

EPS

Experimental
Psychology
Society

**HULL
MEETING**

11-13 APRIL 2012

A scientific meeting will be held in the Department of Psychology, The University of Hull, Hull, HU6 7RX on 11-13 April 2012. The local organisers are David George (d.george@hull.ac.uk) and Chris Longmore (c.longmore@hull.ac.uk).

First Frith Prize Lecture

Thursday 12th April at 6.00pm

The effects of hearing loss and age on temporal coding in the auditory system
Kathryn Hopkins, University of Manchester

Symposium

Thursday 12th April at 12.00pm

A Festschrift for Geoffrey Hall
Organiser: Dr David George

Symposium

Friday 13th April at 9.30am

Applied Issues in Face Recognition
Organiser: Dr Chris Longmore

Poster Session

This will be held in conjunction with the drinks reception on Wednesday evening at 6pm in Room 101, located on the first floor of the Applied Science 3 building, University of Hull. Delegates may put up posters from 12pm on Wednesday 11 April and posters can remain up until the end of the conference.

Platform Presentations

Platform presentations will be held in the East and West Lecture Theatres on the first floor of the Applied Sciences 3 building, University of Hull, Hull, HU6 7RX. Both rooms have data projectors available for Powerpoint presentations. Presenters may provide their own laptops and connector leads, or bring USB keys for the on-site computers. Any queries about facilities in the theatres should be sent to the local organisers, David George (d.george@hull.ac.uk) or Chris Longmore (c.longmore@hull.ac.uk).

Refreshments will be served in Room 157/163, located on the first floor of the Fenner building, in the Department of Psychology, University of Hull.

The conference dinner will be at Piola Restaurant, 160 Newland Avenue, Hull HU5 2NN at 8pm on Thursday 12 April 2012. A booking form/menu is enclosed. Please ensure that your completed booking form and menu choice is returned to Dr David George no later than Monday 26 March 2012.

START OF PARALLEL SESSIONS

Session A**East Lecture Theatre – First Floor**

- 1.30 **Alexander Kirkham* and Paloma Mari-Beffa** (Bangor University)
Impacts of task cue translations and verbal instructions on goal-directed behaviour.
- 2.00 **James A. Grange and Stefanie Schuch*** (Keele University, RWTH Aachen)
The effect of n-3 on n-2 repetition costs in task switching.
- 2.30 **Paloma Mari-Beffa and Alexander Kirkham*** (Bangor University)
The role of verbal instructions on sustained task vigilance.
- 3.00 **Michelle To*, Roland Baddeley, Tom Troscianko, and David Tolhurst*** (University of Hull, University of Bristol, University of Cambridge)
One rule to bind them all: A general rule for feature integration.
- 3.30 TEA
- 4.00 **Anna Chapman*, Richard J. Brown*, Daniel Skehan*, Ewan P. Perry*, Kirsten J. McKenzie*, Donna Lloyd, Christopher Babbs*, Peter Paine* and Ellen Poliakoff** (University of Manchester, University of Nottingham Malaysia Campus, Salford Royal NHS Foundation Trust)
Physical symptom reporting is associated with a tendency to misperceive tactile events.
- 4.30 **Timothy L. Hodgson** (University of Lincoln)
Learning and switching between stimulus-saccade associations in Parkinson's disease.
- 5.00 **Laura Mirams*, Donna Lloyd, Richard Brown* and Ellen Poliakoff** (University of Manchester)
Meditation improves somatosensory perceptual decision making.
- 5.30 **Matthew Longo** (Birkbeck, University of London)
A hierarchy of body representations.
- 6.00-8.00 POSTERS AND DRINKS RECEPTION – Room 101, First Floor, The Department of Psychology

START OF PARALLEL SESSIONS

Session B**West Lecture Theatre – First Floor**

- 1.30 **J. Richard Hanley and Nikita Shah*** (University of Essex)
The irrelevant sound effect under articulatory suppression is a suffix effect even with 5-item lists.
- 2.00 **Daniela Montaldi* and Alex Kafkas*** (University of Manchester)
(Sponsor: Andrew Mayes)
Contrasting the neural bases of familiarity and novelty detection.
- 2.30 **Christopher Kent** (University of Bristol)
Manipulating viewing order at study and test: Exploring the nature of the encoding-retrieval relationship.
- 3.00 **Manila Vannucci*, Charlotte Richardson* and Giuliana Mazzoni***
(University of Florence, University of Hull) (Sponsor: Steve Dewhurst)
Lack of control enhances recall performance in a DRM task.
- 3.30 TEA
- 4.00 **Dermot Lynott, Louise Connell, and Felix Dreyer*** (University of Manchester, University of Leipzig)
Investigating the roles of touch and proprioception in conceptual representations.
- 4.30 **Christos Pliatsikas*, Aditi Lahiri*, Peter Hansen* and Linda Wheeldon** (University of Birmingham, University of Oxford)
A behavioural and fMRI investigation of the processing of zero derivation in English.
- 5.00 **Louise Connell and Dermot Lynott** (University of Manchester)
Strength of perceptual experience predicts word processing performance better than concreteness or imageability.
- 5.30 **Jeffrey Wood*, Andrew Stewart and Louise Connell** (University of Manchester)
Read this and I'll pay you a fiver: Implicit meaning is processed differently in conditionals and conjunctive paraphrases.
- 6.00-8.00 POSTERS AND DRINKS RECEPTION – Room 101, First Floor, The Department of Psychology

Session A**East Lecture Theatre – First Floor**

- 9.00 **Silke Paulmann***, **Ayse Uskul***, **Sarah T. Harris*** and **Lauren King*** (University of Essex) (Sponsor: J. Richard Hanley)
Emotional prosody and social power.
- 9.30 **Fenja V. Ziegler*** and **Richard J. Tunney** (University of Lincoln, University of Nottingham)
Are the decisions that we make for others less impulsive than for ourselves?
- 10.00 **Anna Powell***, **Josephine Haddon**, **Birger Scholz***, **Anthony Isles*** and **Lawrence Wilkinson*** (Cardiff University)
The epigenetics of habits.
- 10.30 COFFEE
- 11.00 **Katy Burgess***, **Dominic Dwyer** and **Robert Honey** (Cardiff University)
Timing from actions and observations: Implications for causal accounts of conditioned behaviour in rats.
- 11.30 **Mark Haselgrove**, **Matthew T. Nolan*** and **Peter M. Jones*** (University of Nottingham)
Latent inhibition and facilitation.
- Symposium:** A Festschrift for Geoffrey Hall
Organiser: Dr David George
- 12.00 **John M. Pearce**, **Jemma C. Dopson***, **Mark Haselgrove**, and **Guillermo R. Esber*** (University of Cardiff, University of Nottingham, University of Maryland)
The fate of redundant cues during blocking and a simple discrimination.
- 12.30 **Jasper Robinson**, **Emma Owens***, **Lone Hørlyck*** and **Claire Petelczyc*** (University of Nottingham)
Age-related attenuation of acquired equivalence: Implications for theories of configural learning and attentional set.
- 1.00-2.00 LUNCH

Session B**West Lecture Theatre – First Floor**

- 9.00 **Preethi Premkumar***, **Dominic Fannon***, **Adegboyega Sapara***, **Emmanuelle R. Peters***, **Anantha P. Anilkumar***, **Andrew Simmons***, **Elizabeth Kuipers*** and **Veena Kumari*** (Kings College London, Nottingham Trent University, South London and Maudsley NHS Foundation Trust) (Sponsor: Deborah Hall)
The role of orbitofrontal cortex and hippocampus pre-therapy volumes in the response to Cognitive Behavioural Therapy for psychosis.
- 9.30 **Jeannie Judge** (University of Central Lancashire)
Gender Differences in Visual Attention: Is the Colour Red a Determinant of go/no-go task performance in men and women?
- 10.00 **Dominic M. Dwyer**, **Matthew E. Mundy***, **Paul E. Downing***, **Robert C. Honey**, **Krish D. Singh***, and **Kim S. Graham** (Cardiff University, Monash University, Bangor University)
Neural correlates of perceptual learning in the visual cortex: Largely, but not completely, overlapping effects of the amount and structure of exposure.
- 10.30 COFFEE
- 11.00 **Alexis D.J. Makin**, **Anna Pecchinenda**, **Moon Wilton*** and **Marco Bertamini** (University of Liverpool)
What is so special about visual symmetry?
- 11.30 **Nick E Barraclough***, **Jennifer Ingham***, **Stephen A. Page*** (University of York, University of Hull) (Sponsor: Paul Skarratt)
Dynamics of walking adaptation aftereffects induced in static images of walking actors.
- 12.00 **Anna Pecchinenda**, **Marco Bertamini**, **Alexis D. J. Makin**, and **Nicole Ruta*** (La Sapienza Università di Roma, Liverpool University)
Affective responses to symmetry perception
- 12.30 **Joanna Wincenciak***, **Tjeerd Jellema*** and **Nick E. Barraclough*** (University of Hull, University of York) (Sponsor: David George)
Two mechanisms for coding emotions from bodily actions.
- 1.00-2.00 LUNCH

Session A**East Lecture Theatre – First Floor****Symposium:** A Festschrift for Geoffrey Hall**continued** Organiser: Dr David George

- 2.00 **Charlotte Bonardi** (University of Nottingham)
Unifying accounts of conditioning and timing: Evidence from studies of conditioning to fixed and variable duration CSs.
- 2.30 **Robert C. Honey** (Cardiff University)
Perceptual and associative learning.
- 3.00 **Isabel de Brugada*** (University of Granada)
The US pre-exposure effect in flavour preference conditioning: Underlying mechanisms.
- 3.30 TEA
- 4.00 **Chris J. Mitchell*** (Plymouth University)
Attention to specific locations in human visual perceptual learning.
- 4.30 **Robert L. Goldstone*** (Indiana University)
Perceptual learning to support the acquisition of both externally stipulated and internally generated categories.

End of Symposium

- 5.30 **EPS Business Meeting** – Members only (East Lecture Theatre)
- 6.00 **Frith Prize Lecture – Kathryn Hopkins** (University of Manchester)
The effects of hearing loss and age on temporal coding in the auditory system.
(East Lecture Theatre)

Session B**West Lecture Theatre – First Floor**

- 2.00 **Chang Hong Liu, Wenfeng Chen*, Hu Han* and Shiguang Shan*** (University of Hull, Chinese Academy of Sciences) Rectifying damaging effects of illumination on face recognition.
- 2.30 **Scott P. Jones*, Michael. B. Lewis and Dominic. M. Dwyer** (Cardiff University)
Can exposure to similar comparison stimuli facilitate improved recognition of unfamiliar faces?
- 3.00 **Alan Scoboria* and Jennifer Talarico*** (University of Windsor, Canada, Lafayette College) (Sponsor: Mary-Ellen Large)
Event cueing confirms that belief in occurrence and recollection reflect distinct processes.
- 3.30 TEA
- 4.00 **Iram Batool* and Giuliana Mazzoni*** (University of Hull) (Sponsor: David George)
Eliciting involuntary memories in the lab: The role of cue information.
- 4.30 **Rachel J. Anderson*, Stephen A. Dewhurst, and Lien Peters*** (University of Hull, University of Leuven)
Comparing the structure of autobiographical past and future events.
- 5.00 **Andrew Clark*, Robert Nash*, Gabrielle Fincham* and Giuliana Mazzoni*** (University of Hull, University of Surrey) (Sponsor: Steve A. Dewhurst)
Creating non-believed memories for recent autobiographical events.
- 5.30 **EPS Business Meeting** – Members only (East Lecture Theatre)
- 6.00 **Frith Prize Lecture – Kathryn Hopkins** (University of Manchester)
The effects of hearing loss and age on temporal coding in the auditory system.
(East Lecture Theatre)

Session A**East Lecture Theatre – First Floor****Symposium:** Applied Issues in Face Recognition

Organiser: Dr Chris Longmore

- 9.30 **Sarah Bate*** (University of Bournemouth)
Intranasal inhalation of oxytocin improves face processing in developmental prosopagnosia.
- 10.00 **Ashok S. Jansari, Scott Miller*, Laura Pearce*, Stephanie M. Cobb*, Noam Sagiv*, Adrian Williams*, Jeremy Tree and J. Richard Hanley** (University of East London, Brunel University, Swansea University, University of Essex)
The Man Who Mistook His Neuropsychologist For a Popstar: When Configural Processing Fails in Acquired Prosopagnosia.
- 10.30 COFFEE
- 11.00 **Markus Bindemann** (University of Kent)
Can individual differences in face recognition predict eyewitness accuracy?
- 11.30 **Karen Lander, Siddhi Poyarekar* and Raymond Evans*** (University of Manchester)
Exploring differences in face recognition ability.
- 12.00 **Charity Brown, Charlie Frowd* and Sophie Marsh-Picksley*** (University of Leeds, University of Central Lancashire)
The effects of holistic attribution on the construction of facial-composites.
- 12.30 **Peter J.B. Hancock*, Alex H. McIntyre* and Josef Kittler*** (University of Stirling)
Improving face matching with caricature.

End of Symposium**End of meeting**

Session B**West Lecture Theatre – First Floor**

- 9.30 **Nicola J. Gregory***, **Timothy L. Hodgson**, **W. Huw Williams***,
Catherine Haslam* and **Adam Zeman*** (University of Portsmouth,
University of Exeter, University of Lincoln, Peninsula College of
Medicine and Dentistry)
Evidence for a role of orbitofrontal cortex in saccadic orienting to eye
gaze cues.
- 10.00 **Igor Schindler***, **Paul Skarratt**, and **Erin McWilliams*** (University
of Hull)
Spatial remapping across saccades is lateralised – a TMS study.
- 10.30 COFFEE
- 11.00 **Nicola Cutting***, **Sarah R. Beck** and **Ian A. Apperly** (University of
Birmingham)
Why can't children piece their knowledge together? The puzzling
difficulty of tool innovation.
- 11.30 **Erica Yu***, **Erika Hussey***, **Michael Dougherty***, **Isaiah Harbison***
and **Eddy Davelaar*** (University of Maryland, Birkbeck College)
(Sponsor: Andrew Stewart)
Is termination of memory search rational?
- 12.00 **Benjamin Parris***, **Zoltan Dienes** and **Timothy L. Hodgson**
(Bournemouth University, University of Sussex, University of Lincoln)
Temporal constraints of the word blindness post-hypnotic suggestion
on Stroop task performance.
- 12.30 **Andrew Stewart**, **Matthew Haigh*** and **Heather J. Ferguson**
(University of Manchester, University of Kent)
Representing hypothetical situations: an eye-tracking investigation into
readers' sensitivity to utility and speaker control in the comprehension
of conditionals.

End of meeting

1. **Richard Hicks***, **Victoria Alexander*** and **Mark Bahr*** (Bond University)
(Sponsor: Andrew Stewart)
Assessing Differences in Emotion Recognition and Short Term Memory for Young Old, Middle Old and Older Adults
2. **Jason Braithwaite and Emma Brogna*** (University of Birmingham)
Autonomic Emotional Responses to the Induction of the Rubber-hand Illusion in those that Report Out-of-Body Experiences and Kindred Hallucinations of the 'self'. Evidence for Psychophysiological Components Associated with illusory Body Representations
3. **Richard Carvey***, **Katherine Fielding*** and **Chang Hong Liu** (University of Hull)
How is the beauty of a group summarised?
4. **Matthew Coleshill***, **Irving Kirsch*** and **Giuliana Mazzoni*** (University of Hull)
(Sponsor: Chang Hong Liu)
Psychological correlates of the rubber hand illusion
5. **Matthew Coleshill*** and **Giuliana Mazzoni*** (University of Hull) (Sponsor: Chang Hong Liu)
Examining the optimum parameters associated with strength of the rubber hand illusion
6. **Roberta Etzi***, **Charles Spence** and **Alberto Gallace** (University of Milan-Bicocca, Oxford University)
A preliminary investigation of tactile hedonic preferences in humans
7. **Elizabeth Evans***, **Emma Gowen** and **Ellen Poliakoff** (University of Manchester)
Examining the role of attention in automatic imitation
8. **Katherine Fielding***, **Richard Carvey*** and **Chang Hong Liu** (University of Hull)
Forming a Summary Representation of Facial Expressions in a Group
9. **Erin McWilliams*** and **Johan Hulleman** (University of Hull, University of Manchester)
Rare item search in static and moving displays
10. **Mila Mileva***, **Peter J. Hills** and **J. Michael Pake*** (Anglia Ruskin University)
Carryover of scanning behaviour in natural scenes: Vertical carryover slows upright face identification but speeds up inverted face identification
11. **Sophie J. Milward*** and **Sotaro Kita** (University of Birmingham)
Children's understanding of replica, iconic gesture and pretence: iconicity facilitates symbol understanding but not via representational insight
12. **Emma Portch***, **Charity Brown** and **Charlie Frowd*** (University of Leeds, University of Central Lancashire)
Facial Composites: does a post-interview delay provide a release from verbal overshadowing under forensically-relevant conditions?

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13. **Stephen Puntis***, **Kirsten McKenzie***, **Adam Laurence***, **Donna Lloyd**, **Richard Brown*** and **Ellen Poliakoff** (University of Manchester, University of Oxford, University of Nottingham Malaysia Campus)
The Effect of a Non-informative Visual Stimulus on Judgements of Tactile Stimulus Magnitude
 14. **Gavin Revie*** and **Martin Fischer** (University of Dundee, University of Potsdam)
Words structure visual attention in a target detection task
 15. **Aimee L. Roberts***, **Peter J. Hills** and **Ian van der Linde*** (Anglia Ruskin University)
The effect of interaction belief on recognition memory for human faces
 16. **Daniel Taylor*** and **Denis McKeown** (University of Leeds)
A perceptual record of the recent auditory past

Impacts of task cue translations and verbal instructions on goal-directed behaviour.

Alexander Kirkham, and Paloma Mari-Beffa
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Previous work stated that verbalisations of task cues (both spoken aloud and presented aurally) could provide facilitation towards goal-directed behaviours, compared to performing the same task in silence (Kirkham, Breeze, & Mari-Beffa, 2012). Such facilitation from these verbalisations was noted as being substantial within measures of mixing cost, with no impact upon switch cost. In our present work we demonstrate how translation of task cues can impact upon these measures. We present results of three experiments, each with different task cues that required varying degrees of translation. Where minor translation was required, participants demonstrated these same significant effects upon mixing cost. A similar effect, only amplified to a greater extent, was achieved when a larger degree of task cue translation was required. Finally, where no task cue translation was required, this effect was removed, with performance in all three conditions being highly similar. Our results demonstrate that the amount of facilitation to be gained towards task performance when using verbal strategies is highly dependent upon the task cue being used. As task cue complexity increases, the amount of benefit obtained with the use of verbal strategies also increases over that found when performing the task in silence.

Kirkham, A.J., Breeze, J.M., & Mari-Beffa, P. (2012). The impact of verbal instructions on goal-directed behaviour. *Acta Psychologica*, 139, 212-219.

The effect of n-3 on n-2 repetition costs in task switching

James A. Grange¹ and Stefanie Schuch²
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Evidence for inhibition in task switching comes from the so-called n-2 repetition cost, which is a reaction time and error cost returning to a task recently performed after one intervening trial (i.e. an ABA sequence) compared to returning to a task not recently performed (i.e. a CBA sequence). This n-2 repetition cost is found across a wide-range of task demands, and is considered a robust measure of inhibitory control during task switching. The present talk will introduce a novel sequential effect of n-2 repetitions when n-3 is taken into consideration. Specifically, compared to a standard baseline of CBA sequences, two successive n-2 repetitions (i.e. BABA) show no cost of inhibition, compared to substantial costs found for n-2 repetitions preceded by an n-2 switch (i.e. CABA sequences). Evidence is provided in the form of a mini meta-analysis of a set of published data, as well as a new experiment with differing task demands from the meta-analysis, testing the generality of the new effect. We speculate as to the source of this novel effect in relation to the Gratton effect in the cognitive control literature.

The Role of Verbal Instructions on Sustained Task Vigilance

Paloma Mari-Beffa and Alexander Kirkham
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Mixing costs refer to the deterioration in performance when participants repeat a task when a secondary task is also required in the same block (a mixed block, AABBAA) compared to a single task context (single block AAAAAA). A popular explanation for this effect is that it reflects the need for cognitive control in the mixed block compared to a more automatic performance in the single block. Recent research has found that verbal instructions effectively reduce mixing costs in these paradigms, possibly by promoting task vigilance (Kirkham, Breeze & Mari-Beffa, 2012). In the present study we compare mixing costs when participants are asked to a) read the task cue aloud or c) articulatory suppress it. In order to isolate different levels of vigilance for each participant, a Cumulative Distribution Function (CDF) approach was used where trials were ranked from best to worse performance (faster to slower RTs). The results demonstrated that when verbalisations were suppressed, mixing costs were evident across all the bins. In the reading aloud condition, however, they only emerged for the slowest trials. The results demonstrate that verbalisations aid sustained vigilance on task by promoting a greater proportion of fast and accurate responses in the mixed block.

Kirkham, A. J., Breeze, J. M., & Mari-Beffa, P. (2012). The impact of verbal instructions on goal-directed behaviour. *Acta Psychologica*, 139, 212-219.

One rule to bind them all: A general rule for feature integration

Michelle To¹, Roland Baddeley², Tom Troscianko² and David Tolhurst³
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To fully appreciate our sensory experiences, the brain must integrate a rich variety of perceptual cues. Several models have been proposed to describe how features are combined, including linear (city-block) addition, Euclidian (energy) summation, and the maximum rule. Interestingly, these rules are examples of a more general Minkowski summation $(\text{Cue}_1^m + \text{Cue}_2^m)^{1/m}$, where $m = 1, 2$ and ∞ , respectively. In this talk, we will describe several experiments that examined how cues are combined in complex natural stimuli such as photographs, musical sequences, phonetic utterances, and cross-modal stimuli. We will also demonstrate that a Minkowski summation with power $m = 2.5-3$ outperforms all three classical models. We suggest that this feature integration rule reflects the degree of correlation between neuronal responses. This would be consistent with electrophysiological research that demonstrates signal correlations ($r = 0.1-0.2$) between sensory neurons when these are presented with natural stimuli.

Physical symptom reporting is associated with a tendency to misperceive tactile events

Anna Chapman¹, Richard J. Brown¹, Daniel Skehan¹, Ewan P. Perry¹,
Kirsten J. McKenzie^{1,2}, Donna M. Lloyd¹, Christopher Babbs³, Peter
Paine³, Ellen Poliakoff¹

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When detecting the presence or absence of weak tactile events, people frequently report feeling sensations in the absence of a tactile stimulus, particularly when a non-informative light is presented. Moreover the number of false alarms an individual makes is relatively stable across testing sessions (McKenzie et al, 2010, *Perception*, 39,839-850). In this work, we investigated whether the frequency of false alarms on the Somatic Signal Detection Task (SSDT) is associated with how many physical symptoms an individual reports experiencing in their daily life (i.e. somatization). In experiment 1, symptom reporting was positively correlated with false alarm rate in light present trials, in a non-clinical sample. In experiment 2, in a clinical sample (endoscopy patients), we found that symptom reporting was positively correlated with false alarm rate in both the presence and absence of the light. Thus, there appears to be a robust link between physical symptom reporting and the tendency to experience distortions in perceptual decision-making, suggesting that susceptibility to somatosensory distortions can account for individual differences in symptom experience.

McKenzie, K. J., Poliakoff, E., Brown, R.J., & Lloyd, D. (2010). Now you feel it, now you don't: How robust is the phenomenon of illusory tactile experience? *Perception*, 39, 839–850.

Learning and switching between stimulus-saccade associations in Parkinson's disease

Timothy L. Hodgson
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Making flexible associations between what we see and what we do is important for many everyday tasks. The control of saccadics in such contexts relies on a network of areas in the frontal cerebral cortex and basal ganglia. We report the performance of patients with idiopathic Parkinsons Disease (PDs) in tasks which require learning and switching between stimulus-saccade rules. In Experiment 1 feedback was given to the participant following each response which reliably indicated which of the two rules was correct. PDs were slower to learn the first rule presented, but did not show impaired performance in rule switching blocks. In a follow up experiment the feedback given by the computer was probabilistic such that executing a response based upon the "correct" rule only resulted in positive feedback on 80% of trials. Under these conditions patients were impaired in both response latencies and number of errors. In all conditions PDs showed hypometric saccades. The findings are consistent with a role for the nigrostriatal dopamine system in learning novel saccade-response-outcome associations. Intact performance of PDs when associations are not stochastically reinforced suggests that

striatal learning systems are complemented by cognitive representations of task rules which are unaffected in PD.

Meditation improves somatosensory perceptual decision making

Laura Mirams, Donna Lloyd, Richard Brown and Ellen Poliakoff
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Interoceptive attention is thought to contribute to the misperception of physical symptoms in patients with medically unexplained symptoms (MUS). In line with this idea, we have previously found that interoceptive attention increases the misperception of touch on a somatic signal detection task (SSDT), during which healthy participants erroneously report feeling near threshold vibrations presented to their fingertip in the absence of a stimulus. However, it has been suggested that the type of interoceptive attention practiced during mindfulness meditation should improve the clarity of somatic perception. To investigate this possibility, sixty-two participants completed the SSDT before and after either a brief meditation intervention consisting of eight, fifteen minute body-scan meditation exercises, or a control intervention that involved listening to eight, fifteen minute clips of a recorded story. After the intervention, the experimental group showed a reduction in false alarms in both the presence and the absence of the light and an increase in sensitivity during the SSDT, perhaps due to an improved ability to distinguish between signal and noise. This finding demonstrates that interoceptive attention does not necessarily increase somatic misperception and raises the possibility that body-scan meditation could reduce somatic misperception in patients with MUS.

A Hierarchy of Body Representations

Matthew R. Longo
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We experience our body as a coherent, 3-D, volumetric object. Somatotopic maps in somatosensory cortex, however, represent the body as a set of fragmented, 2-D skin surfaces. I will discuss recent experiments investigating different classes of body representation of the hand, which suggest they fall along a continuum from fragmented 2-D maps of individual skin surfaces to coherent 3-D maps of the entire body. First, tactile localisation on the skin relies on purely 2-D representations of skin surfaces. Localisation biases, though consistent from person-to-person, differ qualitatively between palm and dorsum. Second, representations underlying position sense rely on an intermediate representation. Distortions are similar between palm and dorsum, suggesting they do not rely on fully distinct 2-D representations. However, the magnitude of distortions is reduced on the palm, inconsistent with a fully 3-D representation. Position sense may rely on a 2.5-D representation of the body, analogous to Marr's 2.5-D sketch in vision. Finally, the conscious body image is largely undistorted, with a clear match between palm and dorsum, suggesting they rely on a fully-integrated 3-D representation. These findings reveal a hierarchy of body representations effecting coordinate transformations from fragmented 2-D maps to fully volumetric representations of our body in the world.

The irrelevant sound effect under articulatory suppression is a suffix effect even with 5-item lists

J. Richard Hanley and Nikita Shah
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The relationship between the suffix effect and the effect of irrelevant sound on serial recall of auditorily presented lists is investigated in this study. Contrary to the predictions of the phonological loop model, Hanley and Hayes (2012) reported that the irrelevant sound effect was abolished under articulatory suppression when a spoken suffix was added at the end of the list. The experiment reported in this paper uses a shorter list length (5 items per list) than that employed by Hanley and Hayes. This is because it cannot be realistically argued that participants will abandon the use of phonological codes to retain the list items with sequences as short as this. Results replicated those of Hanley and Hayes (2012). There was a significant effect of irrelevant sound under articulatory suppression when the list items were followed by an auditory tone. Crucially, however, the effect of irrelevant sound under articulatory suppression was abolished when the list items were followed by a spoken suffix.

Hanley, J.R. & Hayes, A. (2012). The irrelevant sound effect under articulatory suppression: Is it a suffix effect? *Journal of Experimental Psychology: Learning Memory & Cognition*, *in press*.

Contrasting the neural bases of familiarity and novelty detection

Daniela Montaldi and Alex Kafkas
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It is generally assumed that familiarity and novelty are mirror images of each other. However, the possibility that familiarity and novelty have distinct neural bases was explored with a parametric fMRI study. Seventeen participants completed a retrieval task in which they were directed to rate feelings of familiarity or novelty while viewing a series of object stimuli. Crucially no region in the medial temporal lobe responded parametrically across memory strength from strong novelty to strong familiarity. Instead, parametric modulations reflecting variations in memory strength for target familiar and target novel stimuli were isolated in a distributed network of non-overlapping brain areas. Robust novelty signals were identified along the ventral visual stream in visual association areas including the bilateral lingual and fusiform gyri; extending to the parahippocampal gyrus. Familiarity signals, on the other hand, were found in the bilateral inferior parietal region, dorsomedial thalamus, medial prefrontal cortex and anterior cingulate. The perirhinal cortex (PRC) was modulated by novelty strength, while a different region in superior PRC showed a selective response to strong familiarity. These results suggest two complementary but distinct signals responsible for familiarity and novelty decisions. This has important implications for our understanding of the neural bases of recognition memory.

Manipulating viewing order at study and test: Exploring the nature of the encoding-retrieval relationship

Christopher Kent
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Quickly perceived features tend also to be quickly retrieved (Kent & Lamberts, 2006; Lamberts & Kent 2008). The exact nature of this relationship, however, is unclear. Is retrieval order determined by encoding order? (A causal relationship between encoding order and retrieval order). Or are encoding and retrieval driven by similar stimulus-driven properties, such as the saliency of a feature? (A correlation between encoding and retrieval). In a series of scene recognition experiments, we tested the nature of this relationship, using both eye-tracking and manipulation of stimulus presentation order and study and test. Evidence appears to favour a correlation between the time courses of encoding and retrieval, suggesting that exact temporal reinstatement of study information does not determine retrievability.

Kent, C., & Lamberts, K. (2006). Modeling the time course of feature perception and feature information retrieval. *Journal of Memory and Language*, 55, 553-571.

Lamberts, K., & Kent, C. (2008). The time course of object-feature retrieval in recognition. *Journal of Experimental Psychology: Learning, Memory and Cognition*, 34, 688-695.

Lack of control enhances recall performance in a DRM task

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Recent evidence has shown that experimentally-induced need for control affects visual perception both in a negative (illusory perception, Whitson and Galinsky, 2008), and in a positive (enhancing early identification of degraded pictures, Vannucci et al., 2011) way. The need to be and to feel in control makes individuals try to gain cognitive control, and render the events predictable by providing them with a structure. If so, lacking control should affect also memory performance by enhancing the use of strategies that provide structure to the content of the memory task. Depending on the condition participants performed a task that induced need for control. All participants then were presented with a series of DRM lists, and free recall was assessed for each list. While lack of control did not affect intrusions, both critical and non-critical, it enhanced correct recall, extending to memory tasks the positive results already found in perceptual tasks. Follow-up studies are currently run to understand whether the effect occurs at encoding or at retrieval, and to investigate the role of strategy implementation vs. speed of processing.

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Whitson, J.A., & Galinsky, A.D. (2008). Lacking control increases illusory pattern perception. *Science*, 322, 115–117.

Investigating the roles of touch and proprioception in conceptual representations

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Theories of embodied cognition suggest that conceptual processing relies on the same neural resources that are utilised for perception and action. Evidence for these perceptual simulations comes from neuroimaging and behavioural research (e.g., demonstrations of somatotopic motor cortex activations following the presentation of action-related words; facilitation of grasp responses following presentation of object names). However, the interpretation of such effects has been called into question by suggestions that neural activation in modality-specific sensorimotor regions may be epiphenomenal; the result of spreading activations from "disembodied", abstracted, symbolic representations. Here, we present two studies that focus on the perceptual modalities of touch and proprioception. We show that in a timed object-comparison task, concurrent tactile or proprioceptive stimulation to the hands facilitates conceptual processing relative to control stimulation. This facilitation occurs only for small, manipulable objects, where tactile and proprioceptive information form part of the multimodal perceptual experience of interacting with such objects, but facilitation is not observed for large, nonmanipulable objects where such perceptual information is uninformative. These facilitation effects are independent of motor and action planning, and, in support of embodied assumptions, suggest that modality-specific perceptual information plays a functionally constitutive role in our mental representations of objects.

A behavioural and fMRI investigation of the processing of zero derivation in English

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Morphology refers to the rules that govern the internal structure of words. Derivational morphology produces new words by changing the basic meaning of an existing word, as well as its syntactic class (e.g. verb "depart" to noun "department"). The number of steps from a base word to its final output often varies, for instance, nation>national>nationality (2 steps); and in some cases the intermediate derivational steps are not overtly marked as separate words. This is called zero morphology, and has not been adequately investigated in processing terms. We conducted a delayed priming experiment and a simple lexical decision fMRI experiment with 1step (e.g. run (verb)>running) and 2step (e.g. bridge (noun) > bridge (verb) > bridging) derivations. Significant

priming effects were obtained for zero derivation, which could not be attributed to semantic effects, as well as increased activity in brain regions involved in morphological processing, compared to 1steps. Our findings suggest that processing of morphology in the brain is based on implicit rule application, without the need of overt affixing. Our study challenges previous suggestions that morphological processing can be simply reduced to form-based morphemic segmentation (Gold & Rastle, 2007).

Gold, B. T., & Rastle, K. (2007). Neural correlates of morphological decomposition during visual word recognition. *Journal of Cognitive Neuroscience*, 19, 1983-1993.

Strength of perceptual experience predicts word processing performance better than concreteness or imageability

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Abstract concepts are traditionally thought to differ from concrete concepts by their lack of perceptual information, which causes them to be processed more slowly and inaccurately than perceptually-based concrete concepts. We examined this assumption by comparing concreteness and imageability norms to a set of perceptual strength norms in five separate modalities: sound, taste, touch, smell and vision. Results showed that that concreteness and imageability do not actually reflect the perceptual basis of concepts: concreteness ratings appear to be based on two different intersecting decision criteria, and imageability ratings are visually biased. Analysis of lexical decision and word naming performance showed that maximum perceptual strength (i.e., strength in the dominant perceptual modality) consistently outperformed both concreteness and imageability in accounting for variance in response latency and accuracy. We conclude that so-called concreteness effects in word processing emerge from the perceptual strength of a concept's representation and discuss the implications for theories of conceptual representation.

Read this and I'll pay you a fiver: Implicit meaning is processed differently in conditionals and conjunctive paraphrases

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Conditionals can be used to convey a variety of meanings such as inducements (promises and threats) and advice (tips and warnings). Previous research demonstrated a rapid reading time penalty when an explicitly revealed speech act came from a different category (i.e., inducements vs advice) to an anaphorically referenced implicit conditional speech act (Experiment 1: Haigh, Stewart, Wood & Connell, 2011). For example, following the inducement "if you read this, then I'll pay you a fiver" people were slower when the following sentence referenced advice, 'This tip helped John decide on whether to attend'. In the self-paced reading study reported here, we explored whether a reading time penalty would also arise for different speech acts within the inducement category.

We also investigated whether using conjunctions as paraphrases altered when the reading time penalty occurred. The experiment revealed a delayed processing penalty when implicit promises were anaphorically referenced as threats (but not when implicit threats were referenced as promises). However, in contrast, when the conditional promises and threats were replaced with conjunctions there was a rapid reading time penalty on all mismatching trials.

Haigh, M., Stewart, A.J., Wood, J. S. & Connell, L (2011) Conditional advice and inducements: are readers sensitive to implicit speech acts during comprehension? *Acta Psychologica*, 136, 419–424.

Emotional prosody and social power

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The popular saying “it's not what you say, it's how you say it” nicely illustrates the importance that emotional tone of voice (prosody) plays in our social interactions. To explore whether social power of listeners can impact on emotional prosody perception we conducted two behavioural studies: in a correlational and a priming study, participants were asked to recognize basic emotions (anger, disgust, fear, happiness, sadness, pleasant surprise) or a neutral tone of voice from pseudo-speech. Results from the correlational study suggest that the generalized sense of power is negatively correlated with recognition accuracy. Results from the priming study show that participants in the high power condition show significantly lower accuracy than those in the low power condition. Based on these findings we currently explore how differences in social power on emotional prosody recognition manifest at a neural level. A follow-up event-related brain potential study examines how latency and amplitude of the P200 (linked to emotional salience detection) are modulated by social power. Combined, our findings can inform why some people are less adept at “reading between the lines” and can also contribute to the ongoing discussion of the role of power in interpersonal accuracy on more general terms.

Are the decisions that we make for others less impulsive than for ourselves?

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People tend to prefer a smaller immediate reward to a larger but delayed reward. Although this discounting of future rewards is often associated with impulsivity, it is not necessarily irrational. Parfit (1984) suggested instead that it reflects the decision maker's greater interest in the 'me now' than the 'me in 10 years', such that the concern for our future self is about the same as for someone else who is close to us. To investigate this we used a delay-discounting task to compare discount functions for choices that people would make for themselves against decisions that they would make for other people, e.g. accept \$500 now or \$1000 next week. The psychological distance of the hypothetical beneficiaries was manipulated in terms of Wright's (1921) coefficient of relatedness ranging from zero (e.g. a stranger, or unrelated close friend), .125 (e.g. a cousin), .25 (e.g. a nephew or niece), to .5 (parent or sibling). The observed discount functions were steeper (i.e. more impulsive) for choices in which the decision-maker was the beneficiary than for all other beneficiaries, that is, choices made for other people tended to be less impulsive. Implications for Parfit's and decision theories in general will be discussed.

Parfit, D. (1984) *Reasons and Persons*. Oxford: Clarendon Press.

Wright, S. (1921) Systems of mating. *Genetics*, 6, 111-178.

The epigenetics of habits

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Epigenetic marking of histone proteins within the chromatin complex is a key mechanism by which gene expression is regulated, and may be one way by which life-experiences are encoded at a molecular level. It is possible to modify the enzymatic regulation of chromatin modifications using pharmacological agents, such as HDAC inhibitors. This experiment examined the role of epigenetic mechanisms in brain processes underlying habitual behaviour. 32 Lister Hooded rats were trained to press a lever for sucrose pellet rewards. After 3 training sessions behaviour of control animals was goal-directed, as indexed by a sensitivity to reward devaluation. Conversely, the instrumental responding of animals receiving bilateral infusions of the general histone deacetylase inhibitor, sodium butyrate, into the infralimbic cortex, was insensitive to outcome devaluation, suggesting the animals were performing the response habitually. These findings indicate that histone acetylation within the infralimbic cortex may be involved in regulating the expression of instrumental actions. Ongoing work is further examining the role of histone acetylation in the acquisition and expression of habitual and goal-directed behaviour.

Timing from actions and observations: Implications for causal accounts of conditioned behaviour in rats

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Causal binding is a phenomenon whereby humans perceive the interval between an action and its resulting effect as shorter than the same interval between two external events. This effect is thought to occur as a result of characterizing a relationship as causal, which influences temporal perception. We assessed whether rats possess the capacity for representing causality in the same manner as humans by presenting rats with an auditory cue (CS) and an interventional cue (LP); both of which led to the delivery of food after a 5s delay. Rats were trained until their peak rate of responding on non-reinforced trials was approximately 5s. Results showed no hint of a causal binding effect. One potential problem with this paradigm, however, is that lever pressing may have become habitual due to the extensive nature of the training given. Therefore, a devaluation assessment was run once accurate timing behaviour was established. This revealed that the lever pressing remained under the control of a goal-directed process. In conclusion, the evidence from this investigation reveals no support for rats binding actions to their effects.

Latent Inhibition and Facilitation

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Non-reinforced pre-exposure to a conditioned stimulus (CS) typically retards the acquisition of subsequent conditioning (e.g. Lubow & Moore, 1959). Wagner (1978) explained this latent inhibition effect in terms of the formation of an excitatory context-CS association during pre-exposure that attenuates processing of the CS during subsequent conditioning. Here we describe the effect on conditioning of establishing a negative relationship between the context and the CS during pre-exposure. In Experiment 1, rats first received A-P and AX-nothing pre-exposure trials, intended to establish an inhibitory association between neutral cues X and P. Rats then received conditioning trials of the form X-P-food and X-Q-food. An interaction was observed in which early in conditioning, responding was superior during P than Q, whereas later in conditioning responding was superior during Q than P. Experiment 2 replicated this effect and investigated the potential contribution of competing responses to the data. These results are interpreted as a novel form of super-conditioning in which an abnormally large prediction error for the CS is generated during conditioning – enhancing the extent to which the CS is processed.

Lubow, R.E., & Moore, A.U. (1959). Latent inhibition: The effect of non-reinforced preexposure to the conditional stimulus. *Journal of Comparative and Physiological Psychology*, 52, 415-419.

Wagner, A.R. (1978). Expectancies and the priming of STM. In S.H. Hulse, H. Fowler, & W.K. Honig (Eds.), *Cognitive processes in animal behavior* (pp. 177-209). Hillsdale, NJ: Erlbaum.

Symposium: A Festschrift for Geoffrey Hall
Organiser: Dr David George

The fate of redundant cues during blocking and a simple discrimination

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In three experiments animals received blocking, A+ AX+, in which food was always presented after one stimulus, A, that was occasionally accompanied by another stimulus, X. They also received a simple discrimination, AX+ BX-, in which the presence and absence of food was signalled by two compounds that contained one unique cue, A or B, and one common cue, X. In each of these designs, X can be said to be redundant relative to A as a signal for food. Test trials at the end of training revealed that responding during X was stronger after blocking than after the simple discrimination.

These results contradict predictions from theories of learning that assume changes in associative strength of a stimulus are determined by a global error term based on the outcome predicted by all the stimuli that are present for a conditioning trial. The results are interpreted, instead, by assuming either that animals store a memory of every trial to which they have been exposed, or that learning is governed by an error term based on the significance of individual stimuli.

Age-related attenuation of acquired equivalence: Implications for theories of configural learning and attentional set

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We asked younger and older human participants to perform computer-based configural discriminations that were designed to detect acquired equivalence. Both groups solved the discriminations but only the younger participants demonstrated acquired equivalence. The discriminations involved learning the preferences ('like' [+] or 'dislike' [-]) for activities (e.g., tennis [t] and hockey [h]) of four fictitious people (e.g., Alice [A], Beth [B], Charlotte [C] & Dorothy [D]). In one experiment, the discrimination had the form: At+, Bt-, Ct+, Dt-, Ah-, Bh+, Ch-, Dh+. Notice that, e.g., Alice and Charlotte are 'equivalent' in liking tennis but disliking hockey. Acquired equivalence was assessed in ancillary components of the discrimination (e.g., by looking at the subsequent rate of 'whole' versus 'partial' reversal learning). Acquired equivalence is anticipated by a network whose hidden units are shared when inputs (e.g., A and C) signal the same outcome (e.g., +) when accompanied by the same input (t). Several other influential theories of discrimination learning are unable to accommodate acquired equivalence. One interpretation of these results is that there are age-related differences in the mechanisms of configural acquired equivalence.

Unifying accounts of conditioning and timing: Evidence from studies of conditioning to fixed and variable duration CSs

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Despite its clear explanatory power, associative theory is often challenged by phenomena that do not obviously fit within an associative framework; nonetheless it is surprisingly versatile in allowing itself to be adapted to deal with such challenges. One such phenomenon is that of interval timing - the observation that, while learning that a CS is associated with and hence predictive of a US, learning also occurs about exactly when that US will be delivered. Such interval timing effects have been relatively neglected by associative theories. I will discuss some recent work that aims to examine and interpret the effects of temporal factors on conditioning within an associative framework, by focusing on the distinction between CSs that are of a fixed duration, and so can be timed, and CSs of variable duration, that cannot.

Perceptual and Associative Learning

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The scope of Geoffrey Hall's academic interests is no better captured than in the title of his monograph, *Perceptual and Associative Learning*. This monograph dealt with "the interface between learning and perception": it defined the state of the field, identified areas where either theory or data were lacking, and has exerted a guiding influence over the field ever since. Here, I describe some of our own, more or less, recent research that has benefitted from his influence.

Hall, G. (1991). *Perceptual and Associative Learning*. Clarendon Press: Oxford.

The US pre-exposure effect in flavour preference conditioning: Underlying mechanisms

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In several procedures, it has been shown that Pavlovian conditioning is retarded by prior exposure to the event to be used as the unconditioned stimulus (US); this is referred to as the US pre-exposure effect. This effect is well established in flavour aversion conditioning with lithium-induced nausea as the US. Previous results from our research group using this conditioning procedure support an interpretation of the effect in terms of blocking, suggesting that conditioning to injection cues is a fundamental factor in producing the attenuated aversion commonly observed. Pre-exposure may also result in habituation but it plays no part in the retardation of conditioning. We report a series of studies on the US pre-exposure effect using a taste preference procedure. The results provide a demonstration of the US pre-exposure effect in an appetitive conditioning paradigm and, unlike previous appetitive experiments that have used an autoshaping procedure, this effect is not readily susceptible to an explanation in terms of competing responses. It provides, rather, a parallel to instances of the effect that have been obtained in aversive procedures. In seeking to explain this effect, therefore, we have examined the mechanisms that have been proposed to account for the aversive case; context blocking and habituation. The results lend no support for the context blocking account of the US pre-exposure effect. Alternative associative and non-associative interpretations are therefore considered.

Attention to specific locations in human visual perceptual learning

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Two experiments are presented that examine perceptual learning in humans. In Experiment 1, two very similar multi-coloured checkerboards AX and BX were pre-exposed. The common feature X was the majority of the checkerboard. The unique

features A and B were small areas of colour that were added to the X background at a specific location. The pre-exposed AX and BX were better discriminated in a same-different test than were two novel control stimuli CX and DX. Experiment 2 sought to determine whether this effect was due to an increase in attention to the locations in which the unique features A and B appeared on the X background. Attention to particular locations on the checkerboard was found to be the most important determinant of discrimination performance on test. There was also an additional effect of novelty. The data suggest a role for both deliberate search and attentional capture in this task.

Perceptual Learning to Support the Acquisition of Both Externally Stipulated and Internally Generated Categories

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What we see changes as a function of our experiences and chronic goals. In this talk, I will describe mechanisms of perceptual learning that are anticipated by Geoffrey Hall's unification of perceptual and associative learning mechanisms. The mechanisms are implemented in neural network models that incorporate both associative learning and perceptual constraints. In one line of studies, perceptual discriminations are learned in order to support differential responses needed for acquired categories. In another line, discriminations are learned based on unsupervised statistical evidence from the presented materials themselves, with the result that objects that receive the same external response nonetheless become increasingly discriminable with training. Both sets of results are consistent with perceptual abilities adapting to support categorization, be they categorizations that are either explicitly stipulated by the world or internally generated so as to informationally compress the world.

End of symposium

Title: The role of orbitofrontal cortex and hippocampus pre-therapy volumes in the response to Cognitive Behavioural Therapy for psychosis

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The neural integrity of the orbitofrontal cortex (OFC) and hippocampus may be relevant to responsiveness to cognitive behavioural therapy for psychosis (CBTp) because of their roles in responding flexibly¹ and emotional memory² respectively. The

study aimed to determine the relation between pre-therapy OFC and hippocampal grey matter volumes (GMVs) and CBTP responsiveness. This study involved 60 patients with schizophrenia: 30 received CBTP plus standard care (CBTP+SC; 25 completers) for 6-8 months and 30 continued with standard care (SC; 19 completers). Patients and 25 healthy participants underwent structural magnetic resonance imaging (MRI) at baseline to measure pre-therapy OFC and hippocampal GMVs. In patients, change in symptom severity on the Positive and Negative Syndrome Scale from baseline to follow-up was assessed. In the CBTP+SC group, greater pre-therapy OFC GMV was associated with positive symptom improvement following CBTP. CBTP+SC responders (20% response criterion) had normal OFC and hippocampal volumes, whereas CBTP+SC non-responders had reduced right OFC and bilateral hippocampal volumes compared to healthy participants. The findings show that having greater pre-therapy OFC and hippocampal GMVs (within the normal range) are conducive to CBTP responsiveness, potentially because these brain regions may allow patients respond more flexibly to their experiences and have better memory.

Schoenbaum G, Roesch MR, Stalnaker TA, Takahashi YK. A new perspective on the role of the orbitofrontal cortex in adaptive behaviour. *Nature Reviews Neuroscience*, 10, 885-892.

Phelps EA. Human emotion and memory: interactions of the amygdala and hippocampal complex. *Current Opinion in Neurobiology* 14, 198-202.

Gender Differences in Visual Attention: Is the Colour Red a Determinant of Go/No-Go Task Performance in Men and Women?

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Two experiments were conducted to examine gender differences in attention to explore the nature/explanation for the reported differences between men and women (Stoet, 2010). Using the go/no-go flanker task developed by Stoet, men and women responded to a green target that was flanked by a green, red or blue flanker. Flankers were congruent, incongruent or neutral based on response mapping; a green target was mapped to a go-response and a red target was mapped to a no-go response (Experiment 1). Both groups showed a reliable flanker effect (faster reaction times for congruent than incongruent flankers). Consistent with Stoet, this effect was larger in women than men but unlike the results from Stoet, this appeared to be related to greater facilitation for congruent flankers rather than greater distraction for incongruent flankers. When the task instructions were reversed, and a red circle signified a go-response and a green circle was associated with a no-go-response (Experiment 2), men and women showed similar congruency effects indicating that the colour *red* may modify gender differences in attention. These findings suggest that women show greater facilitation than men for congruent green flankers (Experiment 1) but that this benefit is eliminated for congruent red flankers (Experiment 2).

Stoet, G. (2010). Sex differences in the processing of flankers. *Quarterly Journal of Experimental Psychology*, 63, 633-638.

Neural correlates of perceptual learning in the visual cortex: Largely, but not completely, overlapping effects of the amount and structure of exposure.

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While simple exposure to similar stimuli aids subsequent discrimination between them (perceptual learning), the structure of exposure is also important: In particular, discrimination between stimuli exposed in alternation is better than between stimuli receiving equivalent amounts of exposure in blocks. Moreover, perceptual learning of visual stimuli depends, in part, in primary visual cortex. However, it is not known where in primary visual cortex this processing takes place and how this relates to the structure of exposure. In an event-related fMRI study participants received intermixed or blocked exposure to confusable pairs of faces, scenes and dots. Participants then performed same/different judgements with exposed and novel pairs of stimuli. Stimulus type independent activation was seen in early visual cortex (V1-4), and elsewhere, when comparing intermixed and novel stimuli. Areas V1 and V2 were activated by participants showing weak perceptual learning, but with stronger perceptual learning activity in these regions reduced. Activity in areas V3 and V4 was only modulated by those participants showing strong perceptual learning. Similar, but not identical, relationships were observed when contrasting intermixed with blocked exposure. This suggests that the schedule of exposure primarily influences the amount, rather than the nature, of perceptual learning.

What is so special about visual symmetry?

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Animal displays and human artefacts imply that there is something special about visual symmetry. In a previous EPS meeting (Nottingham, July 2011), we reported an implicit preference for symmetry over random patterns. We have since conducted electrophysiological investigations into symmetry perception and evaluation. In one experiment, we contrasted three types of regular pattern (reflection, rotation and translation) with matched random patterns. Event Related Potential (ERP) analysis showed that the brain differentiates regular from random patterns, but does not distinguish between the regularity types under passive viewing conditions. However, in a subsequent study where participants actively classified the patterns, reflectional and rotational symmetry had different ERP signatures. Finally, we explored emotional responses by recording facial muscle activity. Reflection patterns produced more activity in the Zygomaticus Major (the muscle responsible for smiling) than random patterns. This may indicate a positive affective response to reflection. However, by encouraging participants to perceive the random patterns as *the target for the task*, and the reflection as *non-target*, we could reverse this effect. We conclude that affective responses to

reflectional symmetry are spontaneous, but this reaction only occurs when people are engaged in active classification, and it depends how the categories are framed.

Dynamics of walking adaptation aftereffects induced in static images of walking actors

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Visual adaptation to walking actions results in subsequent aftereffects that bias perception of static images of walkers in different postures so that they appear to walk in the opposite direction to the adapting actor. It is not clear, however, if this walking aftereffect is comparable to other well studied low- and high-level visual aftereffects. We therefore measured the dynamics of the walking aftereffect in order to assess the characteristics of the adapting mechanism. We found that walking aftereffects showed similar characteristic dynamics as for face aftereffects and some motion aftereffects. Walking aftereffects could be induced in a broad range of images of walking actors and were not restricted to images of actors in any particular posture. Walking aftereffects increased with adapting stimulus repetition and decayed over time. The duration of the aftereffect was dependent upon time spent observing the adapting stimulus and could be well modelled by a power-law function that characterises this relationship in both face and motion aftereffects. Increasing the speed of the adapting stimulus by increasing actor walk speed increased aftereffect magnitude, as seen for some motion aftereffects. The nature of the aftereffects induced by observing walking actors indicates that they behave like traditional high-level visual aftereffects.

Affective responses to symmetry perception

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Humans and animals are very efficient at detecting visual symmetry (Royer, 1981). In humans the perception and experience of reflectional symmetry leads to aesthetic judgments. The fluency hypothesis explains these preferences as due to the fact that the more fluently the perceiver processes an object, the more positive is their hedonic response (Reber et al. 2004). We conducted two experiments using symmetric or random dot patterns as primes whereas positive and negative words were used as targets in an affective priming task. Results showed a significant interaction between Type of Prime and Word-Valence $F(1, 18) = 11.88, p = .003$. In Experiment 2 (when participants evaluated the symmetry of primes) RTs to positive words were shorter when preceded by Symmetrical primes ($M = 1026$) than when preceded by Random primes ($M = 1104$). This pattern of results was not observed in Experiment 1 (when participants only responded to the Target-Words and did not evaluate the symmetry of primes). We conclude that although symmetry is not evaluated spontaneously, when it is evaluated, its presence results in faster RTs to subsequently presented positive words. We conclude that although

symmetry is not evaluated spontaneously (Hofel & Jacobsen, 2007), when it is engenders affective congruence effects.

Hofel L. & Jacobsen, T. (2007) Electrophysiological indices of processing aesthetic: Spontaneous or intentional processes? *International Journal of Psychophysiology*, 65, 20-30.

Reber, R., Wurtz, P., & Zimmermann, T. D. (2004). Exploring "fringe" consciousness: The subjective experience of perceptual fluency and its objective bases. *Consciousness and Cognition*, 13, 47-60.

Royer, F.L. (1981) Detection of Symmetry. *Journal of Experimental Psychology: Human Perception and Performance*, 7, 1186-1210.

Two mechanisms for coding emotions from bodily actions

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Face aftereffects (AE) have been widely applied to study face coding and have provided support for partially independent coding of facial expressions and facial identity (Ellamil, Susskind, & Anderson, 2008; Fox & Barton, 2007). We can, however, also recognize the identity of other individuals and infer their emotional states by observing their bodily actions. We investigated the mechanisms involved in coding emotions and identity from whole body actions using a visual adaptation paradigm. Following adaptation to happy or sad actions, participants judged the subsequent action as having the opposite emotion. This bias was significantly stronger when the identity of the actor in the adapting and test stimuli was the same. For both conditions (same and different identity) magnitude of emotional action aftereffects increased with the duration of the adapting stimuli. Only the different identity AE decayed over time (absent by 10.8 seconds). These findings suggest that emotional action aftereffects for same and different identity actors rely on different mechanisms. For different identity conditions, aftereffects showed similar dynamics as for other high-level aftereffects; whereas for the same identity condition, adaptation appeared to produce a long lasting recalibration of the perceived emotion derived from the actions of the observed individual.

Ellamil, M., Susskind, J. M., & Anderson, A. K. (2008). Examinations of identity invariance in facial expression adaption. *Cognitive, Affective and Behavioural Neuroscience*, 8, 273-281.

Fox, C. J., & Barton, J. J. S. (2007). What is adapted in face adaption? The neural representations of expression in the human visual system. *Brain Research*, 1127, 80-89.

Rectifying Damaging Effects of Illumination on Face Recognition

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Recognition failure due to variations of illumination is common in face perception. In this study, we explored whether image processing techniques could alleviate this deficit. We employed face images that were either original or altered via a number of image processing techniques to remove or weaken shading. Participants performed recognition and matching tasks based on these two basic types of image conditions. The results show that while recognition accuracy in a memory task was little affected by image manipulations, identification performance in the face matching task was significantly improved on images processed by some of the processing techniques. We conclude that relative to long-term face memory, face matching may be more susceptible to discrepancy of shading on different images of a face. Reducing this discrepancy by certain image-processing techniques can facilitate person identification when original face images contain large illumination differences.

Can exposure to similar comparison stimuli facilitate improved recognition of unfamiliar faces?

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Theoretical analyses of perceptual learning suggest that comparison between similar stimuli is particularly beneficial to their subsequent processing. There is some support for the idea that such processes might contribute to learning about faces in that presenting a computer generated “target face” along with similar comparators improved performance on a matching task using that target (Dwyer & Vladeanu, 2009). Here, we examine whether comparison to similar faces improves subsequent recognition when photos of human faces, rather than computer generated images, were used as the targets. There was no general recognition advantage for faces that had been presented alongside similar comparators. Instead, the pattern of results across studies suggests that comparators are only effective under limited circumstances; in particular, when the comparison faces are very similar those used as foils during test. In addition, there was a suggestion that restricting viewing during initial exposure to internal face features might improve subsequent performance, regardless of the opportunity for comparison.

Dwyer, D. M., & Vladeanu, M. (2009). Perceptual learning in face processing: Comparison facilitates face recognition. *Quarterly Journal of Experimental Psychology*, 62, 2055-2067.

Event cueing confirms that belief in occurrence and recollection reflect distinct processes

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Recent research shows that judgments of occurrence and of recollecting autobiographical events reflect distinct cognitive processes. This has been achieved by asking participants to rate a series of events that they select based on their level belief and recollection. Such self-selection may bias reporting. The current talk covers recent studies in which events are cued rather than self-selected, so that participants are not aware of the specific interest in the distinction between belief and recollection. In these studies, participants are cued to recall five events from early childhood. Once the events are elicited, participants rate belief in occurrence, recollection, plausibility, and characteristics associated with memory (e.g., perceptual, spatial features). Confirmatory factor analytic procedures produced the anticipated measurement dissociation between belief in occurrence and recollection, and regression analyses confirmed a double dissociation between the two constructs.

Eliciting involuntary memories in the lab: The role of cue information

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Four studies were conducted to assess if the characteristics of cues have a role in eliciting involuntary autobiographical memories (IM) in the lab. These are common experiences in which personal life events are remembered without conscious effort. Participants wrote down whatever crossed their mind during a computer-based mind-wondering and then categorized these mental contents as memories or thoughts. After confirming previous results showing that IM can be elicited in the lab (Exp 1), we showed that high-imagery cues elicited significantly more memories than low-imagery cues (Exp 2). However, presenting actual visual details as cues decreased the number of memories elicited compared to high-imagery cues, as well as their vividness (Exp 3). In Experiment 4 was an exploratory study in which we assessed retrieval times which component of the cue is more effective in eliciting memories. Overall, the results suggest that retrieval of IM is probably mediated by imagery, activated by the gist of the cue. The implications for a matching hypothesis at retrieval are discussed.

Comparing the structure of autobiographical past and future events

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Recent research has evidenced a number of similarities in the neural and cognitive processes associated with remembering personal past events and imagining possible

future events. However, this work has also suggested that simulation of future events is generally characterised by less sensory detail. Explanations for these findings have centred on the extent to which constructing past and future episodes place differing demands on underlying cognitive systems involved in the control, manipulation and binding of disparate episodic details into coherent event representations. The current set of experiments asked participants to retrieve past events and imagine possible future events. In each instance they were asked to provide their description of the event as a series of episodic details. Response times to produce the component episodic details were recorded, and used to provide insight into factors affecting how individuals piece together disparate details to create descriptions of past and future autobiographical events.

Creating non-believed memories for recent autobiographical events

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Recent research shows that that people can have vivid memories for events they do not believe occurred. Such memories have been called nonbelieved memories. In the present experiment we had two aims. Firstly we examined if it was possible to create nonbelieved memories in the lab, thus enabling future research of nonbelieved memories in experimental conditions. Second, we examined if following debriefing in false memory studies, nonbelieved memories are left behind. In Session 1 participants imitated simple actions, and in Session 2 they saw doctored video-recordings containing clips that falsely suggested they had performed additional (*fake*) actions. In Session 3, participants were debriefed and told specifically which actions in the video were not truly performed. Rating for belief and memory for all critical actions were tested before and after debriefing. Our results showed that debriefing undermined participants' beliefs in fake actions, but left behind residual memory-like content. Our results demonstrate for the first time that belief can be experimentally dissociated from memory and support the existing theory that belief in and memory for an event can be independently-occurring constructs.

Frith Prize Lecture

The effects of age and hearing loss on temporal coding in the auditory system

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Hearing loss is most commonly caused by irreversible damage to the cochlea in the inner ear, which results in an inability to detect weak sounds. However, even when sounds are amplified to make them audible, people with a cochlear hearing loss often report considerable hearing difficulties, particularly when listening in noisy environments. The extent of these 'supra-threshold' difficulties varies widely among individuals with similar detection thresholds, and their cause is uncertain. Recent

evidence suggests that cochlear hearing loss is often associated with a reduction in the ability to use temporal information carried in rapid sound fluctuations. Listeners with a cochlear hearing loss are poorer than normal-hearing listeners at psychoacoustic tasks that are thought to require accurate temporal processing, and appear to benefit less from precise temporal information in speech signals. I will discuss the evidence for an auditory temporal coding deficit in listeners with cochlear hearing loss, and consider whether such a deficit may explain some of the perceptual difficulties that they report. Performance on auditory temporal processing tasks also appears to decline with age, independently of hearing loss. The effect of age on temporal processing will also be discussed.

Symposium: Applied Issues in Face Recognition**Organiser: Dr Chris Longmore**Intranasal inhalation of oxytocin improves face processing in developmental prosopagnosia

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Recent evidence suggests intranasal inhalation of the hormone oxytocin can improve face processing in healthy participants, but it is unknown whether the technique has the same effect on individuals with impaired face recognition abilities. Thus, the current investigation aimed to examine this issue in individuals with developmental prosopagnosia (DP). Ten DPs and ten matched controls took part in this study, using a randomized placebo-controlled, double-blind within-subject experimental design (AB-BA). Each participant took part in two testing sessions separated by a two-week interval. In each session, they inhaled 24IU of oxytocin or placebo spray, followed by a 45 minute resting period to allow central oxytocin levels to plateau. Participants then completed a new version of the Cambridge Face Memory Test and a face matching task, which had been matched for difficulty prior to testing. Statistical comparisons revealed main effects of both participant group and treatment condition in both face processing tests, but the two did not interact. Specifically, the performance of DP participants was significantly lower than control performance under both oxytocin and placebo conditions, but oxytocin improved processing in both groups. It is therefore concluded that inhalation of the hormone can temporarily improve face processing in individuals with DP.

The Man Who Mistook His Neuropsychologist For a Popstar: When Configural Processing Fails in Acquired Prosopagnosia

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A prosopagnosic patient is reported with extreme difficulties in recognizing familiar faces in everyday life despite excellent object recognition skills. Formal testing indicates that he is also severely impaired at remembering pre-experimentally unfamiliar faces and that he takes an extremely long time to identify famous faces and to match unfamiliar faces. Nevertheless, he performs as quickly and as accurately as controls at recognizing famous faces when fracturing conceals the configural information in the face. He also performs accurately at identifying inverted familiar and unfamiliar faces and can recognize famous faces from their external features. He shows evidence of impaired holistic processing but normal local processing of Navon figures. This case appears to reflect the clearest example yet of an acquired prosopagnosic patient whose familiar face recognition deficit is caused by a severe configural processing deficit in the absence of

any problems in featural processing. These preserved featural skills together with apparently intact visual imagery for faces allow him to identify a surprisingly large number of famous faces when unlimited time is available.

Can individual differences in face recognition postdict eyewitness accuracy?

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Eyewitnesses frequently mistake innocent suspects for the culprits of an observed crime, and such misidentifications have caused the wrongful convictions of many innocent people. This study attempted to establish the accuracy of individual eyewitnesses by assessing their ability to process unfamiliar faces. Observers viewed a staged crime and later tried to select the culprit from an identity lineup. This was followed by a face test that provides a laboratory analogue to lineup identifications. We found that this face test can be used to determine the reliability of individual witnesses when a positive eyewitness identification had been made. Importantly, this was possible based on the specific response that a witness had made and without prior knowledge of whether the culprit was actually present in the lineup. These findings suggest that individual differences in face processing provide a potential instrument for *postdicting* eyewitness accuracy and for preventing miscarriages of justice.

Exploring differences in face recognition ability

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Relatively little research has looked at individual differences in face recognition. However, Megreya and Burton (2006) showed large individual differences in unfamiliar face matching and moderate correlations between face matching and various components of visual short-term memory, cognitive style and perceptual speed. Li et al. (2010) found that extroverts who have better social skills performed better in a face recognition memory task compared with introverts. Burton et al. (1999) found that police officers were no better at identifying people from CCTV compared with unfamiliar participants. We describe a number of face perception experiments, conducted with police officers and controls, looking at the effect of expertise and individual differences. Results also suggest that fingerprint experts and facial image comparison experts perform better than controls on a CCTV face array task. Finally, in ongoing work we discuss the size of the inversion effect as a function of famous face recognition performance and unfamiliar face matching.

The effects of holistic attribution on the construction of facial-composites

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Witnesses to and victims of serious crime are often required to describe an offender and then construct a facial composite. Laboratory studies show that holistic attribution (e.g. rating a face for honesty, masculinity) is associated with improved face recognition, and this technique has been introduced as a practical tool to facilitate facial-composite construction (Frowd et al., 2008). However, it is not currently clear whether holistic attribution to the target face benefits performance by improving a memory representation specific to the target or by eliciting a general processing style that is useful for the composite task. Participants inspected a photograph of an unfamiliar target face and later described the face and constructed a composite of it by selecting individual facial features. Other participants did the same but, after face recall, made holistic judgements either about their particular target face or a face that was unrelated to the study (a female friend). Holistic attribution of the same target promoted better quality composites than those constructed following either holistic attribution of an unrelated target or face recall alone. The data support the notion that holistic attribution can improve access to a specific memory for the purpose of face construction.

Frowd, C.D., Bruce, V., Smith, A.J., & Hancock, P.J.B. (2008). Improving the Quality of Facial Composites Using a Holistic Cognitive Interview. *Journal of Experimental Psychology: Applied*, 14, 276-287.

Improving face matching with caricature

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Matching unfamiliar face images is surprisingly error-prone, with performance in a line up task typically around 70% correct, even with good quality pictures. We demonstrate that caricaturing both the target image and the lineup faces can improve performance, especially when the target is not present. Our explanation is that caricaturing moves all the lineup images further apart in 'face space', thus making them easier to differentiate and reducing the likelihood of a false match with the target. The procedure has the potential for practical application, where an automated face recognition system gives an inconclusive result, which is then passed back to a human operator to decide. The method has worked with Caucasian, Egyptian and Japanese faces, but not with an African American set, all when viewed by Caucasian participants. We analyse the reasons why it did not work for the African American set and test the possibility that the problem was due to using an inappropriate reference image for caricaturing. However, using two different reference images, while improving the apparent image quality, still yielded no performance improvement with this face set.

End of Symposium

Evidence for a role of orbitofrontal cortex in saccadic orienting to eye gaze cues

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Damage to the orbitofrontal cortex (OFC) is known to disrupt normal processing of socially relevant information and is associated with social behavioural difficulties (Cicerone & Tanenbaum, 1997; Mah, Arnold & Grafman, 2004; Bechara and colleagues 1994, 1996, 2000; Stone, Baron-Cohen, & Knight, 1998). We have investigated the role of OFC in saccadic orienting to eye gaze and arrow cues in the pro- and anti-saccade tasks in a patient with circumscribed OFC damage who also shows some deficits in socio-emotional recognition tasks. Unlike control participants, the patient's eye movements were not influenced by the gaze cues, but her responses to arrows were in the normal range in both tasks. A second patient with damage to the lateral frontal cortex was found to be influenced by both types of cues in pro and anti- saccade tasks. These findings suggest that gaze cues are processed differentially to arrows and indicate a possible double-dissociation between the neural basis of typical orienting to gaze and arrow cues. Specifically, we hypothesise that gaze processing is reliant on OFC and that deficits in this ability may underlie social difficulties after OFC damage.

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Bechara, A., Tranel, D., Damasio, H., & Damasio, A. (1996). Failure to respond autonomically to anticipated future outcomes following damage to prefrontal cortex. *Cerebral Cortex*, *6*, 215-225.

Cicerone, K., & Tanenbaum, L. (1997). Disturbance of social cognition after traumatic orbitofrontal brain injury. *Archives of Clinical Neuropsychology*, *12*, 173-188.

Mah, L., Arnold, M., & Grafman, J. (2004). Impairment of social perception associated with lesions of the prefrontal cortex. *American Journal of Psychiatry*, *161*, 1247-1255.

Stone, V., Baron-Cohen, S., & Knight, R. T. (1998). Frontal lobe contributions to theory of mind. *Journal of Cognitive Neuroscience*, *10*, 640-656.

Spatial remapping across saccades is lateralised – a TMS study

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The neural mechanisms underlying the stable representation of visual space across saccadic eye movements are poorly understood. Previous studies in primates, brain damaged patients and imaging studies have shown that the posterior parietal cortex (PPC) has a key role in this updating process. Two targets were presented in rapid succession and participants were required to make a saccade to each remembered location as

accurately as possible. Repetitive transcranial magnetic stimulation (rTMS) over the left and right PPC prior to saccade onset was applied to disrupt the proposed updating process. We found that both left and right PPC stimulation interfered with spatial remapping in the form of increased latencies and landing position errors for saccades to the second- but not the first target. There was no TMS effect on other kinematic parameters. In addition, right PPC stimulation led to a spatial remapping deficit for saccades within the ipsilateral (right) hemifield and across hemifields (right-left). In contrast left PPC stimulation resulted in impaired remapping only for second saccades to the right hemifield. These results suggest a right hemispheric bias for spatial remapping which may be a potential underlying factor in visuospatial disorders following right brain damage.

Why can't children piece their knowledge together? The puzzling difficulty of tool innovation

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Tool innovation – designing and making a novel tool to solve a task – is extremely difficult for young children (Beck et al., 2011; Cutting et al., 2011). In the current studies we demonstrated different aspects of the task to children aged 4 to 6, in order to discover why tool innovation might be so difficult. These were seeing a pre-made example of the target tool (a hook) and having experience manipulating the materials. In experiment 1 (N = 59), older children successfully manufactured a hook after seeing the pre-made target tool only if they had received a warm-up in which they had manipulated the materials. Younger children performed at floor in both conditions. In experiment 2 (N = 50), younger children's poor performance was not explained by a failure to remember the manipulation warm-up. We conclude that children's difficulty is likely to be due to the ill-structured nature of tool-innovation problems, in which components of a solution must be both generated and co-ordinated. Our findings suggest that older children struggled with generating components of the solution but could co-ordinate them, whereas younger children could not co-ordinate components, even when they were explicitly provided.

Beck, S. R., Apperly, I. A., Chappell, J., Guthrie, C., & Cutting, N. (2011). Making tools isn't child's play. *Cognition*, 119, 301–306.

Cutting, N., Apperly, I. A., & Beck, S. R. (2011). Why do children lack the flexibility to innovate tools? *Journal of Experimental Child Psychology*, 109, 497–511.

Is termination of memory search rational?

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Decisions to terminate or give up search of memory are ubiquitous and part of our everyday decision making. Are the trade offs we make between the costs and rewards of retrieval from memory rational? This study used a delayed free recall paradigm with an open-ended retrieval period that allowed participants to decide for themselves when to stop searching memory. The payoff structure for correct retrievals and time spent retrieving was manipulated between subjects: after all participants completed a baseline block of trials, the payoff structure changed to either easier parameters (lower time costs, higher recall rewards) or harder parameters (higher time costs, lower recall rewards). Results show that recall performance is insensitive to payoff changes but time performance – both the total time spent retrieving as well as the exit latency (time after the last retrieval until the decision to quit) – are significantly influenced by payoff structure changes.

Temporal constraints of the word blindness post-hypnotic suggestion on Stroop task performance

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Previous work has shown that a post-hypnotic suggestion stating that words are meaningless symbols given to highly hypnotisable individuals can eliminate the Stroop effect (Raz et al., 2002) and therefore substantially boost top-down control processes. The present work investigated possible temporal constraints on this remarkable finding given known constraints on other top-down control mechanisms. In a completely within-subjects and counterbalanced design, 19 highly suggestible individuals performed the Stroop task both with and without a post-hypnotic suggestion, both when response-stimulus interval (RSI) was short (500ms) or equivalent to previous studies (3500ms). The suggestion reduced Stroop interference in the short RSI condition (54ms vs. 6ms) but not in the long RSI condition (52ms vs. 56ms), and did not have an effect on Stroop facilitation. The effect of RSI on suggestion is consistent with findings of RSI on congruency sequence effects (Egner et al., 2010). Our results suggest that response to the suggestion involves reactive top-down control processes that persist only if levels of activation can be maintained. These findings will have ramifications for use of post-hypnotic suggestions in cognitive neuroscience research and extend our knowledge of the mechanisms by which the word blindness suggestion takes its effect.

Egner, T., Ely, S. & Grinband, J. (2010). Going, going, gone: Characterizing the time-course of congruency sequence effects. *Frontiers in Psychology*, 1, 1-8.

Raz, A., Shapiro, T., Fan, J., & Posner, M. (2002). Hypnotic suggestion and the modulation of Stroop interference. *Archives of General Psychiatry*, 59, 1155-61.

Representing hypothetical situations: an eye-tracking investigation into readers' sensitivity to utility and speaker control in the comprehension of conditionals

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The successful comprehension of a conditional of the form *if...then....* requires the construction of a representation of the hypothetical situation. In two eye-tracking experiments we examine whether readers are sensitive online to congruency between the utility of the consequent clause of a conditional (Experiment 1) and expectations based on prior context, and to the extent to which the speaker has control over the consequent event that is described by a conditional (Experiment 2). On a number of eye-tracking measures, we find that readers are sensitive to conditional utility; conditionals for which the consequent utility mismatches that which would be expected on the basis of prior context result in processing disruption (Experiment 1). In Experiment 2 we find that readers are sensitive to whether or not the speaker of a conditional has control over the consequent event; conditional promises (which require the speaker to have control over the consequent) result in processing disruption for contexts where this control is absent. Conditional tips (which do not require this control) are processed equivalently easily regardless of context.

Assessing Differences in Emotion Recognition and Short Term Memory for Young Old, Middle Old and Older Adults

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Recently, age related cognitive decline has become an area of interest due to the maturing population. Research has identified that emotion recognition is likely to be affected by age related decline. It has also been suggested that memory subsystems may be responsible for decline. Therefore, the purpose of this study was to assess whether age related decline in emotion recognition could be accounted for by short term memory or visual memory. This study also expands on the aging literature as there is a paucity of research that compares aging across three age cohorts, as well as using relatively “young” participants. We examined 62 individuals using the following: a digit span task to assess generalized short term memory, a memory for faces task to assess visual memory, and a faces task consisting of eight different emotions (neutral, happy, sad, angry, surprise, contempt, disgust, fearful). These tasks were a part of a computerised test that was specifically designed for the purposes of the current research. Participants ranged from 18 to 84 years of age; these were divided into young adults (18-49), middle old adults (50-64) and older adults (50-64). Anger and surprise were found to decrease across the three groups, suggesting the possibility of age related decline. Short term memory was also found to decline; however, visual memory remained intact. This suggests that short term memory may contribute to decline in emotion recognition; however, visual mechanisms cannot be completely ruled out. This study provides an insight into emotion recognition and the aging process.

Autonomic Emotional Responses to the Induction of the Rubber-hand Illusion in those that Report Out-of-Body Experiences and Kindred Hallucinations of the ‘self’. Evidence for Psychophysiological Components Associated with illusory Body Representations.

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An out-of-body experience (OBE) can be defined as “*an experience in which a person perceives the world from a location outside their physical body*”. Previously, research has indicated that these experiences reflect a temporary breakdown in typically stable egocentric body-based processing, embodiment, and multi-sensory integration (Blanke et al., 2005) and can be associated with increased degrees of cortical hyperexcitability and temporal lobe dysfunction (Braithwaite et al., 2011; in press / 2012). Kindred hallucinations of self-reduplication, like “sensed-presence experiences” (SPE), are also thought to reflect a breakdown in self-processing, but in the absence of any compromise to the perceiving self and embodiment. We present preliminary findings from the first investigation of Electrodermal activity from hallucinating OBEers and those who report SPEs (and controls) during the induction of a rubber-hand illusion – a task which provides a useful and reliable measure of embodiment and multi-sensory integration. Preliminary evidence suggests a previously unreported psychophysiological component of the Electrodermal response underlying the induction of the rubber-hand illusion. Specifically, we show that (i) significant DC shifts emerge in the electrodermal

activity that precedes the rubber-arm illusion; and (ii) this component is strongest for the OBE groups and those who report stronger and more convincing illusions.

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How is the beauty of a group summarised?

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How does the visual system rapidly process information in a group of faces? Several studies have investigated how emotional signal is summarised. We have previously found that from brief presentations, participants can accurately assess whether a group of faces contains more attractive or more unattractive faces. The current work aims to explore whether observers only have access to a general gist of the group, and whether information regarding its members is lost after summarisation. Participants judged either whether the majority of a group of nine faces were attractive or unattractive, or the number of attractive faces in the group. In the first task, performance only dipped to chance levels when the number of attractive and unattractive faces in a group was nearly equal. In the second task, participants were most accurate when there were only two or three attractive faces, and the degree of error increased linearly as the number of attractive faces increased or decreased. This suggests that when a summary of a group is created, even basic group member information, such as the number of members in a certain category, is not retained.

Psychological correlates of the rubber hand illusion

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The rubber hand illusion is a well documented illusory body experience in which the synchronous tactile stimulation of an observed prosthesis and corresponding unseen limb displaces the perceived location of stimulation toward the prosthesis. Previous research indicates that hypnotic suggestibility is positively correlated with experience of the illusion (MacLachlan et al. 2003). The current experiment addresses waking suggestibility as a psychological correlate of the illusion. A sample was stratified for

waking suggestibility into low, moderate and highly suggestible groups. Each groups experience of the illusion was then examined using a procedure in which a partition obscured view of the participant's right hand, with the prosthesis placed 15 cm away on the visible side of the partition. A synchronous combination of stroking, lifting and tapping formed the tactile stimulation, with an asynchronous control condition. Participants then rated their experience of the illusion using a 9 item questionnaire adapted from Botvinick and Cohen (1999). We predict waking suggestibility to be a psychological correlate of the illusion, with responsiveness to ideomotor suggestions positively correlating with experience of the illusion. Theoretically this implies that highly suggestible individuals are more predisposed to responsiveness regarding the verbal and tactile instructions of the rubber hand illusion.

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MacLachlan, M., Desmond, D. & Horgan, O. (2003). Psychological correlates of illusory body experiences. *Journal of Rehabilitation Research and Development*, 40, 59-66.

Examining the optimum parameters associated with strength of the rubber hand illusion

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In the rubber hand illusion, the synchronous tactile stimulation of a visible prosthesis and obscured limb produces an illusion whereby the stimulation is perceived to emanate from the prosthesis. The literature includes numerous methodologies, with the strength of a procedure being based upon the proximity between the prosthesis and limb (Lloyd, 2007) as well as the type of stimulation utilized (Armel & Ramachandran, 2003). This experiment compares these variables in a between subjects design using two different procedures. One sample had a partition obscure view of the right hand, with the prosthesis placed 15cm away in view. Another sample had a rectangular box cover their right hand, with the prosthesis placed atop approximately 10cm away. Four conditions of tactile stimulation were implemented in each group. Two utilized stroking in both synchronous and asynchronous conditions. Two utilized a combination of stroking, lifting, and tapping in both synchronous and asynchronous conditions. Following each condition, participants rated experience of the illusion on a 9 item questionnaire. We predict that the box procedure utilizing a combination of stimulation will produce a significantly stronger illusion than other synchronous conditions. Hence, this procedure has the most potential for use future experiments examining the rubber hand illusion.

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Lloyd, D, M. (2007). Spatial limits on referred touch to an alien limb may reflect boundaries of visuo-tactile peripersonal space surrounding the hand. *Brain and Cognition*, 64, 104-109.

A preliminary investigation of tactile hedonic preferences in humans

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Very little is known about human preferences for tactile stimuli. Here tactile aesthetic preferences for various textured surfaces were investigated in two experiments. In Experiment 1, people evaluated the pleasantness and the roughness of a range of textures that were either explored actively or passively. The stimuli were presented on the cheek or the palm of the hand. Those textures that were subjectively-rated as smoother were preferred over textures subjectively-rated as rougher. Furthermore, the most unpleasant textures were disliked significantly more during conditions of active as compared to passive stimulation. In Experiment 2, the textures were passively presented by using a controlled speed of 15 cm/s, in order to activate A δ fibers, specialized for the processing of emotional touch. The forearms and palms of both of the participants arms were stimulated. The results revealed a significant preference for the stimulation of the hairy skin of the forearm (densely innervated by A δ fibers) over the glabrous palm of the hand. Taken together, these results provide preliminary evidence regarding people's preferences for different haptic/tactile surface attributes. They also suggest the presence of an important interaction between tactile pleasantness, the physiology of the haptic system, and certain parameters of the stimulation.

Examining the role of attention in automatic imitation

Elizabeth Evans, Emma Gowen and Ellen Poliakoff

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The passive perception of other's actions can have an unconscious effect on the execution of one's own actions. This 'automatic imitation' is typically stronger for biological relative to non-biological stimuli. However, this 'human bias' seems to be reliant on attention: imitation is similar across stimuli when attention is more diffusely directed and abolished by a secondary task (Gowen et al., 2010). Here we further explored whether we could reinstate this human bias by directing attention towards the stimulus movement using an easier secondary task or an earlier go-signal. Participants performed an automatic imitation task in which they observed either a moving finger or square and responded to a diffuse yellow go-signal presented during the stimulus movement. This differs from our earlier study, where the go-signal was presented post stimulus movement. Furthermore, half of the participants performed the secondary task. Automatic imitation was stronger for biological stimuli in the presence of the earlier go-signal. However, although the secondary task was significantly easier it still removed automatic imitation effects. This study highlights that attention is an important determining factor in the strength of automatic imitation and has implications for future autism research, where there is evidence for impaired top-down modulation of automatic imitation.

Gowen, E., Bradshaw, C., Galpin, A., Lawrence, A. & Poliakoff, E (2010). Exploring visuomotor priming following biological and non-biological stimuli. *Brain and Cognition*, 74, 288-97.

Forming a Summary Representation of Facial Expressions in a Group

Katherine Fielding, Richard Carvey and Chang Hong Liu
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k.fielding@2010.hull.ac.uk

Haberman and Whitney (2009) found that people are able to judge the mean emotion depicted in a group of faces. However, because their study used morphed images of two expressions from the same face, there is a possibility that the mean is largely derived from the low-level information such as the highly correlated pixel values across images in a group. Hence it remains unknown whether the mean expression of different face identities can be derived in a similar fashion when there is less low-level similarity among the images. Neither is it clear whether the mean expression in a group is analogous to an undifferentiated morph. In this study, participants were shown two groups of faces. They judged which of the groups contained more happy or disgusted faces. One condition required comparing two groups of unmorphed faces, whereas the other required comparing the unmorphed faces with morphed ones. Participants were more rapid, although not more accurate, in the morphed than the unmorphed condition. The results suggest that a morph can act effectively as a pre-ensembled representation. This finding supports the idea that ensemble representation is analogous to a morph of individual faces.

Haberman, J., & Whitney, D. (2009). Seeing the mean: Ensemble coding for sets of faces. *Journal of Experimental Psychology: Human Perception and Performance*, 35, 718-734.

Rare item search in static and moving displays

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When participants perform a visual search task in the lab, the target is usually present in half of the trials. In real life situations (e.g. airport security) targets occur much less frequently. Search has been shown to yield high miss rates when targets are rare (Wolfe, Horowitz, & Kenner, 2005). The present study examined visual search efficiency for rare targets (10% vs. 50% target prevalence) in displays containing static and/or moving items. Participant's reaction times, error rates and eye movements were recorded. Consistent with previous findings of target prevalence, results showed that the number of misses increased as target prevalence decreased. For easy search, this effect of target prevalence was much more pronounced when moving and static trials were blocked than when they were intermixed. For difficult search, intermixing moving and static trials did not diminish the effect of target prevalence. Reaction times were longer for rare target search, with fewer fixations that lasted longer. The increased error rates and differences

these findings suggest rare target search may operate differently from normal search. The intermixing of trials of different motions may improve vigilance in search due to distinct changes between displays.

Wolfe, J. M., Horowitz, T. S., & Kenner, N. M. (2005). Rare items often missed in visual searches. *Nature*, 435, 439-440.

Carryover of scanning behaviour in natural scenes: Vertical carryover slows upright face identification but speeds up inverted face identification

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Recently, Thompson and Crundall (2011) showed that a preceding unrelated task can affect attention deployment due to the carryover of scanning behaviour in natural scenes (images of road scenes). The present experiments investigated the influence of an irrelevant letter-search task (with letter strings arranged horizontally, vertically or randomly) on the scanning strategies in processing famous faces and full-body pictures (Experiment 1) and in upright and inverted famous faces (Experiment 2). Participants' response time and the direction of their first eye-movement were recorded. Letter searches impacted on the direction of the first eye-movement, such that a direct carryover-effect was observed and this effect impacted the recognition response of faces but no effect on the full body pictures. The recognition of upright famous faces was slowed by a preceding vertically oriented letter-search task. However, the recognition of inverted faces was sped up by vertical eye-movements. These results extend the carryover findings of Thompson and Crundall (2011) into a novel domain, and crucially indicate that upright and inverted faces are better processed by a different first eye-movement.

Thompson, C., & Crundall, D. (2011). Scanning behaviour in natural scenes is influenced by a preceding unrelated visual search task. *Perception*, 40, 1335-1349.

Children's understanding of replica, iconic gesture and pretence: iconicity facilitates symbol understanding but not via representational insight

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This study investigated 3-to-5-year-olds' understanding of three types of symbol. Each type had a property that has been claimed to facilitate children's symbol understanding: Replica (high similarity between signifier and referent), Gesture (using hands as a signifier), and Transformed Object Pretence (creating a 'pretence world' to separate the non-symbolic identity). Children were presented with one of the three types of symbol and selected the referent for the symbol from a set of four objects. Children chose the correct referent above chance for Replicas earlier (26 months) than for Gestures and Transformed Objects (after 36 months, no significant difference between Gestures

and Transformed Objects). This indicates that high signifier-referent similarity is a more dominant factor in facilitating children's symbol understanding than the hand-as-a-signifier and pretence world. However, there was evidence that the hand-as-a-signifier helped children separate the symbolic and non-symbolic identities of the signifier. Children sometimes reached towards Replica and Transformed Object signifiers, but never towards Gestures. This indicates that children sometimes did not see Replicas and Transformed Objects as signifiers, but as objects in their own right. Gestures are easier to identify as symbolic, but their interpretation is not as easy as Replica due to a lack of signifier-referent similarity.

Facial Composites: does a post-interview delay provide a release from verbal overshadowing under forensically-relevant conditions?

Emma Portch¹, Charity Brown¹ and Charlie Frowd²

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Eyewitnesses may describe the facial features of an offender using a Cognitive Interview (CI) and then construct a facial composite. Describing a face however, may interfere with a witness's ability to recognise when the best visual likeness of the offender has been achieved (the verbal overshadowing effect). Inserting a delay between interview and composite construction can improve composite quality, suggesting that interference from verbal recall is temporary (Frowd & Fields, 2011). This experiment examines whether this benefit is maintained when manipulating two forensically-relevant variables; the delay between viewing the 'offender' and composite construction and whether or not the participant knows to attend to the offender's face during encoding. 96 participants watched a video of a target person under intentional or incidental encoding conditions. They were interviewed 3-4 hours or 2 days later using a CI and then constructed a composite, using a feature-based system, either immediately or after a 30 minute delay. Asking target-familiar participants to name the composites allowed for an assessment of composite quality. This experiment provides a heightened estimate of verbal overshadowing effects in instances of applied face recognition. The study of techniques for alleviating verbal overshadowing effects can inform both theory and forensic practice.

Frowd, C.D., & Fields, S. (2011). Verbalization effects in facial composite production. *Psychology, Crime & Law*, 17, 731-744.

The Effect of a Non-informative Visual Stimulus on Judgements of Tactile Stimulus Magnitude

Stephen Puntis^{1,2}, Kirsten McKenzie^{1,3}, Adam Laurence¹, Donna Lloyd¹, Richard Brown¹ and Ellen Poliakoff¹

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 2. University of Oxford
 3. University of Nottingham Malaysia Campus
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The reported intensity of an event in one modality can be enhanced by introducing a concurrent event in another modality, for example sounds are rated louder when accompanied by a light (Odgaard, Arieh & Marks, 2004). Here we investigated how a non-informative light affected judgments regarding the strength of a tactile stimulus. In Experiment 1, we asked participants to discriminate weak and strong tactile pulses, which were accompanied by a light flash on 50% of trials. We observed that the concurrent light led to a bias in classifying vibrations as 'strong' and there was some evidence for improved accuracy of discrimination. In Experiment 2, rather than making a binary decision (weak versus strong), participants made a magnitude judgment about each vibration using a 6 point scale. Our results indicated that a concurrent light led to a significant increase in magnitude ratings for both 'weak' and 'strong' vibrotactile stimuli. This suggests that the simultaneous sensory input from a visual stimulus can increase both the accuracy of tactile intensity judgments and the subjective intensity of a tactile target.

Odgaard, E.C., Arieh, Y., & Marks, L.E. (2004). Brighter Noise: Sensory enhancement of perceived loudness by concurrent visual stimulation, *Cognitive, Affective, & Behavioural Neuroscience*, 4, 127 - 132

Words structure visual attention in a target detection task

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Research in Chinese has found that words can be treated as if they were objects (Li & Logan, 2008) in a Posner-like target detection paradigm. Cues inside a word can facilitate target detection elsewhere in that word, as is found with objects. In this study, cues and targets were embedded inside horizontal and vertical English words to see if this effect is found in a typologically and orthographically different language. Cues and targets were either: Valid (same location), Invalid-within (different location, same word) or Invalid-without (different location, different word). When the cues and targets were character colour changes, relative to valid trials there was a much higher reaction time cost associated with invalid trials where participants were cued to move their attention against reading direction than with. No "words as objects" effect was observed. When the cues and targets were background colour changes, horizontal trials showed no reduction in reaction time to invalid targets within the same word - a possible "words as object effect". It is concluded that this technique of embedding cues and targets inside words is effective at measuring attention deployment to words, but the effects are highly sensitive to the type of cues and targets used.

Li, X., & Logan, G. D. (2008). Object-based attention in Chinese readers of Chinese words: Beyond Gestalt principles. *Psychonomic Bulletin and Review*, 15, 945-949.

The effect of interaction belief on recognition memory for human faces

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In natural environments, face recognition is often interactive: observer and observee are mutually aware of one another. This, the situation in which face processing evolved and develops, accrues a wider range of cues than laboratory-bound experiments employing non-interactive faces, attracting deeper processing, and invoking social/etiquette pressures. In this study, we examine the impact of perceived social interaction on face recognition performance. The power of our experiment stems from using an identical memory task for all participants, except that belief in the interactivity of the environment was manipulated via different pre-experiment instructions. Two belief variables were controlled: 1. live video belief (whether participants were told that the learning stimuli they were charged to remember were live or pre-recorded); 2. video capture belief (whether participants were told that they were being recorded for use as an experimental stimulus, either live or later, contingent upon variable 1). The use of live learning stimuli did not significantly affect performance; however, being recorded significantly degraded performance. Combining the interactivity of natural environments with the control of a laboratory experiment, we find that the pressure of peer observation degrades recognition performance, but that observing live, cognisant individuals or inert clips is unimportant.

A perceptual record of the recent auditory past

Daniel Taylor and Denis McKeown
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Listeners appear to be able to compare the timbre of two successive complex tones separated by several seconds, even when active or verbal rehearsal is difficult or impossible. Thus our stimuli have an abstract timbre that resists verbal labeling, they differ across trials so that no “standard” comparison stimulus is built up, and the spectral change to be discriminated is very slight and therefore does not shift stimuli across verbal categories. Still, performance was worse at short (example, 2 sec) than long (example, 32 sec) RIs, an outcome predicted by temporal distinctiveness theory whereby at long RIs tone stimuli are closer in time to tones on previous trials. We reject this account in this most recent experiment where we demonstrate that the ratio of RI to inter-trial interval does not determine performance. Further, in one condition we insert an intense broadband noise early in the RI in an attempt to mask the sensory trace of the timbre stimulus. The mask has little influence on performance, consistent with our psychoacoustically derived conception is of a robust short-term auditory memory which serves to track recent auditory stimulation, maintaining a “perceptual record” of the excitation pattern arising out of cochlear filtering.

NOTES

Local Information

Accommodation

There are a number of reasonably priced hotels in Hull city centre. A selection of these is given below:

Holiday Inn Express: 80 Ferensway, Hull, HU2 8LN. Tel: 01482 485700.
(<http://www.hiexpress.com/hotels/gb/en/kingston-upon-hull/huyuk/hoteldetail>)
From £62.50 per room/night

Travelodge Hull Central: Pryme Street, Hull, HU2 8HR. Tel: 0871 984 6473.
(<http://www.travelodge.co.uk/>) From £19 per room/night

Ibis: Osbourne Street, Ferensway, Hull, HU1 2NL. Tel: 01482 387500
(<http://www.ibishotel.com/gb/hotel-3479-ibis-hull>) From £27 per room/night

Campanile: Beverley Road, Freetown Way, Hull, HU2 9AN. Tel: 01482 325530
(<http://www.campanile-hull-city-centre.co.uk/>) From £35 per room/night

Mercure Hull Royal Hotel: 170 Ferensway, Hull, HU1 3UF. Tel: 01482 325087
(<http://www.hotels-hull.co.uk/>) From £49 per room/night

Those interested in accommodation very close to the conference venue might want to consider:

The Old Grey Mare: Cottingham Road, Hull, HU5 EG. Tel: 01482 772312
(<http://www.flaminggrillpubs.com/pub-food/old-grey-mare-hull/pid-M6968>)
From £51 per room/night

University Accommodation

Accommodation has been reserved for the nights of 10th – 12th April at Thwaite Hall. Rooms cost £30 per night and include breakfast. No double or ensuite rooms are available. Thwaite Hall is located in the nearby village of Cottingham. Immediately outside the hall there is a bus stop that is served by the number 105 bus every 20 minutes. This service stops at the entrance to the university. Alternatively, it is possible to walk from the hall to the university in around 40 minutes.

Delegates wishing to book for Thwaite Hall for any of the available nights should complete the booking form and return it to: David George, Department of Psychology, University of Hull, Hull, HU6 7RX before Monday 26 March 2012.

Conference Dinner

The conference dinner will be held at the Piola restaurant (<http://www.piolarestaurant.co.uk/>), which is located at 160 Newland Avenue, on Thursday 12th April at 8pm. It will take approximately 15 minutes to walk from the conference venue to Piola.

The cost will be £33.00 TBC, for 3 courses. EPS members please book and indicate any dietary requirements on the enclosed form which should be returned to David George, Department of Psychology, University of Hull, Hull, HU6 7RX before Monday 26 March 2012.

Local Information

Travel

From Hull – approximately 2 miles

By rail: It is relatively easy to reach Hull by train from all parts of the country. There are direct services from London running approximately every two hours and hourly services to Sheffield, Leeds and Manchester. Travel from the northeast of England and eastern Scotland would involve a change of train at York or Doncaster.

Hull railway station is located in the city centre. It is approximately 2 miles from the conference venue and it will take around 40 minutes to reach the venue on foot. A taxi rank is available at the front of the station and the journey to the conference venue will take around 15 minutes.

By bus: The University is well serviced by East Yorkshire Motor Services (EYMS; <http://www.eyms.co.uk/>) bus routes number 105 and 215. Both services run from the main interchange (located in the railway station) to the University entrance. Service 105 departs from stand 20 at the interchange every 20 minutes. Service 215 also runs every 20 minutes, departing from stand 13.

From Cottingham – approximately 2 miles

By rail: The approximately hourly rail service between Sheffield and Scarborough calls at Cottingham rail station. It is a short walk from the station to Thwaite Hall and Cottingham village centre. EYMS service 105 serves the village centre and runs services to the University.

From Zeebrugge/Rotterdam

By sea: The port of Hull is served by P&O ferries (<http://www.poferries.com/>) running to Zeebrugge and Rotterdam. There is a bus service timed to meet arriving ships that runs from the port to the main interchange in the city centre.

From Humberside Airport

By bus: The airport is served by the Stagecoach HumberFlyer service. It runs approximately hourly between the airport and the main interchange in Hull city centre (see: http://www.stagecoachbus.com/PdfUploads/Timetable_11176_HumberFlyer.pdf).

By car from the M62 Motorway: Follow the M62 towards Hull. The M62 will turn into the A63 and runs into Hull city centre. Follow the signs for Hull City Centre and turn left onto the A1079. Follow the signs for Beverley. The university is sign posted along the A1079.

For delegates who wish to drive to the conference venue, **we have a small number of parking permits available. If you wish to reserve a parking permit, please email Chris Longmore (c.longmore@hull.ac.uk) to make a reservation.** There is also a pay and display car park available at the venue.

Local Taxis

If you wish to use a taxi service during your stay a couple of reliable operators are 57 taxis (01482 575757) and Hull Cars (01482 828282).

Local Information

Eating and Drinking on Campus

Staff House is located very close to the Department of Psychology and contains the Myton Servery that serves hot food between 11:45am and 2:00pm. Staff House also houses the Wyke Coffee Lounge serving sandwiches, snacks and hot drinks between 8:30am and 2pm.

The Wheelhouse is located in the Brynmor Jones Library in the centre of campus and provides a selection of sandwiches, cakes and hot and cold drinks. It will be open between 8:30am and 4:30pm.

Evening meal: Restaurants in Hull

There are many restaurants located in the centre of Hull. You will also find a number of outlets in the St. Stephen's shopping centre that is located next to the railway station. A good selection of restaurants is listed here: http://wikitravel.org/en/Kingston_upon_Hull

Hitchcocks: (*eat-as-much-as-you-like buffet - vegetarian*). 1 Bishop Lane, High Street, Hull. Tel: 01482 320233 (<http://www.hitchcocksrestaurant.co.uk/>)

Nandos: (*Portuguese chicken*): St. Stephen's Shopping Centre, Ferensway, Hull, HU2 8LN. Tel: 01482 218895 (<http://www.nandos.co.uk/>)

Raj Pavilion (*Indian*): 56a/58 Beverley Road, Hull, HU3 1YE. Tel: 01482 581939 / 211418 (<http://www.rajpavilion.co.uk/>)

Thai House (*Thai*): 51 Princes Avenue, Hull, HU5 3QY. Tel: 01482 473473

Marrakech Avenue (*Moroccan*): 58 Princes Avenue, Hull HU5 3QG. Tel: 01482 343746

Xanders (*Traditional bar*): 158 Newland Avenue Hull, HU5 2NN. Tel: 01482 446555 (<http://www.xanders-bar.co.uk/>)

The Laundry (*British*): 12a Princes Avenue, Hull, HU5 3QA. Tel: 01482 334455 (<http://www.the-laundry.co.uk/>)

Evening meal: Restaurants in Cottingham

Delegates staying in Thwaite Hall may wish to eat in Cottingham. There are a number of good restaurants in Cottingham that are listed below:

The Blue Bell (*British*): West Green, Cottingham, HU16 4BH. Tel: 01482 422741 (<http://www.bluebellinn-cottingham.co.uk/>)

Alishaan Tandori (*Indian*): 205 Hallgate, Cottingham, HU16 4BB. Tel: 01482 847255 (<http://www.alishaan.net/>)

Zing (*Indian*): 199 Hallgate, Cottingham, HU16 4DA. Tel: 01482 845777

Woksoever (*Chinese*): 169 Hallgate, Cottingham, HU16 4BB. Tel: 01482 840800 (www.woksoever.co.uk)

Pascos (*Italian*): 5 Kings Parade, Cottingham, HU16 5QQ. Tel: 01482 778683 (www.pascosbar.com)

Local Information

Places of Interest

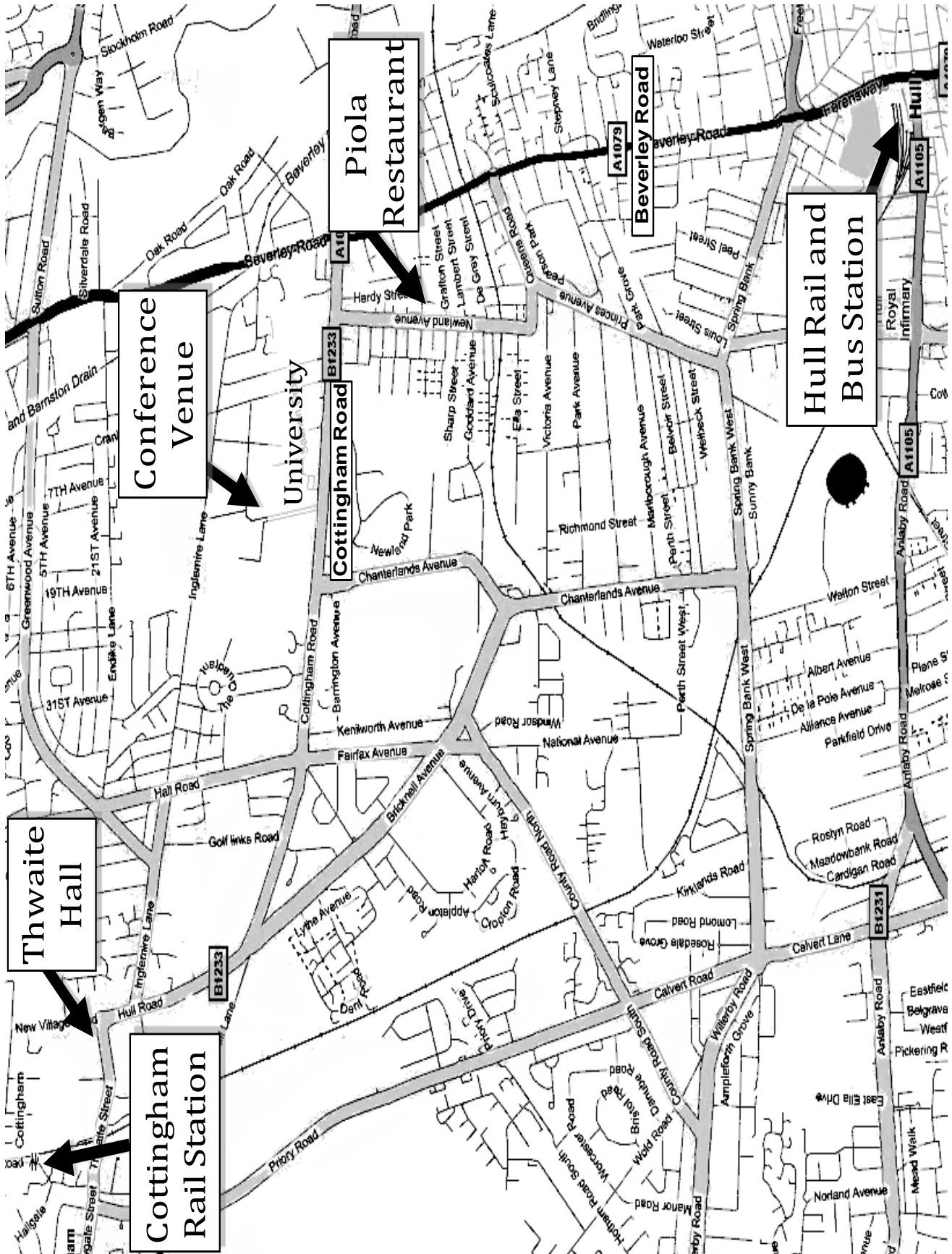
There are a number of places of interest and attractions in the city centre itself. A popular destination is the *High Street* that contains the **Museums Quarter** in which you can find a number of museums including: the **Streetlife Museum of Transport** that chronicles 200 years of transport history, **Wilberforce House** that explores the history and abolition of slavery and is the birthplace of William Wilberforce, the **Hull and East Riding Museum** that allows you to stroll through an Iron Age village and visit a Roman bath house and the **Arctic Corsair**, Hull's last arctic sidewinder trawler restored complete with guided tours.

Considering Hull's position on the banks of the River Humber, close to the North Sea, it is unsurprising that the sea is a core part of Hull's history. Fishing was, until the 1970s, a vital component of Hull's economy. The **Seven Seas Fish Trail** is a self-guided walk that begins by the Tourist Information Centre on *Paragon Street* and follows an A to Z of fish depicted in pavement sculptures through Hull's Old Town. For those keen on aquatic life, **The Deep**, located on the banks of the Humber on *Tower Street*, is a highly popular attraction: an aquarium that is home to over 3,500 fish including a number of sharks and ray. Just to the west of The Deep is **Hull Marina** that contains a number of small yachts and sailing craft together with the **Spurn Lightship** that aided shipping on the entrance to the River Humber. The lightship is now a museum and is open to visitors. The **Marina** is near to **Princess Quay**, a shopping centre that is built over the water and is overlooked by a number of small cafes of which **Leonardo's Bistro Bar** is highly recommended.

Moving away from the sea theme, the **Ferens Art Gallery** is located next to Princess Quay on *Carr Lane* and during the period of the meeting will host an open exhibition of work by professional and amateur artists. Somewhat closer to the conference venue on *Princes Avenue* is **Artlink** that will be hosting **A Cat of Nine Tales**, a photograph collection of cats and kittens from Morocco.

Also worthy of a visit is the wonderfully named **Land of Green Ginger**, a narrow street at the bottom of *Whitefriargate* in the old town. On this street you will find the **George Inn**, which boasts the **Smallest Window in England** that is said to have been used by the gatekeeper of the hotel to look out for stagecoaches.

Local Information



BOOKING FORM FOR CONFERENCE DINNER

HULL MEETING 11-13 APRIL, 2012



The Dinner is on Thursday 12th April at 8:30pm, at Piola Restaurant, 160 Newland Avenue, Hull, HU5 2NN. The cost will be £33.00 per person, including 3 courses, wine and water and gratuity.

Postgraduates may attend the dinner for a subsidised cost of £16.50.

In this instance the Booking form must be accompanied by a statement from an EPS member confirming Postgraduate status.

Name:

Address:

Tel and email:

Please book dinner ticket(s) at **£33.00** each/..... **£16.50** each for Postgraduate Total:.....

Conference Dinner – Thursday 12th April 2012	Please Tick
Starter	
King prawns sautéed with garlic, fresh chilli, white wine and herbs and served on crostone bread	
Slices of seared fillet of peppered beef thinly with rocket, shaved parmesan and chef’s special dressing	
Sautéed fresh mussels, baby clams and langoustine in olive oil, white wine, garlic and cherry tomatoes, served with homemade toasted bread	
Goat cheese and roasted red peppers bruschetta	
Agnolotti pasta filled with lobster tossed in a sauce of creamy asparagus prawns and rocket pesto	
Main	
Halibut steak with capers and tomato on a bed of sautéed spinach	
Half grilled lobster served with courgette and cherry tomato risotto	
Free range chicken breast with wild mushrooms and prawns	
8oz prime filet steak set on a crouton, topped with chicken liver pate and finished with Madeira sauce	
Stuffed aubergine with fregola and taleggio cheese	
Chefs special asparagus and saffron risotto	
Dessert	
Tiramisu	
Trio of chocolate truffle torte	
Champagne profiteroles	
Strawberry cheese cake	

Please return this form, with your cheque (made payable to University of Hull)
 to: Dr D George, Department of Psychology, University of Hull, Cottingham Road, Hull HU6 7RX
 Tel: 01482 465483 Email: d.george@hull.ac.uk

BOOKING FORMS MUST BE RETURNED, TOGETHER WITH FULL PAYMENT BY MONDAY 26th MARCH 2012

BOOKING FORM FOR CONFERENCE ACCOMMODATION

HULL MEETING 11-13 APRIL, 2012



Accommodation has been reserved for the nights of 10th – 12th April at Thwaite Hall. Rooms cost £30 per night and include breakfast. Thwaite Hall is located in the nearby village of Cottingham.

Immediately outside the hall there is a bus stop that is served by the number 105 bus every 20 minutes. This service stops at the entrance to the university.

Alternatively, it is possible to walk from the hall to the university in around 40 minutes.

Name:

Address:

.....

Tel and email:

Accommodation – Thwaite Hall, Cottingham	No of Rooms Required	Total
Tuesday 10 th April 2012		£
Wednesday 11 th April 2012		£
Thursday 12 th April 2012		£
TOTAL		£

Please return this form, with your cheque (made payable to University of Hull)

to: Dr D George, Department of Psychology, University of Hull, Cottingham Road, Hull HU6 7RX
 Tel: 01482 465483 Email: d.george@hull.ac.uk

**BOOKING FORMS MUST BE RETURNED, TOGETHER WITH FULL PAYMENT BY
 MONDAY 26th MARCH 2012**

The First Frith Prize Lecture

EPS

Experimental
Psychology
Society



will be delivered by

Dr Kathryn Hopkins

University of Manchester

The effects of hearing loss and
age on temporal coding in the
auditory system



6.00pm, Thursday 12th April 2012

East Lecture Theatre, Department of Psychology,
University of Hull, Hull, HU6 7RX

The lecture will be open to the public

EPS

Experimental
Psychology
Society

Hull Meeting, 11-13 April 2012: First Frith Prize Lecture

The programme for the Hull meeting is enclosed with this mailing. A booking form is enclosed for the conference dinner at The Piola Restaurant, 160 Newland Avenue, Hull, HU5 2NN, on Thursday 12 April at 8.00pm. If you wish to come to the dinner, the booking form should be completed and returned with payment to Dr David George by Monday 26 March 2012. Some places at the dinner are available to postgraduate students at half-price: bookings for these must be accompanied by a letter from an EPS member confirming the student's status.

The Business Meeting will be on Thursday 12 April at 5.30pm.

The programme also includes:

Thursday 12 April, 6.00pm. First Frith Prize Lecture by Dr Kathryn Hopkins entitled *The effects of hearing loss and age on temporal coding in the auditory system*.

Thursday 12 April, 12.00pm; Symposium : *A Festschrift for Geoffrey Hall* (Dr David George) speakers to include J M Pearce, J Robinson, C Bonardi, R Honey, I de Brugada, C Mitchell and R Goldstone.

Friday 13 April, 9.30am; Symposium: *Applied Issues in Face Recognition* (Dr Chris Longmore) speakers to include S Bate, A S Jansari, M Bindemann, K Lander, C Brown and P J B Hancock.

Bristol Meeting, 11-13 July 2012

The website for submissions to this meeting will open on 19 March 2012.

The meeting will include the 40th Bartlett Lecture by Professor Annette Karmiloff-Smith entitled *Adult neuropsychological models won't work for neurodevelopmental disorders: a cross-syndrome approach* plus an accompanying Symposium organised by Dr Gaia Scerif on *Cognitive Neuroscience: Insights From and For Developmental Dynamics*.

This meeting will also include a symposium in honour of Stephen Monsell to be organised by Ian McLaren and a symposium on Models of Learning and Prediction to be organised by S Farrell and C Kent.

A copy of the EPS Handbook 2012 is included in this mailing.

Dr Helen Cassaday
Hon. Secretary

February 2012

EXPERIMENTAL PSYCHOLOGY SOCIETY

A Business Meeting will be held at 5.30pm on Thursday 12th April 2012, at the University of Hull, Department of Psychology in the East Lecture Theatre, First Floor.

AGENDA

- 12/14 Minutes of the Annual General Meeting Business Meeting held on Thursday 5th January 2012, in the Ground Floor Lecture Theatre, University College London, at 5.30pm.
- 12/15 Matters arising
- 12/16 Treasurer's Report
- 12/17 Editor's Report
- 12/18 Arrangements for future meetings
- 12/19 Any other business

Date, time and place of next meeting

EXPERIMENTAL PSYCHOLOGY SOCIETY

Minutes of the 64th Annual General Meeting held in the Ground Floor Lecture Theatre, Department of Cognitive, Perceptual & Brain Sciences, University College London, 26 Bedford Way, at 5pm on Thursday 5 January 2012.

The meeting was very well-attended with over 50 members present.

The 64th AGM at UCL followed shortly after the death, in late November, of Jon Driver of UCL and the President noted this tragic loss to Experimental Psychology. In due course, EPS and the British Academy will get together to mark his memory. The President invited suggestions for this memorial event, or for other forms of memorial, from the Membership.

MINUTES

12/1 Minutes of the Business Meeting held at 5.30pm on Thursday 7th July 2011, at the University of Nottingham in Lecture Theatre B37, School of Psychology.

The minutes of the July 2011 Business meeting were approved and signed by the President.

12/2 Annual Reports

12.2.1 Annual Report of the Society (to be circulated)

The President invited comments on the Annual Report.

12.2.2 Treasurer's Report (summary accounts to be circulated)

The Treasurer showed his financial summaries. Overall income was similar to expenditure with a surplus of approximately £40K. The Treasurer emphasised the Society's reliance on the royalty from QJEP in that income from subscriptions is a relatively small proportion of the annual income. The royalty payment was down slightly on 2010, but overall income was comparable to that received in 2010 because of the Frith Prize donation. Reserves are up to £443,702 but this apparent increase is due to a delayed payment and, as required, reserves are still less than twice expenditure. The Treasurer reported an increase in spending on small grants (by some £10K), as well as on Grindley grants (160 post docs and postgrads have been supported to attend conferences). The increased Hon Sec expenditure was due to the overlap with the previous Hon Sec during the transitional period. Expenditure on meetings looks reduced relative to 2010 because the April meeting in Granada was more expensive than usual.

The President thanked the Treasurer, both for all his work this year, as well as for his 6 year term as Treasurer.

12.2.3 Editor's Report

The Editor reported on another fine year for QJEP. There were in total 443 submissions, of which 114 were rapid communications. Consistent with the journal's international standing, only 26% of submissions were from the UK, 20% of submissions were from North America, 35% submissions were from Europe and 19% were from the rest of the world. Decision times averaged 54 days, reflecting a very good turnaround time for Experimental Psychology, and authors received a response on their revisions on average within one month. The new impact factor for QJEP has been announced as 2.21 (up from 2.01 and 1.76 in previous years). The journal is now ranked 27/81 in Experimental Psychology (previously ranked 36 and 44 in this category). The Editor credited this improvement in the journal's standing to changes introduced under Mike Burton's earlier Editorship.

The President thanked the Editor.

12/4-12/9 October Committee Nominations

Election of Forty First Bartlett Lecturer

Professor John Mollon

Election to Tenth and Eleventh EPS Mid-Career Awards

Professor Nilli Lavie

Professor Nicola Clayton

Election of Twentieth EPS Prize Lecturer

Dr Antonia Hamilton

Election to First Frith Prize

Dr Kathryn Hopkins

Election of Officers and Committee Members 2012

Officers of the Society

Hon Secretary

Dr Helen Cassaday

Editor Elect

Professor Marc Brysbaert

Ordinary Committee Members

Dr David George

Dr Trish Riddell

Dr Andrew Stewart (Conference Secretary)

Honorary Members

Professor Tony Dickinson

Professor Uta Frith

Professor William Marslen-Wilson

The nominations made by the committee in October 2011 were all ratified at the AGM.

12/10 Admission of Ordinary Members

The list recommended by the Committee for admission to Ordinary Membership, under Rule 7 had been circulated electronically, as well as at the meeting.

The October Committee recommendations for admission to membership were all ratified at the AGM.

12/11 Proposed rule changes

There are no proposed rule changes but there will be a couple of minor amendments to correct the cross-referencing between rules.

12/12 Arrangements for future meetings

The President highlighted the two symposia planned for Hull, including a Festschrift for Geoffrey Hall, as well as the events planned for Bristol, including a symposium in honour of Stephen Monsell. The Bristol meeting will be preceded by a Festschrift for Graham Hitch.

Members were advised that the 2013 meeting details are now advertised on the web page. We have venues arranged up to April 2014. The President invited members to send offers to host future EPS meetings to the Hon Sec.

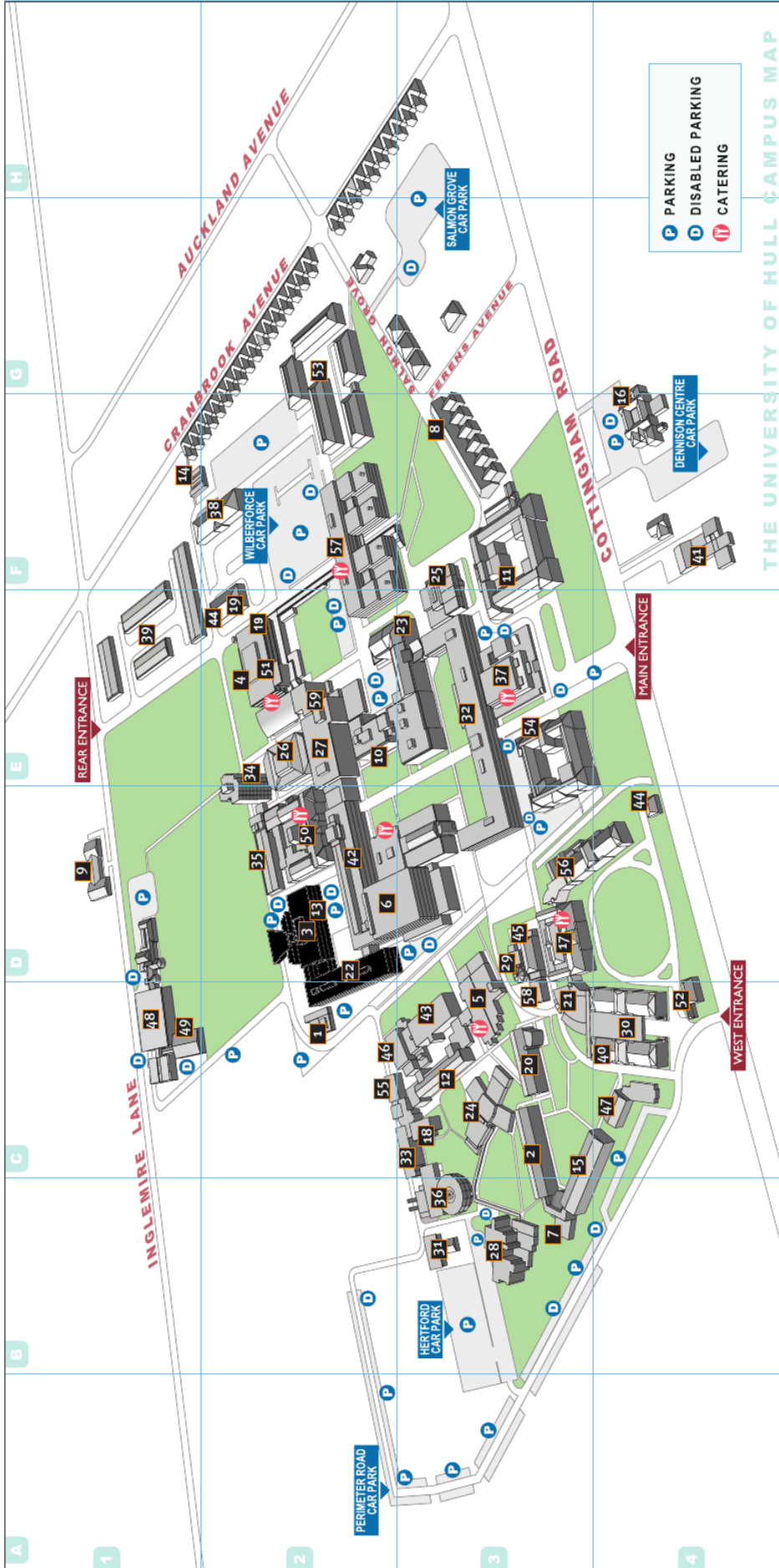
12/13 Any other business

Members were invited to raise any other business.

As incoming President, John Pearce thanked the outgoing President Vicki Bruce, on behalf of EPS.

The President thanked Jenni Rodd for doing a fantastic job as Local Organiser.

Retiring Committee members, Jasper Robinson and Dana Samson, were thanked for all their hard work on behalf of EPS. Dana was additionally thanked, as the role of Conference Secretary involves a phenomenal amount of work.



THE UNIVERSITY OF HULL CAMPUS MAP

- | | | | | | |
|--|--|--|--------------------------------------|--|----------------------------|
| 1 Acoustic Research Centre (C2) | 12 Coine (C3) | 23 Ferens (E3) | 34 Loten (E2) | 45 Ryton Lecture Theatre (D3) | 56 Wharfe (D3) |
| 2 Aire (C3) | 13 Computer Services (D2) | 24 Foss (C3) | 35 Loten Workshops (D2) | 46 Sheaf (C2) | 57 Wilberforce (F2) |
| 3 Applied Science 3 (D2) | 14 Little Einsteins Centre (F1) | 25 Graduate School (F3) | 36 Loxley (HYMS) (B3) | 47 Skell (C4) | 58 Wiske (C3) |
| 4 Asylum Nightclub (E2) | 15 Dearne (C3) | 26 Gullbankian Centre (E2) | 37 Middleton Hall (E3) | 48 Sports and Fitness Centre (C1) | 59 Wolfson (E2) |
| 5 Bain (C3) | 16 Dennison Centre (F4) | 27 Hardy (E2) | 38 Newlands House (F2) | 49 Sports, Health and Exercise Science Lab (C1) | |
| 6 Brynmor Jones Library (D2) | 17 Derwent (D3) | 28 Herford (HYMS) (B2) | 39 Newlands Science Park (E1) | 50 Staff House (D2) | |
| 7 Calder (B3) | 18 Don (C3) | 29 Holme (D3) | 40 Nidd (C4) | 51 University House (E2) | |
| 8 Centre for Lifelong Learning (F3) | 19 Engineering Innovation (E2) | 30 Hull University Business School (C4) | 41 Raines House (F4) | 52 Swale House (C4) | |
| 9 Central Print Services (D1) | 20 Enterprise Centre (C3) | 31 Kyle (B3) | 42 Robert Blackburn (D2) | 53 Taylor Court (G2) | |
| 10 Chemistry (E2) | 21 Esk (C4) | 32 Larkin (E3) | 43 Rother (C3) | 54 Venn (Reception) (E3) | |
| 11 Cothen (F3) | 22 Fenner (D2) | 33 Leven (C3) | 44 Rye House (D4) | 55 Washburn (C2) | |