a function of semantic content intelligibility (participants' mother tongue vs. a fictional language) and affective prosody (neutral vs. painful). We found that affective prosody may interact with both facial expressions and semantic content in two temporal windows when empathizing with others' pain, supporting its role as a transverse communication cue.

Typical and atypical patterns of pro-social prospective memory in autism spectrum disorder: an fNIRS study

Paola Pinti[1], D. Perpetuini[2], M. Buseman[3], J. Crum[4], L. Carnegie-Peake[1], D. Paoletti[4], A. Merla[2], A. Postma[3], A. Hamilton[4], I. Tachtsidis[1], P. Burgess[4]
[1] Department of Medical Physics and Biomedical Engineering, University College London; [2] Department of Neuroscience, Imaging and Clinical Sciences, University of Chieti-Pescara; [3] Helmholtz Institute, Experimental Psychology, Utrecht University; [4] Institute of Cognitive Neuroscience, Alexandra House, University College London

The neural correlates of time-based prospective memory (PM) were explored while participants either earned money for themselves or another person, and either worked alone or were accompanied by an observer. Participants were adults with autism spectrum condition (ASC; n=24) and were compared to IQ-matched typically developed adults (TD; n=25). Non-invasive monitoring with functional Near Infrared Spectroscopy (fNIRS) showed greater activation in left and medial PFC in the ASCs when earning money for themselves, and the TDs showed increased brain activity when they were accompanied, compared with working alone. The ASDs did not show this effect. These results occurred despite no performance differences between the groups, and demonstrate the utility of fNIRS in examining differences in social cognition in ASD.

Modulation of amygdala response by cognitive conflict in threat-reactive adolescents with conduct problems

Catherine L. Sebastian[1], Jean Stafford[2], Eamon J. McCrory[2], Arjun Sethi[2], Stephane A. De Brito[3], Patricia L. Lockwood[4], Essi Viding[2]
[1] Royal Holloway, University of London, UK; [2] University College London, UK; [3] University of Birmingham, UK; [4] University of Oxford, UK

Adolescents with threat-reactive conduct problems display hyperactive amygdala response to facial fear. However, it is unknown whether amygdala response to fear in this group shows the typical pattern of modulation by cognitive load. Here, we present fMRI data from a cognitive conflict task in which the requirement to visually scan fearful faces was held constant across low and high levels of cognitive conflict (load) in 17 threat-reactive adolescent males with conduct problems (CP) and 18 typically developing (TD) controls. TD adolescents showed the typical pattern of attenuated right amygdala response to fear under high (relative to low) conflict, while threat-reactive adolescents with CP showed the reverse pattern, suggesting atypical modulation of amygdala response as a function of task demands.

Embodiment and the size-weight illusion

Gavin Buckingham[1]
[1] Department of Sport and Health Sciences, University of Exeter, UK

We use our hands to manipulate our environment and experience non-visible properties of objects such as weight. Little is known, however, about how our embodiment of an end-effector affects our perceptual expertise and subsequent experience of how heavy an object is. Here, in the context of the size-weight illusion, we examined how weight perception varies across hands, feet, tools, and

prosthetic limbs. We find that the experience of an object's weight is affected differentially depending on what is used to lift it, noting a surprising dissociation between the perception of real and illusory weight differences when lifting with prosthetic hands. These findings offer insights into how embodiment may affect how tools are incorporated into our body schema for sensorimotor tasks.

Poster presentations

Reconfiguration of the semantic and default mode networks induced by variations of semantic context during comprehension of written narratives

Francesca Martina Branzi[1], Gina F. Humphreys[1], Paul Hoffman[2], Matthew A. Lambon Ralph[1]
[1] University of Manchester, [2] University of Edinburgh

In this fMRI study we asked participants to read short narratives to investigate how variations of semantic context affect the semantic control network (SCN) and the default mode network (DMN). Some of the narratives embedded a change of semantic context between the first (context) and the second part (target), whereas others did not. Some other narratives were presented without contextual support (only target). We found that when the semantic context changed, SCN was extensively recruited. Instead, DMN was sensitive to the presence of contextual support only. In accordance with previous findings, our results suggest that SCN supports semantic integration processes, whereas the DMN may support recollection of contextual information to allow at forming links between different parts of a narrative.

Neuropsychological testing in the South Asian Elderly

Faiza Choudhry Parveen[1], Valerie Lesk[1], Elizabeth Walters[1]
[1] Division of Psychology, University of Bradford, Bradford, UK

Neuropsychological tests used to detect cognitive changes which have been validated with Caucasian samples may not be appropriate for culturally and linguistically diverse populations. This research investigated the use of two standardised assessment tools of general cognition (MMSE (Folstein et al., 1976) and RUDAS (Storey et al., 2004)) in the British South Asian elderly. 40 participants with no confirmed cognitive impairment completed the tests in English and Urdu. Participants performed significantly better when the test was administered in Urdu and for both tests a large number of participants scored within the cognitive impairment range, regardless of language. The results highlight that both of these tests may not be appropriate for use in non-English speaking minority populations.

Eye Gaze and Aging: The role of working memory and inhibitory control

Trevor J. Crawford[1], Eleanor S. Smith[1], and Donna M. Berry[2]
[1] Department of Psychology, Lancaster University, Lancaster, UK [2] Keele University

Speculation around the cause of age-related differences in the antisaccade task centres two sources of cognitive dysfunction: declining inhibitory control or working memory deterioration. The current study assessed inhibitory control and working memory processes underpinning saccades in sixteen young and older participants, which were achieved with three conditions systematically varying the extent the two factors were taxed. No-go trials required saccade inhibition to a target, whilst memory-guided trials involved remembering the position of a target compared to a standard antisaccade task. Results revealed that neurotypical ageing is associated with changes in both inhibitory control and working memory; increased inhibitory load was associated with increased reaction times in the older group, whilst increased working memory and inhibitory load contributed to increased errors.

The Neural Precursors of Voluntary Action

Alex Dorgham[1], Patrick Haggard[1]
[1] UCL Institute of Cognitive Neuroscience, Queen Square, London, UK

"Readiness potentials" (RPs) are thought to act as neural biomarkers for the preparatory processes preceding voluntary action. Instead of measuring RP morphology, our primary measure was trial variability of these pre-movement potentials. A lower inter-trial variability suggests that trials are converging onto a common pattern of activity, indicative of a specific preparatory process. A decision-making exercise operationalized free will to a 'skip' response allowing progression to the next trial. Self-initiated actions were compared against externally triggered actions in different blocks. In a separate session, participant 'skip' responses were limited to half of their total in the unlimited session, to assess whether increasing skip value in the self-initiated block produced a stronger EEG convergence. We were unable to demonstrate a significant interaction effect between skip action value and skip action

type, but replicated previous findings that self-initiated actions show a significantly greater EEG convergence than actions that are externally triggered.

Characterising the relationship between executive functions and academic performance in adolescence: Implication for genetic research

G. Donati[1], E. Meaburn[1], I. Dumontheil[1]
[1] *Department for Psychological Sciences, Birkbeck College, University of London, UK.*

Executive functions (EFs) are often considered intermediary mechanisms between genes and educational attainment. Large genetic studies mostly use general academic and cognitive phenotypes assuming a common cause for success across academic outcomes. There is little research investigating whether subject-specific ability is differentially associated with cognitive traits. Here vocabulary and reasoning showed a greater association with science, vocabulary and processing speed with English, and a range of measures with maths. These findings highlight the importance of preserving specificity when investigating the cognitive predictors of educational achievement in genetic studies.

Developmental differences in action kinematics across adolescence determine emotion perception

Rosy Edey[1], D. Yon[1], I. Dumontheil[1], C. Press[1]
[1] *Department of Psychological Sciences, Birkbeck, University of London*

Our movement kinematics provide useful cues about our affective states. Previously - in adults – it has been shown perception of others affective states is determined by individual differences in kinematics during action production. The current study tested whether movement differences during adolescence show comparable differences in perceiving affect in others. To test this hypothesis, we measured the preferred walking pace of three groups of adolescents; Early (11-12 years old), Middle (13-14 years old) and Late (16-18 years old) Adolescence, and also asked them to rate the perceived intensity of affective states conveyed by Point Light Walkers. As predicted, we found differences in walking kinematics between the groups. Specifically, there was a linear relationship between age group and walking kinematics, such that as the groups got older they moved more slowly. Importantly, measures of emotion perception also followed a linear trajectory across age groups, as was anticipated on the basis of the key hypothesis. Namely, as the groups got slower (i.e., older) they rated the slower emotions less intensely relative to their ratings for faster emotions. Social communication difficulties between adolescents and caregivers could therefore, in part, stem from misattributions concerning internal states.

Exploring the neural substrates of misinformation processing

Andrew Gordon[1], Stephan Lewandowsky[1], Susanne Quadflieg[1], Jon Brooks[1], Ullrich Ecker[1]
[1] *School of Experimental Psychology, University of Bristol, Bristol, UK*

Information that is initially thought to be correct but then revealed to be false often continues to influence human judgement despite people being aware of the retraction. Yet little research has examined the underlying neural substrates of this 'continued influence effect of misinformation' (CIEM). To address this question, 26 adults underwent functional magnetic resonance imaging (fMRI) while listening to narratives which either involved a retraction of prior information or not. Following each narrative subjects' inclination to rely on retracted information was probed. It was found that retracted information continued to affect participants' reasoning. In addition, the fMRI data indicated that the CIEM may be due to a breakdown of narrative-level integration and coherence-building mechanisms implemented by the precuneus and posterior cingulate gyrus.

Predicting post stroke cognitive trajectory

Laverick R[1], Hosseini A[1], Bickerton W-L[1], Demeyere N[1], Sims D[1], Rotshtein P[1]
[1] *School of Psychology, University of Birmingham, UK*

We asked 1) Does cognitive recovery follow the proportional rule as with motor recovery? 2) Can performances at baseline predict recovery trajectories? We examined cognitive trajectories in 380 stroke survivors between <3(Baseline) and 9 months (Follow-Up) post-stroke. Cognition was measured with the BCoS. We used regression (Baseline/Follow-Up) to split survivors to three groups of recovery rates: accelerated, expected and decelerated. Performances at follow-up were linearly related to initial severity, $r2=.48$, $p< .001$. Forward-logistic-regression showed that attention at baseline (OR=1.47, $p=.006$) and depression at follow-up (OR=1.08, $p=.046$) predicted decelerated-recovery. Like motor

recovery, overall cognition followed the proportional rule. Those who were more severely impaired in attention and had lower mood were at higher risk of cognitive decline at 9 months.

Task Switching in Dyslexia: An ERP Investigation

Shane MacSweeney[1], Jessica Bramham[1], Richard Roche[2], Caoilainn Doyle, Aoife Lonergan
[1] University College Dublin; [2] The National University of Ireland Maynooth

This ERP study explored the electrophysiological bases of task-switching in dyslexia. Behavioural and ERP data were recorded during task completion for 64 children (37 dyslexia and 27 typically-reading). Behavioural data indicated that the dyslexia group made significantly fewer accurate responses than the control group. A frontal N2 component was identified and statistical comparison between groups indicated that the dyslexia group had significantly smaller frontal N2 mean amplitudes. There was a borderline significant difference in P3 amplitudes between groups while switching from letters to numbers. An interpretation of these findings suggested that the dyslexia group may have demonstrated lower cognitive control than the typically-reading group. This may have affected task-conflict resolution, thus resulting in interference from the previous task.

Occipito-temporal EEG correlates of the visual perception of the human body

Carlacci De Mattia L.[1,4], Moreau Q.[1,2], Pavone, E.F.[3], Candidi M.[1,2]
[1] SCNLab, Department of Psychology, Sapienza University, Rome, Italy; [2] IRCCS Fondazione Santa Lucia, Rome, Italy; [3] BrainTrends ltd Applied Neuroscience, Rome, Italy; [4] Goldsmiths, University of London, UK

Perceiving human body images activates specific area of the occipito-temporal cortex (Extrastriate-Body-Area (EBA)) 190 ms post-stimulus. Yet, no information is available concerning any time-frequency modulation associated to category-specific processing in the occipito-temporal cortex. We recorded EEG in 16 subjects who passively observed body stimuli of four different hierarchical levels (finger/hand/arm/full body) compared to hierarchically-matched tree images, and analysed time (ERP, N190) and time-frequency (ERD/ERS) indexes. Body category elicited a higher N190 than Plants over EBA. In the time-frequency domain we found a greater Theta synchronization selectively associated to the observation of specific body-parts (hands/arms). The time-frequency results are coherent with the proposal that different sectors of the occipito-temporal cortex process different body-parts according to their functional meaning.

Analysis of executive and attentional (dys)function in chronic stroke aphasia

Rahel Schumacher[1], Matthew Lambon Ralph[1]
[1] Neuroscience and Aphasia Research Unit, Division of Neuroscience and Experimental Psychology, School of Biological Sciences, Faculty of Biology, Medicine and Health, University of Manchester, UK

There is growing awareness that stroke aphasia co-occurs with deficits in other cognitive functions. To date, no systematic analyses of attentional and executive (dys)functions in patients with aphasia have been completed. We administered tests measuring language, attentional and executive functions to more than thirty patients. A quarter of the patients showed reduced selective attention performance, in a third distractibility was increased, and nearly half of the patients had impaired abilities to divide attention. Furthermore, our analysis yielded deficits in non-verbal tests of executive functioning in thirty to fifty percent. We show that the assessment of attentional and executive functions is not only feasible but also informative with respect to potential therapeutic targets and a patient's cognitive resources.