LEICESTER MEETING

15-17 APRIL 2009
A scientific meeting will be held at the University of Leicester on 15-17 April, 2009. The local organisers are Tim Jordan and Kevin Paterson.

**Sixth Mid Career Prize Lecture**

Thursday 16\textsuperscript{th} April 6.00pm  
*Simulation of another person's behaviour: Effects on object and person attributes*  
Professor Steven Tipper (Bangor University)

**Symposium - To accompany the Prize Lecture**

Thursday 16\textsuperscript{th} April 2.30pm – 5.00pm  
*Links between perception and action*  
Organiser: Professor Stephen Jackson

**Symposium**

Wednesday 15\textsuperscript{th} April 2.30pm – 6.00pm  
*Is there a role for split-fovea processing in visual word recognition and reading?*  
Organisers: Professor Tim Jordan and Dr Kevin Paterson

**Poster Session**

This will be held in conjunction with the drinks reception on Wednesday evening from 6pm until 8pm in the Atrium of the Henry Wellcome Building, adjacent to the School of Psychology. Delegates may put up posters from 5pm.

**Platform Presentations**

Sessions will be held in Lecture Theatre 1 and Lecture Theatre 2 of the Ken Edwards Building. The Ken Edwards Building is located on the main area of the campus and is nearest Entrance 2. It is a 10 minute walk from the Ken Edwards Building to the Henry Wellcome Building and the School of Psychology. Both theatres have data projectors available for Powerpoint presentations. Presenters are encouraged to email their presentations ahead of time, or bring them on CD Rom or USB, but may provide their own laptops and connector leads. The onsite PC has Windows Vista and Office 2007. Any queries about facilities in the theatres should be sent to Kevin Paterson (kbp3@le.ac.uk)

Tea and Coffee will be served in the 1st Floor Park Lounge of the Charles Wilson Building.

The conference dinner will be held at The Case Restaurant, Hotel Street, Leicester, LE1 5AW on Thursday 16th April at 8.00pm. A booking form is enclosed.
START OF PARALLEL SESSIONS

Session A

Ken Edwards Building, Lecture Theatre 1

2.00  Matthew A. J. Roberts* and Richard C. Shillcock (University of Edinburgh)
      Fixation disparity lengthens reading saccades.

Symposium:  Is there a role for split-fovea processing in visual word recognition and reading?
            Organisers: Professor Tim Jordan and Dr Kevin Paterson

2.30  Timothy R. Jordan, Kevin B. Paterson, Stoyan Kurtev* and Mengyun Xu* (University of Leicester)
      Evaluating the evidence for split-fovea processing in word recognition.

3.00  Kevin B. Paterson, Timothy R. Jordan, Stoyan Kurtev* and Mengyun Xu* (University of Leicester)
      Evidence against split-fovea-processing in word recognition: The long and short of it.

3.30  TEA

4.00  Marc Brysbaert, Lise Van de Haegen* and Denis Drieghe* (Ghent University)
      The split fovea theory and the Leicester Critique: What do the data say?

4.30  Richard Shillcock (University of Edinburgh)
      Foveation in reading.

5.00  Simon P. Liversedge and Hazel I. Blythe (University of Southampton)
      There’s no such thing as a free trip across the corpus callosum.

5.30  Erik D. Reichle (University of Pittsburgh)
      Eye movements in reading: A functional role for split-foveal processing?

End of Symposium

6.00 – 8.00  POSTERS AND DRINKS RECEPTION. Atrium of the Henry Wellcome Building, adjacent to the School of Psychology.
START OF PARALLEL SESSIONS

Session B

Ken Edwards Building, Lecture Theatre 2

2.00  **Carlo De Lillo, Giorgio Fuggetta*, Kirandeep Kooner* and Daniel Poole* (University of Leicester)**
The relative role of structure, path length and path crossing in immediate serial spatial recall.

2.30  **Thom Baguley, Sebastian Webb* and Mark Lansdale** (Nottingham Trent University, University of Leicester)
What predicts confidence in location memory?

3.00  **Helen L. Henshaw* and Mark W. Lansdale** (University of Leicester)
How location memory is forgotten: A loss of both availability and precision.

3.30  TEA

4.00  **Rebecca Ashton* and Carlo De Lillo** (University of Leicester)
Association, inhibition and objects permanence in dogs’ (Canis familiaris) spatial search.

4.30  **Sharon L. Money* and Dinkar Sharma** (University of Kent)
Associative-learning and Stroop: differences between implicit and explicitly learned associations.

5.00  **Susan Chipchase* and Peter Chapman** (University of Nottingham)
Narrowing of attention at encoding associated with negative, but not positive, visual memory specificity.

5.30  **Luciano G. Buratto*, William J. Matthews* and Koen Lamberts** (University of Warwick)
Study-test congruence modulates the long-term memory advantage for dynamic stimuli.

6.00 – 8.00 POSTERS AND DRINKS RECEPTION. Atrium of the Henry Wellcome Building, adjacent to the School of Psychology.
Session A

Ken Edwards Building, Lecture Theatre 1

9.00 Eva Belke and Janina Wilmskoetter* (Ruhr-Universität Bochum, Universität Bielefeld)  
Effects of spatial and semantic context on confrontation naming in anomic speakers.

9.30 Jason Bohan*, Anthony Sanford Hartmut Leuthold, Yuko Hijikata* Alison Sanford* (University of Glasgow, University of Strathclyde)  
ERP investigations of semantic anomalies.

10.00 Anke Büttner* (University of Wolverhampton) (Sponsor Kevin Paterson)  
Something else on the mind: The effect of working memory load upon semantic illusion rate.

10.30 COFFEE

11.00 Ruth Filik and Linda Moxey (University of Glasgow)  
The on-line processing of written irony.

11.30 Linda Moxey and Ruth Filik (University of Glasgow)  
The effect of a character’s desire on the focus patterns associated with natural language quantifiers.

12.00 Kumiko Fukumura* and Roger van Gompel (University of Dundee)  
The role of inherent saliency in the choice of referring expressions.

12.30 – 1.30 LUNCH
**Session B**

**Ken Edwards Building, Lecture Theatre 2**

9.00  **Hazel I. Blythe, Simon P. Liversedge and Nicolas S. Holliman**  
(University of Southampton, Durham University)  
Binocular coordination in response to stereoscopic stimuli.

9.30  **Mary-Ellen Large**  
(University of Hull) (Sponsor Paul Skarrat)  
Detecting changes in facial expression.

10.00 **Markus Bindemann, A. Mike Burton and Christoph Scheepers**  
(University of Glasgow)  
Face detection in natural scenes is mediated by the body.

10.30  **COFFEE**

11.00 **Eun Young Yoon, and Glyn Humphreys**  
(University of Birmingham)  
Attention to your body and object affordance.

11.30 **Kulbir Singh Birak**, **Elizabeth A. Maylor** and **Friederike Schlaghecken**  
(University of Warwick)  
Low-level perceptuo-motor control in old age.

12.00 **Mike Anderson, Allison Fox**, **Corinne Reid** and **Dorothy Bishop**  
(University of Western Australia, Murdoch University, University of Oxford)  
Executive functions in children and their relationship to fluid and crystallised intelligence.

12.30 – 1.30  **LUNCH**
Session A

Ken Edwards Building, Lecture Theatre 1

1.30  Richard Ramsey* and Antonia Hamilton (University of Nottingham)  
Neural systems coding actor identity in goal-directed action.

2.00  Robert Hardwick* and Martin Edwards (University of Birmingham)  
Effects of observation perspective on action priming.

Symposium:

2.30  Rob Ellis* (University of Plymouth)  
The perception-action loop in visual object selection.

3.00  TEA

3.30  Patric Bach* (Bangor University)  
I feel your pain: the representation of tactile consequences of others' actions.

4.00  Günther Knoblich* (Radboud University Nijmegen)  
Motor contributions to action perception.

4.30  Stephen Jackson (University of Nottingham)  
Influence of motor intention on perception: Evidence from behavioural and brain imaging studies.

End of Symposium

5.00  EPS Business Meeting

6.00  6th Mid Career Award Lecture – Professor Steven Tipper (Bangor University)  
Simulation of another person's behaviour: Effects on object and person attributes.  
(Henry Wellcome Building Lecture Theatre, adjacent to the School of Psychology.)
Session B

Ken Edwards Building, Lecture Theatre 2

1.30 Alan O'Donoghue* and John H. Wearden (Keele University)  
“...but it felt like an hour”. Duration judgements and the rate of subjective time.

2.00 Ruth S. Ogden*, Catharine Montgomery* and John H. Wearden  
(Liverpool John Moores University, Keele University)  
Time flies when you’re having fun, particularly if you’re drunk: an exploration of distortions to the passage of time.

2.30 Alexis Makin* and Ellen Poliakoff (University of Manchester)  
Is there a common velocity memory system?

3.00 TEA

3.30 Andrew T. Woods*, Donna M. Lloyd*, Ellen Poliakoff, Garnt Dijksterhuis* and Anna Thomas* (University of Manchester, Unilever R&D)  
Perceptual constancy effects in taste discrimination.

4.00 Briony D. Pulford* (University of Leicester) (Sponsor Andrew M. Colman)  
Is luck on my side? Optimism, pessimism, and ambiguity aversion.

4.30 Shira Elqayam, Valerie Thompson*, Jonathan Evans and David Over* (De Montfort University, University of Saskatchewan, University of Plymouth, Durham University)  
Deontic introduction: How to infer the 'ought' from the 'is'.

5.00 EPS Business Meeting

6.00 6th Mid Career Award Lecture – Professor Steven Tipper (Bangor University)  
Simulation of another person's behaviour: Effects on object and person attributes.  
(Henry Wellcome Building Lecture Theatre, adjacent to the School of Psychology.)
Session A

Ken Edwards Building, Lecture Theatre 1

9.00    Roger P. G. van Gompel and Maria Nella Carminati* (University of Dundee)
        Structural priming in production: The special role of the verb.

9.30    Maria Nella Carminati* and Roger P.G. van Gompel (University of Dundee)
        Structural priming in comprehension is not short lived.

10.00   Jon Catling and Kevin Dent* (University of Worcester, University of Birmingham)
        Age of acquisition, frequency and picture – word interference.

10.30   Tessa Webb* and Kevin Paterson (University of Leicester)
        The locus of age-of-acquisition effects in word recognition: Evidence from fixation times in reading.

11.00   COFFEE

11.30   Sarah J. White, Adrian Staub*, Elizabeth C. Hollway* and Keith Rayner (University of Leicester, University of Massachusetts, University of California)
        Distributional effects of word frequency and orthographic familiarity on eye fixation durations during reading and response times to isolated words.

12.00   Walter van Heuven*, Kathy Conklin* and Taoli Zhang* (University of Nottingham) (Sponsor Richard Tunney)
        Word recognition in Chinese-English bilinguals: Cross-linguistic effects of orthographic and phonological similarity.

12.30   Mohammed Shafiullah*, Effie. A. Karanikola*, Evangelia Michalaki* and John Albutt* (De Montfort University, University of Teesside, University of Salford) (Sponsor Mark Scase)
        Bilingual input switching.

End of parallel sessions

End of meeting
**Session B**

**Ken Edwards Building, Lecture Theatre 2**

* 9.30  
  **James S. Adelman*, Duncan Guest* and Christopher Kent**  
  (University of Warwick, Oxford Brookes University, University of Bristol)  
  Why do additional presentations help us identify a stimulus?

* 10.00  
  **Eleanor Miles*, Richard Brown* and Ellen Poliakoff**  
  (University of Sheffield, University of Manchester)  
  The 'Modality shift effect': do stimuli automatically grab attention to their modality?

* 10.30  
  **Snehlata Jaswal* and Robert H. Logie**  
  (University of Edinburgh)  
  (Sponsor Dana Samson)  
  Effects of a pattern mask on memory for binding of visual features.

* 11.00  
  **COFFEE**

* 11.30  
  **Lucy S Andrews*, Jason J. Braithwaite, Derrick G. Watson and Glyn W. Humphreys**  
  (University of Birmingham, University of Warwick)  
  Do inhibitory processes underlie instances of sustained inattentional blindness? Evidence for feature-based inhibition from dynamic visual search.

* 12.00  
  **Daniel Smith and Thomas Schenk**  
  (Durham University)  
  Inhibition of return suppresses visual awareness.

* 12.30  
  **Simon Farrell, Casimir J. H. Ludwig*, Lucy A. Ellis* and Iain D. Gilchrist**  
  (University of Bristol)  
  Modeling the influence of environmental statistics on inhibition of saccadic return.

End of parallel sessions

End of meeting
1. **Clare Allely* and Luke A. Jones** (University of Manchester)  
The affect of repetitive stimulation on memory recall and time estimation: Are increases in information processing speed proportional to increases clock speed?

2. **Khader A. Baroun** (Kuwait University) (Sponsor Dana Samson)  
Differences between the Kuwaiti and the British college students on Receiver Operating Characteristcs (ROC) of time judgment: A comparative study.

3. **Mazda Beigi*, Marjan Jahanshahi*, Fernand Gobet* and Andrew Parton*** (Brunel University, UCL Institute of Neurology) (sponsor Dana Samson)  
Impact of S-R incompatibility on procedural learning.

4. **Colin Davidson*, Noah Prince*, Katherine Reid*, G. Daniel Weese*, Cassandra Ahn*, Masato Fukui* and Everett H. Ellinwood** (Duke University Medical Centre, Leicester University, Hampden-Sydney College) (Sponsor Kevin Paterson)  
Effect of chronic methamphetamine treatment on attentional set-shifting in the rat.

5. **Giorgio Fuggetta*, Claire Hutchinson* and Victoria Slade*** (University of Leicester) (Sponsor Tim Jordan)  
Electrophysiological correlates of ocular sighting dominance in human visual cortex.

The timecourse of load-induced effects on attention early in a fixation in reading.

7. **Debra Griffiths* and Steven P. Tipper** (Bangor University)  
Priming of reach trajectory when observing actions: Hand-centred effects.

8. **Sarah Hotham* and Dinkar Sharma** (University of Kent)  
The moderating effects of emotional eating on conflict monitoring.

9. **Shazeaa Ingar* and Carlo De Lillo** (University of Leicester)  
Working memory for spatially structured and unstructured sequences in individuals diagnosed with Autism Spectrum Disorder.

10. **Julie A. Kirkby*, Hazel I. Blythe, Valerie Benson* and Simon P. Liversedge** (University of Southampton)  
Binocular coordination during a non-reading task: adult, child and dyslexic populations.

11. **Anna Lelievre* and Simon Farrell** (University of Bristol)  
Unwrapping serial recall: Input or output effects?

12. **Mateo Obregón* and Richard Shillcock** (University of Edinburgh)  
N-gram effects and sex differences for word beginnings and endings in word recognition.

13. **Milena Palumbo*, Carlo De Lillo, Giovanna Spinozzi*, Emily Drake*, Kathryn Oakey* and Jenna Walker** (University of Leicester, Consiglio Nazionale delle Ricerche)  
The role of redundancy in the processing of hierarchical visual stimuli by humans and capuchin monkeys (Cebus apella).
14. Alison J. S. Sanford*, Jessica M. Price* and Anthony J. Sanford (University of Strathclyde, University of Glasgow)
Suppression and enhancement effects induced by cleft constructions.

15. Antje Sauermann*, Frank Kühler*, Heiner Drenhaus* and Kevin B. Paterson (University of Potsdam, University of Leicester)
On the interpretation and processing of "only"

16. Helen Saunderson*, Steve Shimozaki* and Sarah White (University of Leicester)
Expertise and domain specific explanations of face processing - evidence from art experts.

17. Andrew M. J. Young, Emma Aley* and Alexandra Russell* (University of Leicester)
Heavy drinkers show attentional bias to alcohol-related stimuli in a novel conditioning task.

18. Taoli Zhang* and Walter van Heuven* (University of Nottingham) (Sponsor Richard J. Tunney)
The role of semantic transparency on Chinese compound processing: Evidence for morphemic decomposition
Fixation disparity lengthens reading saccades

Matthew A. J. Roberts and Richard C. Shillcock
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Recent studies have shown that a considerable proportion of binocular fixations in reading are not conjoint, i.e. the left eye fixates one or more characters either left or right of the right eye. This finding has considerable implications for the study of eye-movements in reading, but to date no exploration of the consequences of this behaviour has been published. We examine a large corpus of binocular eye-movements recorded during the reading of naturalistic multi-line texts, and show that wider fixation disparities tend to be followed by longer saccades. We refine this observation to show that the apparent lengthening of saccades is based on an increased probability of skipping word n+1. In so doing we show that a significant proportion of the effect of disparity on saccade length remains independent of confounding visual, cognitive and methodological effects. Our analysis suggests that fixation disparity expands the perceptual span in reading; we contrast visual and cognitive processes by which this might be expected to occur.

Symposium: Is there a role for split-fovea processing in visual word recognition and reading?
Organisers: Professor Tim Jordan and Dr Kevin Paterson

Evaluating the evidence for split-fovea processing in word recognition.

Timothy R. Jordan, Kevin B. Paterson, Stoyan Kurtev and Mengyun Xu
University of Leicester
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Hemispheric processing of visual information presented about the point of fixation has become a matter of considerable debate in word recognition research (e.g., Jordan & Paterson, in press; Jordan, Paterson, & Kurtev, 2009; Jordan, Paterson, Kurtev, & Xu, in press; Jordan, Paterson, & Stachurski, 2008). Specifically, although it is well established that information presented to the left and right sides of each retina outside the fovea projects to each contralateral hemisphere, some researchers have proposed the interesting view that each fovea is divided precisely at its vertical midline such that, when a word is fixated, all letters on each side of fixation project unilaterally to the contralateral hemisphere. To help form an accurate understanding of the viability of this “split-fovea theory” of word recognition (SFT), this talk examines some of the evidence and arguments that have been presented in the literature to develop the theory. In addition, an experiment is reported which examines the effects of fixation location on performance with fixated words as this is a key test for SFT. Overall, the assessment reveals issues that are important both for an accurate understanding of the viability of SFT and for developing procedures for conducting future research in this area.


Evidence against split-fovea-processing in word recognition: The long and short of it.

Kevin B. Paterson, Timothy R. Jordan, Stoyan Kurtev and Mengyun Xu
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Lavidor, Ellis, Shillcock, and Bland (2001) report an experiment that is widely cited in support of the "split-fovea" theory of word recognition and that is purported to show that lexical decisions for fixated words are affected by the number of letters to the left of fixation but not the right, and therefore that there is a functional split in hemispheric processing at the point of fixation. We re-evaluated this claim over five experiments using Lavidor et al.'s original stimuli and procedure of merely instructing participants where to fixate (Experiment 1), or using an eye-tracker to either monitor actual fixation location (Experiment 2), or to ensure fixation accuracy during binocular and monocular viewing of stimuli (Experiments 3-5; Jordan, Paterson, & Stachurski, in press; Jordan, Paterson, Kurtev, & Xu, in press). All five experiments produced robust effects of optimal viewing position (e.g., O’Regan, 1981), thereby revealing that normal processes of word recognition had occurred, but none of the experiments was able to replicate Lavidor et al.’s findings or provide evidence for the split-fovea processing of words. Thus, the findings of all five experiments provide no evidence of a functional division in hemispheric processing at the point of fixation.


The split fovea theory and the Leicester Critique: What do the data say?

Marc Brysbaert, Lise Van de Haegen and Denis Drieghe
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According to the Split Fovea Theory (SFT) recognition of foveally presented words involves interhemispheric transfer. This is because letters to the left of the fixation location are initially sent to the right hemisphere, whereas letters to the right of the fixation position are projected to the left hemisphere. Both sources of information must be integrated for words to be recognized. Evidence for the SFT comes from the Optimal Viewing Position (OVP) paradigm, in which foveal word recognition is examined as a function of the letter fixated. OVP curves are different for left and right language dominant participants, indicating a time cost when information is presented in the halffield ipsilateral to the dominant hemisphere. The methodology of the SFT research has recently been questioned by a group of researchers working at the University of Leicester, because not enough efforts were made to ensure adequate fixation. The aim of the present study is to test the validity of this argument. Experiment 1 replicated the OVP effect in a naming task by presenting words at different fixation positions, with the experimental settings applied in previous OVP research. Experiment 2 monitored and controlled eye fixations of the participants and presented the stimuli within the boundaries of the fovea. In Experiment 3, the eyes were also tracked and monocular viewing was used. A comparison of the results of these 3 experiments allows us to empirically verify the impact of the confounds raised by the Leicester group.

Foveation in reading

Richard Shillcock
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I will summarize a theory of foveation in the normal binocular reading of multi-line text. The theory is grounded in observed anatomical and functional distinctions within the visual pathways and cerebral cortex, such as contralateral advantages in visual processing, and the vertical division of the human fovea. The theory matches both new and existing data, resolves some current controversies in research on binocular reading, and makes testable predictions.

There’s no such thing as a free trip across the corpus callosum.

Simon P. Liversedge and Hazel I. Blythe
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The split-fovea model of reading posits that a vertical split in the human retina, with each hemiretina projecting information from one visual field to the contralateral hemisphere, has processing implications for word identification. Thus, when the points of fixation are aligned on a letter within a word, different portions of the word, initially, are projected to the two hemispheres. For lexical identification to occur, information from the two hemiretinae must be integrated following a transfer of information primarily via the corpus callosum. In a series of recent studies we have demonstrated that fixation
disparity occurs frequently during reading. According to the split-fovea model disparity (crossed or uncrossed) leads to an overlap in terms of the specific letters projected to each hemisphere. Furthermore, shared letters in both hemispheres should lead to a facilitation of lexical identification (the so-called “free trip across the corpus callosum”, Shillcock & Roberts, 2008). Facilitated lexical identification during reading is indexed by shorter fixation durations. We investigated the relationship between fixation durations and disparity in our existing data sets. We will discuss our findings, and more generally, the implications of binocular coordination during reading for split foveal processing.


Eye movements in reading: A functional role for split-foveal processing?

Erik D. Reichle
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The split-fovea hypothesis posits that a vertical splitting of the fovea and the projection of information from each visual hemi-field to contralateral halves of the visual cortex plays an important functional role in both printed word identification and eye-movement control during reading (McDonald & Shillcock, 2005; McDonald, Carpenter, & Shillcock, 2005). This hypothesis will be evaluated in light of empirical and computational research examining how word identification guides readers’ eye movements. An ERP experiment (Reichle, Tokowicz, Liu, & Perfetti, 2009) suggests that activation in cortical areas implicated in abstract orthographic processing (e.g., the word-form area; McCandliss, Cohen, & Dehaene, 2003) predicts when the eyes move from one word to the next, and that—contrary to the split-fovea hypothesis—visual areas play little role in this capacity. Computational work (Reichle & Laurent, 2006) suggests that a pre-cursor to full lexical access (e.g., an early stage of lexical processing indicating that a word is “familiar” and hence likely to be identified; Reichle, Warren, & McConnell, 2009) initiates saccadic programming, and that—again, contrary to the split-fovea hypothesis—uncertainty about the exact identity of words is unlikely to play a central role in guiding readers’ eye movements.


**End of Symposium**

The relative role of structure, path length and path crossing in immediate serial spatial recall

Carlo De Lillo, Giorgio Fuggetta, Kirandeep Kooner and Daniel Pool
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Different factors affecting the recall of sequences of tapping responses, as measured by variants of the Corsi test have recently been assessed. They include imposing structure consistent with the hierarchical coding of sequences (De Lillo, 2004) and the length and number of crossings in their movement path (Parmentier, Elford & Maybery, 2005). Although there are theoretical implications of the relative role of these factors, they have often been confounded in previous studies. Therefore, we assessed the strength of the effects produced by each factor by manipulating them systematically in a single study. Path length explained the smallest portion of the variance in the scores, whereas path crossing and serial-spatial structure accounted for most of it. Structure in particular explained most of the variance as recall benefitted maximally from sequences affording their segmentation into linear components. These results are discussed in relation to the notion of the relative independence of coding structure and path characteristics in the explanation of how serially ordered spatial items can be represented.


What predicts confidence in location memory?

Thom Baguley¹, Sebastian Webb¹ and Mark Lansdale²
1. Nottingham Trent University
2. University of Leicester
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Previous research (e.g., Lansdale, 1998) has suggested that accuracy in location memory involves both an exact and an inexact recall process. An earlier analysis of confidence scores in incidental memory for real world pictures used a mathematical model to derive estimates exact and inexact recall parameters (Lansdale, Oliff & Baguley, 2005). This analysis suggested that confidence was influenced by the availability, but not the precision of inexact memory. A new location memory experiment is described that adopts a two-stage memory procedure in order to derive empirical (rather than model-derived) estimates of the availability and precision of inexact recall. This experiment uses intentional recall and simpler visual scenes to prevent potential confusion about the target (which might explain absence of an effect of precision on
confidence). A multilevel ordered regression of confidence ratings from the experiment confirms the finding that availability of a memory, but not precision of an inexact recall memory predicts confidence. In addition, it shows that exact recall also increases the probability of a high confidence rating.


**How location memory is forgotten: A loss of both availability and precision.**

Helen L. Henshaw and Mark W. Lansdale
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Two experiments are reported in which the nature of forgetting is examined in relation to object location memory for real world images. Pictures were shown to participants either with or without an accompanying verbal commentary for a duration of 20s each. Participants were tested immediately for the location of a specific target item for each image. Participants were then split into two groups, and retook the recall task after either a one or a two week delay. Findings highlight increased availability for immediate recall in the commentary condition, but similar forgetting effects for both the commentary and the no commentary conditions, with very little information remaining after a 2 week delay in recall; despite the presence of a verbal commentary at stimuli presentation. Pooled analysis of immediate and delayed recall data suggest that both availability and precision are lost as a function of forgetting within object location memory, with recall errors often assuming the locations of other significant items within the images.

**Association, inhibition and objects permanence in dogs’ (Canis familiaris) spatial search**

Rebecca Ashton and Carlo De Lillo
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We investigated the processes controlling dogs’ search behaviour using a spatial binary discrimination reversal paradigm where reversal conditions featured: 1) a previously rewarded location and a novel location; 2) a previously non-rewarded location and a novel location; or 3) both a previously rewarded location and a previously non-rewarded location. Rule mediated learning predicts a similar performance in these different reversal trials whereas a prevalence of associative/inhibitory processes predicts a different pattern with the worst performance in Condition 3. Evidence for associative control of search emerged when no explicit cues about food location were provided (Experiment 1) but also when dogs witnessed the hiding of food in the reversal trials (Experiment 2) and when they did so in both the pre-reversal and the reversal trials (Experiment 3). Nevertheless, dogs performed better in the pre-reversal phase of Experiment 3 indicating that their search could be informed by the knowledge of the food location. We conclude that object permanence guides search behaviour in dogs but this
ability cannot override associative and inhibitory processes in this species and discuss our results in relation to recent claims about the special cognitive status of dogs.

**Associative-learning and Stroop: differences between implicit and explicitly learned associations**

Sharon L Money and Dinkar Sharma  
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In five experiments we investigated whether implicit remembering (as reflected in a modified Stroop task) was affected by emotion, repetition, modality, association and study-test intervals. Nonwords were conditioned with emotional and neutral sounds or pictures (CS+), or were presented by themselves (CS-) in an associative-learning task. Studied (CS+ & CS-) nonwords were then shown along with unstudied nonwords, in a modified Stroop test. Our results showed that when explicit learning was used emotion took time to emerge, but when it did it was robust. Under conditions of passive-viewing, emotion appeared relatively quickly, but did not last long. We also found that the repetition priming effects from studied nonwords lead to in colour-naming interference compared with the unstudied nonwords. This was more pronounced for the CS- than the CS+. Modality effects were only found in the passive-viewing condition, and association effects were observed, independent of emotion, in all 5 studies. The block-ordering effects from the counterbalancing technique interacted with all other variables. These findings suggest that the relationship between explicit/implicit learning, and implicit remembering as measured by the Stroop test, is not straightforward and is highly sensitive to learning instructions, and task-demands.

**Narrowing of attention at encoding associated with negative, but not positive, visual memory specificity**

Susan Chipchase and Peter Chapman  
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Emotion can lead to an enhancement of memory for specific visual details and it has been suggested this is due to emotion influencing attention at encoding (Kensinger, Garoff-Eaton, & Schacter, 2007). This was investigated by confirming visual memory specificity for both negative and positive emotional stimuli, investigating the central/peripheral trade-off in memory and measuring eye movements to assess the distribution of attention at encoding. Enhanced memory for specific visual details was found for positive and negative objects in comparison to neutral objects. There was a central/peripheral trade-off in memory with an improved memory for negative objects at the expense of memory for the neutral background on which the objects were presented. This trade-off was absent for neutral or positive objects presented on neutral backgrounds. Measurements of eye movements provided evidence for attention narrowing onto the object in scenes with a negative object, but not in scenes with a neutral or positive object. In conclusion, negative visual memory specificity was found to be associated with attentional effects at the time of encoding, but positive visual memory specificity was not.

Study-test congruence modulates the long-term memory advantage for dynamic stimuli

Luciano G. Buratto, William J. Matthews and Koen Lamberts
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We investigated the previously reported dynamic superiority effect (dynamic stimuli are better recognised than static stimuli) and show that the memory advantage for dynamic stimuli can be eliminated if the mode of presentation at test (e.g., static) mismatches the mode of presentation at study (e.g., moving). Neither the dynamic superiority effect nor the study-test congruency effect were affected by encoding (Experiment 1) and retrieval (Experiment 2) manipulations, suggesting that these effects are relatively impervious to strategic control. The results demonstrate that the spatio-temporal properties of encoded stimuli are preserved in long-term memory, in addition to semantic information.

Effects of spatial and semantic context on confrontation naming in anomic speakers

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In naming tasks used in diagnostic and therapeutic contexts, aphasic speakers are typically confronted with objects shown in isolation rather than in the natural context that they are seen in in daily life. We assessed to what extent a rudimentary embedding of objects into a spatial and semantic context affects the naming performance of sixteen anomic speakers with mild to severe aphasic impairments. We presented an object (e.g., a HAT) either in isolation, in a contextually and semantically appropriate context (a on a head), in a contextually appropriate but semantically inappropriate context (a HAT on a notepad) and in a semantically appropriate but spatially unrelated context (a HAT next to a head). Analyses of overall error rates and latencies of immediate, fluent naming responses yielded significant differences between the aphasic speakers and a group of healthy age-matched control speakers. Both groups took longer to name spatially embedded objects than objects shown in isolation. A semantically appropriate embedding facilitated naming in the aphasic speakers but not in the control speakers. Analyses of the largest group of errors, dysfluent responses reflecting word retrieval difficulties, yielded parallel results. We discuss implications of our findings for models of word production.

ERP investigations of semantic anomalies

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Anomalies such as (1) give rise to an N400 effect in ERPs. Such anomalies are typically words that do not fit the context in which they occur at all: (1) John likes to drink his coffee with *mud*. In two experiments, we investigated the ERPs signatures by a class of anomalies where the key word belongs to the context, but is anomalous, as in: (2) After the air crash, the authorities buried the *survivors*. While mud does not occur in a coffee-drinking scenario, survivors is a word that often occurs in an air crash scenario. Participants listened to or read materials containing both types of anomalies, indicating when they detected an anomaly. The results from both studies showed an absence of an N400 in the well-fitting anomalies, but a presence in the poorly fitting case. We suggest that the N400 is a general index of goodness-of-fit to context, and not of integration. In both cases, a late positivity was observed in cases where detections occurred, but not where they did not, or in the control non-anomalous cases. We discuss this in terms of the role of awareness in text comprehension.

Something else on the mind: The effect of working memory load upon semantic illusion rate

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When asked “How many animals of each kind did Moses take on the Ark?” most people respond with “two” despite the substituted name (Moses for Noah) in the question (Erickson and Mattson, 1981). A possible explanation for this phenomenon is that people process the question on the basis of a partial match (Reder and Kusbit, 1991) which seems a sensible strategy given processing limitations such as working memory capacity. In fact, there is evidence that individuals’ working memory capacity influences susceptibility to semantic illusions (Hannon and Daneman, 2001). This paper explored the effect of working memory load upon semantic illusions. In Experiment 1, it was found that overall processing time increased with working memory load, but no significant effect upon semantic illusion rate was observed. Since there were concerns that the response time finding was a procedural artefact, the experimental design was refined for experiment 2, which found a small but significant effect of working memory load upon semantic illusion rate, but only for secondary tasks that required central executive involvement and only in a by-sentence analysis. These findings provide some support for the hypothesis that partial matching as a strategy is driven by working memory limitations.


The on-line processing of written irony

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We report an eye-tracking study in which we investigate the processes underlying the comprehension of written irony. Specifically, readers’ eye movements were recorded while they read comments which were either intended ironically, or non-ironically, and while they read subsequent text which contained pronominal reference to the entities described in the ironic or non-ironic comment. Results showed longer reading times for ironic comments compared to the non-ironic baseline. This supports the predictions of the standard pragmatic view (e.g. Grice, 1975) and graded salience hypothesis (e.g. Giora, 1997), which both state that the literal meaning of an ironic phrase is accessed first, leading to a processing cost. It is less compatible with the direct access view (e.g. Gibbs, 1986), which predicts little or no difficulty for ironic utterances when they appear in a context which supports the ironic meaning. Reading times for subsequent pronominal reference indicated that the ironic and the literal meaning of an ironic phrase were equally accessible for reference. This supports the graded salience hypothesis, which states that readers represent both the literal and ironic meaning of an ironic utterance, but not the standard pragmatic view or direct access view which state that only the ironic meaning is retained.


The effect of a character’s desire on the focus patterns associated with natural language quantifiers.

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We report three experiments on the effects of the desire of an explicitly mentioned character on the normal focus patterns of positive and negative natural language quantifiers (NLQs). Experiment 1 is a sentence continuation study in which participants are asked to read materials such as (1) and to complete the sentence beginning with They: (1) Jenny hoped that [all/none] of the icecubes would have melted. NLQ of them had dissolved. They…. Without the mention of character desire, positive NLQs such as a few normally lead to reference set focus i.e. they refers to the icecubes which dissolved, while negative NLQs such as few often lead to complement set focus i.e. the icecubes which are not dissolved (see Moxey & Sanford, 1993 for earlier work). Experiment 1 shows that this pattern of focus is altered depending on the character’s desire for all or none. Experiments 2 and 3 are eye-tracking studies which show that the shifts in focus apparent in Experiment 1 have on-line consequences as we read text. These findings are interpreted in favour of the Presupposition denial account of
complement set focus, extending on previous work using character expectations (Moxey, 2006; Moxey, Filik, & Paterson, 2008).


The role of inherent saliency in the choice of referring expressions

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A referent's saliency influences the choice of referring expressions: People tend to use pronouns when referring to salient entities, whereas definite NPs or names are used for non-salient entities (Ariel, 1990). A critical issue is what kind of saliency has an effect. Past research has focused on how the context of the referent affects saliency and the choice of expression. It is less clear whether saliency due to the referent’s inherent properties also has an effect. Five experiments examined how one inherent property, the referent’s animacy (Bock et al, 1992; Dahl & Fraurud, 1996), affects the choice of referring expressions (pronouns vs. repeated NPs). All experiments showed strong animacy effects: Participants used more pronouns (therefore, fewer NPs) when the referent was animate than inanimate, indicating that the referent's inherent saliency affects referential choice. Furthermore, the animacy of another entity in the context had an effect: Pronoun use was lower when the non-referent’s animacy was the same than when it was different from the referent, suggesting that semantic similarity between the NPs resulted in competition. Importantly, the non-referent's animacy had no independent effect: Participants produced as many pronouns for the referent when the non-referent was animate as when it was inanimate.


Binocular coordination in response to stereoscopic stimuli

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Participants viewed a physical array of LED light sources, an accurate 3D stereoscopic digital image of the LEDs, or a 2D digital image of the LED array. They were required to saccade between specified LED pairs, such that pure version saccades and combined version-vergence movements were elicited. Binocular coordination was compared across these three viewing conditions to examine the effects of either matching or conflicting vergence and accommodation cues within the stimuli. We compared the proportions of direction-appropriate vergence movements and the magnitudes of those movements during both fixations and saccades for the real, stereoscopic 3D and the 2D stimuli. We also compared mean fixation disparities under each of the viewing conditions. The data showed that depth appropriate vergence movements occurred during both fixations and saccades for real stimuli. A different pattern of binocular coordination was elicited by the stereoscopic images; while depth appropriate vergence movements occurred during fixations, there was little evidence to suggest that vergence movements during saccades were driven by the depth of the saccade target.

Detecting changes in facial expression

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Studies have shown that ecologically relevant stimuli, such as fearful faces, can have preferential access to awareness. We used a flicker task to modulate participants’ awareness of changes from neutral to fearful, angry, happy and sad expressions. We expected that participants would be quicker and more accurate at detecting changes to fearful expressions. We presented alternating matrices of three faces in which one face changed expression on half of the trials. Participants indicated with a button press whether they detected a change or not. The position and identity of the faces were kept constant in each trial but varied randomly across trials. To control for low level stimulus differences, faces were inverted in half the trials. Surprisingly, we found that happy face changes were detected more quickly and accurately compared to other expression changes. We also found change detection advantages for upright compared to inverted faces, and for faces changes occurring in the left visual field compared to the right visual field. These results suggest that access to awareness that is mediated by selective attention may be more sensitive to socially rewarding stimuli than negatively arousing stimuli.

Face detection in natural scenes is mediated by the body

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Human observers are skilled at finding people in natural scenes, but rather little is known about how we can achieve this. In artificial visual displays, cropped faces pop out and capture an observer's attention, which suggests that the face may drive person detection. However, under more natural viewing conditions faces appear attached to an additional physical cue – a person's body. In this study, we investigated the extent to which the body contributes to person detection in natural scene displays. Detection performance was superior when the body was visible than when only the face was displayed. This advantage was driven by the upper body and was evident in detection times and eye movements. Most surprisingly, however, this advantage seems to arise from a general scene scanning strategy, whereby the region of initial interest in a scene frequently coincides with the location of the upper body. These findings highlight the need to bridge the gap between cognitive models of scene perception, person detection and human face processing.

Attention to your body and object affordance

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This study investigates the relationship between attention and object affordance - in particular whether the effects of object affordance on decision making increase when viewers direct attention to their effectors. To assess this, we examined the 'paired object affordance effect' (Yoon et al., in press). In this effect, right-handed participants are asked to decide whether objects should be used together. RTs are speeded if the objects are presented in spatial locations that match the usual right-handed action (e.g., nail on the left, hammer on the right) compared with when the locations are reversed (hammer left, nail right). Here, object displays were preceded by different primes: a normal right hand, an injured right hand, an animal or an arousing scene in which people were involved in an accident, but no wound was shown. The injured hand and the scene were judged as equally arousing. The results showed that the paired object affordance effect was enlarged when the injured right hand was presented as a prime. The data suggest that observation of the painful hand can direct attention to the viewer's own effector, which makes an object affordance more apparent. The results are consistent with object affordance being dependent, at least in part, on activation of a motor-response to a display.


Low-level perceptuo-motor control in old age

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While low-level motor activation in older adults is equivalent to that in young adults, older adults’ low-level motor inhibition appears to be impaired. We assessed the extent to which this might be due to (i) older adults’ perceptual limitations, (ii) their generally slower information processing, or (iii) the necessity for prolonged learning. A series of ‘masked prime’ experiments was conducted in which participants executed
speeded manual choice-RT responses to simple visual targets. These were preceded – either immediately or at some earlier time – by a backward-masked prime. With prime and target immediately following each other, young and older adults produced similar priming effects. With a longer delay between prime and target, young participants produced a reversed priming effect (negative compatibility effect, NCE). Older participants, in contrast, failed to produce NCEs even with increased opportunity for prime processing (longer prime-mask intervals; enhanced contrast), longer prime-target intervals, and prolonged learning. These results indicate that neither perceptual limitations, nor reduced processing speed, nor inexperience with task demands cause older adults’ lack of NCE. Rather, it appears to reflect a genuine limitation in older adults’ low-level inhibitory motor control.

Executive functions in children and their relationship to fluid and crystallised intelligence

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Miyake and colleagues have argued for both the unity and diversity of executive functions (EF) – unity in that they all share variance in common and diversity in that there is discriminant validity for three EFs: inhibition, updating and shifting (Miyake et al., 2000). Friedman et al. (2006) showed that these EFs are differentially related to fluid and crystallized intelligence. Lehto et al., (2003) broadly replicated the structure of EF in children aged between 8 and 13. We test whether this applies in even younger children (7-year-olds) and ask whether the relationship with fluid and crystallised intelligence found in adults is the same for children. We tested 119, 7 and 9-year-old children on a battery of tasks, including the WISCIII, the Wisconsin Card Sorting Test, the Stroop and information processing measures of inhibition. Confirmatory factor analysis broadly validated the Miyake model for EFs. We also found that not all executive functions are related to intelligence. Further analyses reveal that while the Miyake structure for executive functions is a robust descriptive frame, caution must be exercised in the theoretical interpretation for models of intelligence and its development.


Neural systems coding actor identity in goal-directed action

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When another person takes £10 from your hand, it matters if they are a shopkeeper or a robber. That is, the meaning of a simple, goal-directed action can vary depending on the identity of the actors involved. Research examining action understanding has identified a mirror neuron system (MNS) in the inferior frontal gyrus (IFG) and inferior parietal lobe (IPL) that encodes action features such as goals and kinematics. However, it is not yet known how the brain represents actor identity within the context of goal-directed actions. In the present paper, we used a repetition suppression (RS) paradigm during functional magnetic resonance imaging (fMRI) to examine the neural representation of actor identity within the context of goal-directed actions. Participants watched video clips of two different actors with two different goals. Repeated presentation of the same actor suppressed the blood oxygen level-dependent (BOLD) response in middle frontal gyrus (MFG), a region superior and anterior to the classic MNS region of IFG. These data suggest that MFG contains a population of neurons that encode the agent of action – that is; they encode who is performing goal-directed action. Our data support the hypothesis that the MNS is agnostic with respect to who is performing the action, and other brain regions are needed to make complete sense of social situations.

Effects of observation perspective on action priming

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Several studies have reported that the observation of action can modulate line tracking and grasping execution tasks (see for example, Dijkerman and Smit 2007; Edwards, Humphreys & Castiello 2003; Kilner, Paulignan & Blakemore 2003). These data show that congruency between observed and executed actions lead to improvements in the executed movement, making them faster or less variable compared to incongruent conditions. Based on the consistency of these effects, we have used the action priming effect to test what influence the perspective of observed action has on execution. In the presentation here, we will report some experiments that tested the effects of observed action perspective on execution. The data showed modulation of movement variance according to direction perspective congruency in a concurrent action observation-execution task. The data are discussed in terms of the underlying mechanisms that may cause the relative prime effects.


Symposium:  Links between perception and action  
Organiser: Professor Stephen Jackson

The perception-action loop in visual object selection

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Represented visual objects, whether we are seeing them or recalling them in memory, propel us to act on them. This conclusion is derived from a number of studies that demonstrate micro-affordance effects on the responses of observers when classifying single visual objects. We now describe studies in which one object has to be selected from several. When ignoring an object it can be shown that the actions associated with it are inhibited and when searching for a target object among several the effectiveness of search is effected by what actions the observer prepares. These data illustrate the mutual influences of action and objects within a perception-action loop. We suggest ways in which similar experimental procedures may be used to visual object representation, selection and action in multi-agent contexts. This work will aim to replace the study of visual attention in the lone observer with that visual attention in the social agent.

I feel your pain: the representation of tactile consequences of others' actions.

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Multiple lines of evidence suggest that humans - like monkeys – are endowed with a so-called 'mirroring system' that automatically maps observed actions onto the observer's own motor system. This system might provide a foundation for human core social abilities such as imitation, action understanding, and empathy. However, actions also have a crucial tactile-sensory component, and I will report data from functional imaging and tactile detection experiments that reveal how these aspects are represented in the brain. In particular, I will provide evidence for subregions in our sensory cortices that anticipate the specific sensory-tactile consequences of observed actions, even when these consequences are not directly observable in the stimuli. Moreover, processing in these regions leads to changes in our own tactile processes, providing evidence for a mirror-like process that represents the tactile aspects of others' actions in terms of our own action experiences.

Motor contributions to action perception

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Cognitive psychologists and neuroscientists have long worked under the assumption that perception, action, and cognition are clearly separated. I will defend the view that perception, action, and cognition are closely linked and that we use our own motor system to simulate observed actions. In this view, we are exercising our skills
while perceiving others’ actions. Numerous results support this view. Motor laws that
govern our own actions also govern what we perceive as doable for others. Motor
expertise can alter and improve our perception of others' actions. Finally, the inability to
sense one's own body (lack of proprioception) can impair one's understanding of others' actions.

Influence of motor intention on perception: Evidence from behavioural and brain imaging
studies

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Textbook accounts of cognition typically emphasise the influence that perceptual
processes have on the selection, planning and control of action. However, psychophysical
and physiological investigations extending over a thirty-year period have repeatedly
demonstrated that our intention to execute an action can influence our perception of
sensory events. In this talk I will present recent behavioural and neuroimaging data from
demonstrates how, and perhaps why, the intention to act modulates perception.

End of Symposium

EPS Prize Lecture

Simulation of another person's behaviour: Effects on object and person attributes.

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There is increasing evidence that when we observe the actions of other
people we covertly simulate them. Such simulation of another persons' body
state aids our understanding of them. That is, we better understanding
their current behaviour and emotions and are better able to predict their
future actions. Experiments will be described which have investigated how
observation of another person's actions, such as their eye or body
movements, influences our judgments of them, and of objects with which they
have interacted.

“…but it felt like an hour”. Duration judgements and the rate of subjective time

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Some previous studies have used duration judgement tasks to examine the
experience of subjective lengthening of duration, i.e. the ‘watched pot’ phenomenon. The
current research investigated duration estimates, duration judgments based on how long
the clip seemed to last, and passage of time judgments of perceived time rate, when
people viewed the same film clip four times. No significant difference was found
between mean duration estimates for each viewing, but time was judged to be passing significantly more slowly with more viewings, indicated by judgments based on how long the clip seemed to last and significantly slower passage of time judgments. In line with previous work, passage of time judgements rarely correlated with duration estimates. Estimates of actual duration and “seemed” duration judgments correlated more poorly with every viewing, indicating an increasing separation of participants’ perceptions of the actual length of the clip from how long the clip “seemed to last”. These results indicate that duration estimates may not the most appropriate measure for assessing the ‘watched pot’ phenomenon.

Time flies when you’re having fun, particularly if you’re drunk: an exploration of distortions to the passage of time.

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Previous lab based research indicates that drug and alcohol intake (Lapp, Collins, Zywiak & Izzo, 1994; Meck, 1996), heightened emotion (Droit-Volet & Meck, 2007), attention to time and level of information processing (Zakay & Block, 1997) can influence the subjective passage of time. However, few studies have explored the occurrence of such distortions in non-lab based, ‘real world’ settings. This paper explores self reported, real world distortions to the passage of time in 132 undergraduate students. Participants consistently reported accelerated passage of time when under the influence of alcohol, cocaine and ecstasy. Slowing of the passage of time was reported when cannabis and ketamine were consumed, along with during periods of boredom. Students associated accelerated time passage with being busy, happy and concentrating, whereas decelerations in the passage of time were associated with boredom, fatigue and sadness. The results are interpreted in terms of the known effects of drugs, alcohol and emotion on attention to time and internal clock speed.


Is there a common velocity memory system?

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The systems which control smooth pursuit eye movements have been well studied. This system is thought to integrate visual velocity information and stored velocity representations. In the current work, we ask whether a common system guides eye movements and perceptual judgements about the path of occluded moving objects. We presented subjects with a horizontally rightward moving target which disappeared and then reappeared either at the correct time, too early or too late. Subjects discriminated correct from incorrect reappearance times and responded with a 2AFC button press. In one session, they fixated centrally and in another they were free to move their eyes. First, we found that discrimination was less accurate during fixation. Secondly, in the free eye movement condition, eye position at reappearance was related to their judgment: when subjects responded as if the target was moving too fast, eye position was more advanced along the horizontal trajectory. Finally, in the fixation condition, we found that low amplitude eye movements around fixation were related to the current position of the occluded object. Together these results suggest that a common system guides both oculomotor responses and perceptual judgments about occluded moving objects.

Perceptual constancy effects in taste discrimination.

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Taste often takes time to develop and varies over mouthfuls, but we rarely perceive this. In other modalities, perceptual constancy acts to smooth over such variation; we test for effects on taste here. Taste-constancy may be driven by the assumption that food items are homogeneous in taste throughout. We developed a paradigm to prompt this assumption for drink-stimuli. In Experiments 1 and 2, participants sipped 2 drinks and indicated whether the two drinks tasted the same (sureness-scale). In some trials, the drinks appeared to be poured from the same jug, prompting the homogenous-taste assumption. Taste constancy should reduce perceived differences in taste here and this was observed: ‘same-jug’ drink-pairs were reported more similar than ‘different-jug’ drink-pairs, in which the drinks were seen to be poured from different jugs. However, when we assessed whether a sweeter first drink had a greater impact on the perceived sweetness of the second drink in ‘same-jug’ pairs, no evidence for taste-constancy was found for either the sweetness measure (Experiments 3 and 4) or the similarity rating (Experiment 4) suggesting that an analytical cognitive strategy acted to inhibit constancy here (Le Berre et al, 2008; Prescott, 2004). Summarising, our findings provide first support for taste constancy.


Is luck on my side? Optimism, pessimism, and ambiguity aversion

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The influences of optimism and pessimism on ambiguity aversion were investigated in two tasks that manipulated the presence or absence of a potentially competitive experimenter. A total of 112 participants chose which option—ambiguous or known-risk—they preferred in the two slightly differing Ellsberg urns tasks. Optimism was measured using the Extended Life Orientation Test (ELOT). Highly optimistic people showed significantly less ambiguity aversion than less optimistic people when information was given that the number of balls was randomly determined. This pattern was present but less pronounced in the condition when the composition of the ambiguous urn could be interpreted as being influenced (rigged) by the experimenter. Pessimism was uninfluential. Perceptions of the situation, especially the degree of trust in the experimenter, were significantly influenced by the participants’ optimism. People who do not have highly optimistic personalities tend to shy away from choosing ambiguous options. When ambiguity is clear, and trust issues are removed, people’s optimistic outlook influences their degree of ambiguity aversion and thus their decisions.

Deontic introduction: How to infer the ‘ought’ from the ‘is’

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Deontic logic, with operators such as ‘must’, ‘may’ and ‘should’, has been mostly studied in the context of deontic conditionals, e.g. ‘If someone drinks beer than they must be over 18 years of age’. However, little is known about deontic introduction: How do people infer deontic conclusions from factual premises? For example, given global warming, we easily and naturally infer that we should reduce our carbon footprint. Inference from ‘is’ to ‘ought’ is considered a fallacy (Hume, 2000; Moore, 1903), although it can be defended for factual evaluative (‘thick’) premises (Williams, 1985). We currently know too little about the psychological processes underlying this inference to evaluate it. In an adaptation of the method in Thompson, Evans and Handley (2005), participants were presented with factual premises such as ‘If Jack smokes, he is at high risk for cancer’, and asked to evaluate deontic conclusions such as ‘Jack must not smoke’. Results show that participants tended to draw ‘should’ conclusions from positive premises and ‘should not’ conclusions from negative premises; and that conclusions with ‘should’ were endorsed more than conclusions with ‘must’ or ‘may’. We conclude that is-ought inference from evaluative premises is a robust psychological effect, although Williams’ conceptualisation may need some fine-tuning.


Structural priming in production: The special role of the verb

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Two structural-priming experiments investigated the lexical boost, the finding that priming is larger when a content word is repeated between prime and target than when it is not. According to Pickering and Branigan (1998), the boost should occur only with the repetition of the syntactic head subcategorising for the primed structure (for ditransitives, the verb). According to Chang et al. (2006), it is due to an explicit memory mechanism, and repeating any content word (e.g., the subject noun) should result in a boost. In both experiments the subject was the same or different in prime and target, while the verb was the same in Experiment 1, and different in Experiment 2. Participants read either a DO (The Indian will hand the politician the petition) or PO prime. Next, they described a target scene by completing a fragment (An Indian will hand…). Priming occurred in both experiments, and was stronger when the verb was the same. However, priming was no stronger when the subject was repeated than when it was not, showing that subject repetition does not lead to a lexical boost. These results support Pickering and Branigan’s model but are problematic for Chang et al.’s explanation of the lexical boost.


Structural priming in comprehension is not short lived

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Most studies suggest that syntactic priming in comprehension, unlike in production, is heavily lexically dependent (Arai et al., 2007). According to Chang et al.’s implicit learning model (2006, p. 256), lexically-dependent priming is due to an explicit memory mechanism and is therefore very short lasting. This suggests that syntactic priming in comprehension may be a very short-lived effect. In two visual-world experiments we investigated the time course of comprehension priming of ditransitive structures. In Experiment 1, prime and target were adjacent (lag 0), while in Experiment 2 the prime was separated from the target by two intervening trials (lag 2). The verb was always the same in prime and target. Analyses of looks to the target entities (e.g., a necklace and a princess when participants heard “The pirate will give …”) revealed significant priming effects in both experiments. More importantly, in the combined analysis we found no significant priming by lag interaction, suggesting that priming was
as strong at lag 2 as at lag 0. These results are problematic for the view that an explicit memory mechanism underlies lexically-dependent priming. We will discuss the implications for theories of structural priming and for the relationship between comprehension and production.


**Age of acquisition, frequency and picture – word interference**

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Miozzo and Caramazza (2003) showed that low frequency words caused greater interference than high frequency words on a picture naming task. However, they did not match their high and low frequency word groups for Age of Acquisition (AoA), which allows the possibility that this could be the basis of their findings. Experiment 1 replicates their study, but matches high and low frequency word groups for AoA. A significant effect of frequency was still found. Experiment 2 compared early and late acquired distractor words that had been balanced for frequency. Late acquired words caused significantly greater interference than early acquired words. The mechanisms behind these findings, and implications for accounts of AoA, are discussed.


**The locus of age-of-acquisition effects in word recognition: Evidence from fixation times in reading**

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This project investigated the role of Age-of-Acquisition (AoA) in word recognition during normal sentence comprehension. Some researchers (Juhasz & Rayner, 2003) have suggested that AoA effects might in part originate in the semantic system, reflecting factors affecting the activation of word meaning. We investigated this possibility using eye fixation times on homographs, for which one meaning was acquired earlier than another. Homographs were placed in sentences disambiguating towards either the early or late acquired meaning. Frequency effects were also examined, with half of the homographs having a high frequency count and half a low frequency count. Participants’ eye fixations were recorded using a DPI eye-tracker as they read the sentences. Early measures of processing (first fixation times, gaze duration) showed frequency effects, with high frequency homographs receiving shorter fixations than low frequency ones. No AoA effects were seen in these measures. In later measures of
processing (total fixation time, probability of a first pass regression), there was evidence of an AoA effect. Participants were more likely to re-inspect context for sentences containing homographs disambiguated to a late acquired meaning. We argue that this supports the notion that frequency effects are lexical in origin but AoA effects have a semantic component.


Distributional effects of word frequency and orthographic familiarity on eye fixation durations during reading and response times to isolated words.

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White (2008) recently showed that word frequency and orthographic familiarity have separable effects on the duration of eye fixations in reading. New analyses will be presented in which ex-Gaussian distributions were fitted to the fixation duration data. The results show that word frequency influences both the shift and skew of fixation duration distributions, whilst orthographic familiarity affected the location of reading time distributions but not skew. In two new experiments, lexical decision and semantic categorization response times confirmed the patterns from the eye movement data. The results suggest that word frequency and orthographic familiarity may play qualitatively distinct roles in the process of visual word recognition. Furthermore, the results demonstrate a correspondence at the level of distributional parameters between eye fixation durations in normal reading and response times in single word recognition paradigms, supporting the conclusion that the progress of lexical processing is critical in the decision to move the eyes.


Word recognition in Chinese-English bilinguals: Cross-linguistic effects of orthographic and phonological similarity

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In a series of experiments with Chinese-English bilinguals, we investigated whether word recognition in English and Chinese is affected by orthographic and phonological similarity between English words and Chinese words written in Hanyu Pinyin. Hanyu Pinyin is a romanisation system for Standard Mandarin that is used in schools in Mainland China to represent the sounds in Mandarin. Interestingly, some Hanyu Pinyin words are also correctly spelled English words, for example the Hanyu Pinyin word "gun" written without tone diacritics. A set of these interlingual homographs
and English-Chinese homophones (e.g., "shoe") was presented in a purely English lexical
decision task. The results revealed that Chinese-English bilinguals responded
significantly faster to interlingual homographs and homophones than to English control
words. Interestingly, a purely Chinese lexical decision experiment with Chinese character
words revealed significant inhibitory effects for interlingual homographs and
homophones. These findings suggest that visual word processing in Chinese-English
bilinguals is affected by orthographic similarity between Hanyu Pinyin words and
English words and by phonological similarity between English words and Chinese
characters. The implications of these results for models of bilingual word processing will
be discussed.

Bilingual input switching

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Previous studies have demonstrated observable switch costs when bilinguals have
to switch outputs (e.g. Rayner and Ellis, 2007; Costa et al. 2006; Jin and Yokosawa,
2006; Meuter and Allport, 1999). In order to minimise any interference from the output
representations of the non-target language, bilinguals need to suppress output of non-
target language and incur switch costs. In reading bilingual texts switching of inputs
from different language is required. It is not clear whether the readers need to suppress
the processing of unattended input while reading a bilingual text. In the first experiment
Greek–English bilinguals performed a semantic categorisation task on visually presented
Greek or English words. No significant switch cost was observed. In the second
experiment they had to switch between auditory and visual semantic categorisation tasks
in addition to switching between languages. The inter-stimulus- intervals were 100 msec,
500 msec and 1200 msec. Significant switch costs were observed only when the
participants switched both the modality and language, and only when inter-stimulus-
interval was 100 msec. This suggests that although suppressing non-target input is not
mandatory, bilingual sometimes strategically suppress non-target input to optimise their
performance.

control their lexicalization process? Inhibitory and language-specific selection
mechanisms are both functional. Journal of Experimental Psychology: Learning,
Memory, and Cognition, 32, 1057-1074.


Meyer, L. R. Wheeldon, & A. Krott (Eds.), Automaticity and Control in Language
Why do additional presentations help us identify a stimulus?

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Nosofsky (1983) reported that additional stimulus presentations within a trial increase discriminability in absolute identification, suggesting that each presentation creates an independent stimulus representation, but it remains unclear whether exposure duration or the formation of independent representations improves discrimination in such conditions. Experiment 1 replicated Nosofsky’s result. Experiments 2 (masking the ISI between two presentations) and 3 (manipulating stimulus duration without changing number of presentations or overall trial duration) ruled out an explanation in terms of extended opportunities for stimulus sampling, from either a sensory buffer during additional ISIs or increased stimulus exposure, respectively. Experiment 4 (comparing two and three presentations, other factors controlled) provided some limited additional support for Nosofsky’s original claim that additional stimulus presentations can create either independent or duplicate representations. Experiments 5 and 6 (both manipulating ISI) demonstrated that a key factor in the additional stimulus presentation effect is the overall trial duration. We discuss the results in relation to models of absolute identification, their relative emphasis on stimulus sampling versus response selection, and the mechanisms by which duplicate representations could be created.


The 'Modality Shift Effect': do stimuli automatically grab attention to their modality?

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It is well known that stimuli grab attention to their location, but the Modality Shift Effect suggests that they also grab attention to their sensory modality; responding to a stimulus leads to reaction time benefits for subsequent stimuli in the same modality (Spence et al., 2001). Observations that non-informative cues, which do not require a response, also lead to the MSE suggest that this effect is automatic (Turatto et al., 2002, 2004). We aimed to remove some potential confounds in the cue-target method, and to investigate the time-course of the visuo-tactile MSE. In Experiment 1, when visual and tactile tasks and stimulus locations were matched, uninformative cues did not lead to RT benefits for targets in the same modality. However, the modality of the previous target led to a significant MSE. In Experiment 2, increasing attention towards the cue attenuated the effect of the previous target, but still did not produce a cue-target MSE. Only stimuli which require a response, therefore, appear to lead RT benefits for their modality. Experiment 3 demonstrated that the MSE is strongest initially and decreases over time, and that this effect represents a benefit for the target modality, rather than a cost for other modalities.


**Effects of a pattern mask on memory for binding of visual features**

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Feature binding is the process whereby different features such as shape, colour, orientation, location, etc. are linked together to form a coherent representation of the object. In our experiments, using a change detection task, we studied the binding of colour and shape, whilst location was made irrelevant through randomization. Study-test intervals ranging from 0 to 2500 ms were used. Results of Experiment 1 confirmed that randomising location significantly disrupted performance, but this disruption decreased as study-test intervals increased. Experiment 2 used a pattern mask, presented immediately after the study display, to eliminate the effect of iconic memory in the performance of the participant, following Phillips (1974). Results showed that the mask reduced, but did not completely eliminate, the gap between unchanged and randomized location conditions at shorter study-test intervals. In Experiment 3, the same pattern mask was used, but after a delay of 300 ms, with a view to study encoding efficiency, as was done by Vogel, Woodman, and Luck (2006), and Woodman and Vogel (2008). A comparison of results across experiments confirmed that the performance of the participants was a function of consolidation of bindings of relevant features aided by iconic memory, and the active inhibition of irrelevant features.


Do inhibitory processes underlie instances of sustained inattentional-blindness? Evidence for feature-based inhibition from dynamic visual search.

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Recent research has shown that under static visual search conditions, observers can be attentionally-blind to new target information if it carries the critical feature attribute of information currently being ignored (Braithwaite & Humphreys, 2007; Braithwaite et al., 2003). Here we present the first empirical investigation of this feature-based inhibitory mechanism under more ecologically valid dynamic preview-search conditions. Experiments are presented which demonstrate feature-based inhibition under dynamic preview-based visual search conditions. In addition, we present evidence that shows magnified effects of color-based inhibition when display items were moving, relative to when they were static. This could not be explained in terms of an increased role for low-level grouping factors specific to moving displays or purely color-based prioritization. Collectively, the present findings suggest that feature-based inhibitory processes are an important contributing factor to striking failures of awareness which may well underlie many instances of sustained inattentional-blindness in everyday life.


Inhibition of return suppresses visual awareness

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The relationship between covert attention and conscious awareness has been the focus of great controversy. Although the issue is hotly debated, there is good evidence that attention greatly increases the probability of a visual stimulus entering visual awareness. For example, peripheral cues can trigger a reflexive attention shift which facilitates perceptual processing, producing faster response times, better discrimination accuracy and enhanced visual awareness. However, this facilitation is quickly superseded by a sustained inhibition of signals from the cued location (Inhibition of Return). Surprisingly, although there is strong evidence that reflexive attention facilitates awareness, little data exists regarding the effects of IOR on awareness. This may be because IOR is often masked by voluntary attention in tasks which measure visual awareness such as change-blindness tasks. This study investigated the effects of IOR on visual awareness using a subliminal peripheral cue (which cannot be used to voluntarily guide attention) in a change-blindness paradigm. The results clearly show that subliminal cues exaggerate change-blindness at long cue-change latencies, demonstrating that IOR can suppress visual awareness. This study confirms the importance of
attentional processes in mediating visual awareness by demonstrating for the first time that IOR directly affects the contents of consciousness.

**Modeling the influence of environmental statistics on inhibition of saccadic return**

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Human observers take longer to re-direct gaze to a location they previously fixated, or covertly attended (inhibition of saccadic return: ISR). Arguments have been made for the adaptive value of this phenomenon in the context of search and foraging. However, the mechanisms through which inhibition operates are not completely understood. In the framework of evidence accumulation models, in which activity is integrated over time to a response threshold, ISR could reflect a reduction in the rate of accumulation for saccades to return locations, an increase in the threshold for response, or a combination of the two. Data and modelling are presented showing that slowing of saccadic latency for return saccades can be accounted for by a reduction of accumulation rate. Furthermore, the environmental probability of the target appearing at a return location predicts saccadic latencies, and differentially effects accumulation rate and response threshold.
The affect of repetitive stimulation on memory recall and time estimation: Are increases in information processing speed proportional to increases clock speed?

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It is generally known that certain durations can seem of short or long duration depending on its content. An extreme example of this is in a high adrenaline situation (e.g. a car crash) where time appears to slow down. What is not understood is whether information processing speed also increases as subjective time slows. The current experiment is the latest of a series investigating this affect using click trains (Jones, Allely & Wearden, under revision) which have previously been shown to increase internal clock speed/slow down subjective time (Penton-Voak, Edwards, Percival & Wearden, 1996). There were two main conditions, one in which participants estimated the duration of a 3x4 letter matrix and another in which they recalled as many letters as possible. The matrices were presented for one of ten durations on each trial (77, 203, 348, 461, 582, 767, 834, 958, 1065 and 1183 ms). The presentation of the matrices was either preceded by 5 seconds of a click train (5hz) or 5 seconds of silence, with warning/cue tones in both conditions. Participants recalled significantly more letters from the matrices preceded by clicks trains than by silence, additionally the estimates of the matrices durations were significantly longer when preceded by clicks.


Differences between the Kuwaiti and the British college students on Receiver Operating Characteristcs (ROC) of time judgment: A comparative study

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The preset study investigated the cross – cultural differences between the Kuwaiti and British subjects in the Receiver Operating Characteristics (ROC) on the judgment of short time intervals at different times of the day. The subjects were students from two Universities, Kuwait University and Sussex University (116 Kuwaiti students, 116 British students), with a mean age of 19.30 yrs and SD of 1.65. They were asked to judge the duration of two tones of sound of 60 db each, for 850 msec. and 1000 msec. presented one at a time, and determine whether it was the short or the long interval at three different times of the day (08:00 hrs, 12:00 hrs, and 17:00 hrs). A signal detection paradigm was used to obtain the d Prime ROC curves of their judgments. The results revealed that although there were significant differences in efficiency of sensory process (d prime) and ROC in the morning, there were significant differences between them at noon and in the evening.
Impact of S-R incompatibility on procedural learning

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In serial reaction time (SRT) tasks participants view a sequence of stimuli appearing at one of four screen locations and respond to each item by pressing a spatially corresponding button. The current study compared sequence learning in an SRT where the response mapping was spatially incongruent with the stimulus location and a traditional SRT with a congruent stimulus-response (S-R) mapping. Learning was significantly attenuated in the SRT with incongruent S-R mapping. This may be due to the fact that explicit efforts to optimize learning of the incongruent S-R mapping during the SRT interfered with the implicit learning of the sequence.

Effect of chronic methamphetamine treatment on attentional set-shifting in the rat

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While evidence suggests deficits in executive functioning in methamphetamine abusers, the fact that these subjects are polydrug abusers makes it difficult to ascertain exactly which abused drug leads to these pathologies. Differences in the abstinence period of methamphetamine subjects in each study also confounds these results. The question of whether methamphetamine alone causes psychopathology can be answered using experimental animals. Rodent studies show that methamphetamine treatment can lead to dopamine neurotoxicity and various behavioral changes (Davidson et al., 2001). Here, we examined the effect of a 7-day methamphetamine minipump treatment (20 mg/kg/day s.c.) on cognitive function, specifically an attentional set-shifting task. We found that methamphetamine treated rats had long-term deficits in reversal learning of extra-dimensional shifts and exhibited a loss of caudate dopamine, but not serotonin or norepinephrine. Further, caudate dopamine levels were correlated with proficiency at the reversal of extra-dimensional shift task. There was no evidence of neurotoxicity in the medial prefrontal cortex or the orbito-frontal cortex. Thus, chronic continuous high-dose methamphetamine leads to a long-term loss of caudate dopamine and cognitive dysfunction.


Electrophysiological correlates of ocular sighting dominance in human visual cortex

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Under monocular viewing conditions, individuals exhibit a consistent behavioural preference for one eye over the other. In around 70% of cases, this preference favours the right eye. Despite strong evidence for the existence of ocular sighting dominance across a range of behavioural tasks, its neurological basis remains unknown. As such, the present study measured and compared the cerebral correlates of eye dominance using event-related potentials (ERPs). Nine right eye dominant participants took part in the study. Participants performed a 2-alternative, forced-choice task in which, using either their dominant or non-dominant eye, they judged the orientation of a high contrast sinusoidal grating stimulus (1.5 c/deg) that appeared within an 18 degree circular display window in the centre of the screen. An early ERP difference between the two monocular viewing conditions occurred in the parietal-occipital electrodes bilaterally after about 100 ms with an enhanced P1 amplitude when participants viewed the stimulus with their dominant eye compared to their non-dominant eye. This result indicates that the dominant eye actually elicited a greater response in extrastriate visual cortex than the non-dominant eye, suggesting an important functional role for eye dominance in the early stages of visual processing.

The timecourse of load-induced effects on attention early in a fixation in reading

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The effect of load on the spatio-temporal distribution of attention during reading was investigated using a dual task (Fischer, 1999). Participants were presented with single sentences and required (1) to read them for comprehension, and (2) to discriminate gaze-contingent probes that were briefly superimposed on a single character in the sentence. Probes appeared after the eye landed on a critical word of either high or low frequency; they occurred 6 characters from fixation, either on the right (within the perceptual span) or on the left (outside the span), and either 40 or 110 ms after fixation. Probe discrimination performance showed a significant three-way interaction between word frequency (load), the temporal delay with which the probe occurred, and whether or not it occurred within the perceptual span (p = 0.003): the effect of word frequency could only be detected outside the perceptual span and only for probe delays of 40 ms. Our findings outside the perceptual span are compatible with load-induced changes in attention (Brand-D’Abrescia and Lavie, 2007) that occur in reading as early as 40 ms into a fixation but dissipate by 110 ms. We propose that load focuses attention very early in a fixation.


Primbing of reach trajectory when observing actions: Hand-centred effects.

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Since the discovery of mirror neurons (Di Pellegrino, et al, 1992) there has been much research into the nature of what might be encoded when observing the actions of others. Converging evidence from both animal and behavioural studies indicates that the goal of an action is encoded along with the actions concerning that goal, such as grasping (e.g. Umilta et al. 2001), and indeed that observation of grasping can interfere with and prime one’s own actions (e.g., Castiello et al., 2002; Castiello, 2003; Edwards et al, 2003). This study suggests that, in addition to encoding action goals, specific aspects of the path taken to reach the goal may also be encoded. When avoiding an obstacle, whilst reaching for a goal object, a person’s hand path is necessarily higher to clear that obstacle. We demonstrate that the observation of such hand path deviation can prime one’s own reach trajectory such that when reaching for an object without an obstacle that trajectory is higher. This priming can take place under a variety of circumstances, with or without a shared goal, and when the action is seen from a variety of perspectives. However for the action of the other to be simulated the obstacle avoided must be within the action space of the observer.


The moderating effects of emotional eating on conflict monitoring.

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This study attempted to establish if sequential modulation effects can be moderated by individual differences in eating behaviour. 66 participants completed a Stroop task in which colour words were embedded onto images of disorder-relevant (high-fat foods) or non-food images. Two types of sequential trials were analysed: complete alternation trials (adjacent trials do not repeat the colour or word) versus
repetition trials (complete and partial repetition). Sequential modulation effects were observed in complete alternation and repetition trials, replicating previous findings suggesting the presence of conflict monitoring and priming. In complete alternation trials the effects were also moderated by emotional eating levels in the food image condition. These findings suggest that conflict monitoring can be moderated by an attentional bias in high emotional eaters towards disorder-relevant cues.

**Working memory for spatially structured and unstructured sequences in individuals diagnosed with Autism Spectrum Disorder**

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An experiment is presented where individuals diagnosed with Asperger’s disorder and control participants reproduced sequences of tapping responses on a board featuring a square matrix of locations. The degree of structure present in different type of sequences was manipulated. The serial path of structured sequences followed a linear organisation while that of unstructured sequences violated this constraint. Only in control participants serial recall benefitted from the presence of structure and performance in the two groups of participants differed only in the reproduction of structured sequences. These results are discussed in relation to the possible involvement of frontal functions in the detection and use of structure in this type of task and the value of structured versions of Corsi-type tasks in the detection of cognitive deficits in Autism Spectrum Disorder.

**Binocular coordination during a non-reading task: adult, child and dyslexic populations**

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The most striking conclusion from recent binocular coordination research during reading is that the points of fixation associated with the two eyes are often disparate. This body of research has serious ramifications for the central principle of a sensory explanation of dyslexia. The Magnocellular theory of dyslexia maintains, not only that poor binocular coordination modulates reading ability, but also, in some cases, is the primary cause of developmental dyslexia. It was with this hypothesis in mind that the current experiment was designed. Three visual tasks were designed to make similar demands on the oculomotor control system as reading (sequential saccades and fixations), in the absence of cognitive processes associated with language comprehension. Adult, child and dyslexic populations' binocular eye movements were recorded as they scanned horizontal arrays of dot targets. It was found that the magnitude and frequency of fixation disparity were modulated by the preceding saccade amplitude for all groups. However, disparity was uninfluenced by target onset and group dot size. While children differed from adults in terms of their binocular coordination, there were no significant differences between typically developing children and children with a diagnoses of dyslexia.
Unwrapping serial recall: Input or output effects?

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Temporally grouping lists to be serially recalled results in a tendency to leave a pause at group boundaries during recall. The ACT-R model (Anderson, Bothell, Lebiere & Matessa, 1998) assumes a hierarchical structure, whereby a list is represented at one level by its constituent groups, and at a subordinate level as the items at each within-group position. There is an assumed cost associated with traversing the hierarchy to access subsequent groups during recall, leading to longer latencies. Alternatively, grouping effects could be explained by output constraints: participants construct short ballistic recall sequences that happen to match the grouping structure usually introduced in grouping experiments. Our experiments use a nine-item, grouped serial recall paradigm to distinguish between these possibilities. The starting position of recall was varied across input position, such that in some trials participants had to ‘wrap’ back round to the first item once they reached the end of the list to continue recall (Cowan, Saults, Elliott & Moreno, 2002). Consistent with the ACT-R model, latencies were increased at group boundaries regardless of where recall starts, suggesting that the effects are reflections of encoding, or at least that output constraints are combined with the hierarchical structure when determining output.


N-gram effects and sex differences for word beginnings and endings in word recognition

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Vertically split foveas (Shillcock et al., 2000) will separate letter strings of centrally fixated words such that --for each eye-- half words travel to opposite hemispheres. fMRI evidence from Toosy et al. (2001) shows that monocular stimulation produces greater activation in the contralateral than in the ipsilateral cortex. We hypothesise that words presented stereoscopically as half words to each eye are better perceived when letters fall onto nasal hemifoveas from temporal visual fields (contralateral condition). Furthermore, word beginnings and endings are initially processed separately by each hemisphere and males will show fine-code left lateralisation. We briefly projected halves of six-letter words to each eye, counterbalancing contralateral and ipsilateral presentations. 200 words were selected such that beginning and ending n-gram strings spanned type-count neighbours. Fifty native English speaking university students participated. People phenomenologically perceived single whole words. Linear mixed effects analyses showed better word perception for targets presented contralaterally than ipsilaterally ($p<0.01$), supporting a split fovea. N-gram counts of word beginnings favoured stimuli with more neighbours for females but not for males. While both sexes showed fine-code facilitation for word
endings (LH effect), only females showed coarse-code facilitation for word beginnings (RH effect).


The role of redundancy in the processing of hierarchical visual stimuli by humans and capuchin monkeys (*Cebus apella*)

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Despite the similarity of their visual system, humans and monkeys display different patterns of relative advantage when processing hierarchical visual stimuli (De Lillo, Spinozzi, Truppa & Naylor, 2005). We report an experiment where the role played by stimulus redundancy (Garner, 1974) as one possible determinant of this interspecies difference was investigated using a Matching-to-Sample task. When matching hierarchical patterns characterised by a very high or very low level of redundancy at both global and local levels, humans processed redundant stimuli more accurately but only in conditions requiring them to attend the global aspects of the stimuli. In monkeys the difference in accuracy for redundant and non-redundant stimuli was not significant at both the Global and the Local level of processing. Nevertheless, the local advantage typically observed in this species only emerged with redundant stimuli. We interpret these results as indicating that redundancy affects pattern discrimination in these species at the level of stimulus processing which they preferentially attend.


Suppression and enhancement effects induced by cleft constructions

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Despite previous work on suppression and enhancement effects with anaphora (Gernsbacher & Jescheniak, 1995), there has been no demonstration that a single linguistic device, such as cataphora, induces both sorts of effects simultaneously. We
report three experiments showing this effect. In experiment 1, we compared reading times for sentences containing anaphors to items that were within the scope of cleft-induced focus, or outside of it, including a neutral control. For instance: It was Harry who lost his daughter. (cleft). OR: Harry lost his daughter. (control). He had wandered off in the park. (Anaphor focussed in cleft). She had wandered off in the park. (not focussed). Reading times showed enhancement when anaphor was in focus, and suppression when it was not, relative to baseline. A similar pattern of focus-based enhancement with pseudocleft, such as: What Harry lost was his daughter. Experiment 2 used a text-change procedure (Sanford & Sturt, 2002), and showed that the detection of changes to focussed elements led to greater change detection than the control, while detection of elements beyond focus showed suppression. In Experiment 3, a probe recognition method showed similar effects.


On the interpretation and processing of "only"

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The interpretation of the focus particle “only” depends on syntactic and prosodic constraints (Jackendoff, 1972). Two auditory speeded acceptability judgement experiments investigated the processing and the interpretation of “only” in ditransitive sentences. In constructions like “The manager showed only the bishop the altar but not the chaplain/the organ”, contrastive pitch accent (L+H*) on the direct object “the altar” could override the preference to associate “only” with the adjacent element on the right side (Paterson et al., 2007). In constructions like “The manager showed the bishop only the altar but not the chaplain/the organ”, syntactic constraints prohibit the association with “the bishop”. Placing pitch accent on the indirect object could neither overwrite the syntactic constraint nor the prosodic requirement to associate “only” with an accented constituent. The results of the first experiment show that prosodic information can be used for syntactic disambiguation, supporting previous research by Paterson et al. (2005) that information structure can override the scope preference. The results of the second experiment show that both syntactic and prosodic constraints restrict association with focus. Moreover, introducing a prosodic contrast couldn’t override the prosodic-syntactic constraints imposed by the focus particle, as was indicated for German negation (Kügler & Drenhaus, 2006).


Expertise and domain specific explanations of face processing - evidence from art experts

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Inverted faces are relatively impaired when processed, and there are two alternative explanations for the face inversion effect. Namely, that it is due to special processing that occurs for faces or that there is no specialised processing and humans are simply experts at face recognition. Assuming that expertise influences the processing of faces, then experts in other fields would also be expected to show an equivalent effect with their objects of expertise, such as art. To assess this question, 12 art experts, and 12 art novices, were shown 45 images of contemporary art works. The images were presented in three sets of 15 (upright, inverted and mirror image orientations) for 5 seconds each. Following a distracter task, two images (old verses new) were presented for a forced choice decision. Percent correct and hit reaction times for art experts were significantly different between the inverted and upright orientation, whilst for art novices orientation was non significant. Therefore, art experts show a potential ‘inversion’ effect, hence arguably supporting the expertise theory of the inversion effect.

Heavy drinkers show attentional bias to alcohol-related stimuli in a novel conditioning task

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A greater understanding of the mechanisms directing of attention towards salient stimuli, termed attentional bias, may help elucidate the mechanisms involved in the motivation to drink in problem drinkers. In addiction, a hyper-attentive state may develop towards drug-related cues, characterised as an attention bias to such cues. Such a bias, developed through associative learning, may help explain maintenance of drug taking and processes driving craving and relapse. Although a number of studies have been undertaken to investigate whether there is a differential alcohol-related attentional bias in heavy drinkers, the findings so far are inconclusive. We have used a novel conditioning task, in which participants learn the association between picture stimuli, presented sequentially on a screen, and a target, to which they must respond. Learning of a cue-target association is indicated by a more rapid response to the target. Low drinkers showed similar learning to both neutral stimuli and alcohol-related stimuli. High drinkers showed similar learning to neutral stimuli, but enhanced learning to alcohol-related stimuli, indicative of an attentional bias towards pictures of alcohol-related objects in heavy drinkers. The results from these studies may help us understand the attentional processes promoting the desire to take alcohol in problem drinkers.
The Role of Semantic Transparency on Chinese Compound Processing: Evidence for Morphemic Decomposition

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The present study used a masked constituent priming paradigm to investigate the role of semantic transparency on Chinese compound processing in a lexical decision task. Transparent compounds, opaque compounds and binding words (pseudo-compounds) served as targets and were preceded by either 60ms or 100ms masked primes corresponding to the first or second morpheme of the target stimulus, or an unrelated Chinese character. Transparent and opaque compounds differed in the semantic relationship between morphological constituents and the whole compound form. In both 60msec and 100msec prime durations, the recognition of transparent compounds and binding words was facilitated significantly and equally by the prior presentation of 1st morpheme and 2nd morpheme masked primes. The recognition of opaque words was faster numerically when they were preceded by 1st morpheme primes, but the recognition was faster significantly when they were primed by 2nd morphemes. All these priming effects did not vary as a function of prime duration or morpheme position. Transparent compounds were responded to faster than opaque compounds. This performance difference suggested that semantic transparency plays an influential role in compound processing. The experimental results provided clear evidence that representations of Chinese two-character compounds are stored in a decomposed form.
Accommodation

B&B accommodation has been reserved for the nights of 15th and 16th April at the University’s residences in Oadby Student Village, where single en suite rooms are £40.04. The area is approximately 3.5 km south of the main University campus and is served by a regular bus service into the city and along London Road. EPS members can make reservations for accommodation by calling the Residential and Catering Service on 0116 221 2032. Check-in is from 2pm on the date of arrival and check out is 9.30am on departure. Once delegates book they will be sent instructions detailing this information.

Hotels and Guest Houses close to campus

There are many hotels and guest houses in Leicester. With Go Leicestershire! (www.goleicestershire.com) you can search for accommodation and book on-line.


Travel

For information on directions and maps you are invited to consult the Leicester University website at http://www.le.ac.uk/portals/maps/maps.html. The conference will take place in the Ken Edwards Building on the main campus and the Henry Wellcome Building, which is accessible from Lancaster Road.

By Rail
Leicester Station lies very close to the University on the University side of the City centre. The University may be reached on foot in 15 minutes, by turning left outside the station, walking up London Road and then along University Road. The National Rail telephone enquiry number is 08457 48 49 50.

By Coach
National Express (http://www.nationalexpress.com/destinations) operate regular daily services from Leicester. See their website for full details. If you arrive by bus or coach at St Margaret's Bus Station, you can take bus number 48 to the stop for the University at the bottom of Mayors Walk on University Road. The fare from the bus station is about £1.20. It will take approximately 40 minutes to walk to the University from the bus station. A taxi from the bus station to the University is around £5.00.

By Car
The main routes into Leicester and locations of University and College buildings are marked on the University map (http://www.cam.ac.uk/map/) and detailed directions are given on the University Transport pages (http://www.le.ac.uk/portals/maps/howto.html). Leicester is a busy city with limited parking facilities. Please bear this in mind when planning your journey. There is no parking available at the University. If you are staying overnight, your hotel may be able to offer you parking facilities.
Local Taxis
There is a taxi rank at Leicester Train station (although the University is only a few minutes walk from here). If you wish to call a taxi during your stay, we recommend you use ABC Taxis (0116 255 5111).

Eating and Drinking

Options for lunch on campus include Café Piazza in the Charles Wilson Building and the coffee bar in the Library. Sandwiches and snacks are also available from the Charles Wilson Building and the Students’ Union (in the Percy Gee Building).

Pubs and Bars in Leicester

Leicester has many pubs and bars. The Marquis of Wellington (139 London Rd) is possibly the best option close to the University. It is a relaxing bar with a wide range of ales (including the local Everards beers), continental lagers and wine, an impressive range of whiskies, and a gastropub-style menu. Ideal for the EPS! Other alternatives include The Lansdowne (London Road, www.orangetree.co.uk/lansdowne), The Old Horse (189 London Road, opposite Victoria Park, www.oldhorsepub.co.uk), which has a courtyard and a large beer garden to the rear, The Belmont Hotel (New Walk, www.belmonthotel.co.uk), which also has outdoor seating, and Out of the Vaults (bottom of New Walk), which offers a huge range of real ales (from across Leicestershire and neighbouring counties) and a touch of local colour.

Evening meal: Restaurants in Leicester

There are a large number of restaurants a few minutes walk from the University on or near London Road. Kayal (153 Granby St, 0116 255 4667 www.kayalrestaurant.com) is an awarding-winning South Indian style restaurant, and Shimla Pinks (65-69 London Road, 0116 247 1471, www.shimla-pinks.com), The Tiffin (1 de Montfort St., 0116 247 0420, www.the-tiffin.co.uk) and Taj Mahal (12 Highfield St, 0116 254 0328) are excellent examples of restaurants offering more traditional Indian fare. The Curry House (64 London Rd, 0116 255 0688, the-curry-house.com) is a cheap but good quality alternative. Non-Indian alternatives include Siam Corner (118 London Rd, 08450177447, www.siamcornerthai.co.uk) which is a small but pleasant Thai restaurant, La Tosca (169 London Rd, 0116 291 1005) for Italian, and Yen Lin (146C London Rd, 0116 222 3889) for Cantonese style Chinese.

Other nearby restaurants are found on Queens Road, including Babelas Continental Bar (77 Queens Rd, 0116 270 7744), the Barceloneta tapas restaurant and bar (54 Queens Rd, 0116 2708408, www.barceloneta.co.uk), and the highly-recommended Jones Café Bistro (93 Queens Rd, 0116 270 8830). There is also a wide range of restaurants in the city centre, including the usual pizza and pasta joints. The more adventurous may wish to travel out to Belgrave Road (10 minutes by taxi from the University), where there are lots more Indian restaurants, many specialising in vegetarian Gujarati cuisine. Recommended restaurants include Bobby’s (154 Belgrave Rd, 0116 266 0106), Sayonara (49 Belgrave Rd, 0116 266 5888), and Curry Fever (139 Belgrave Rd, 0116 266 2941).
Conference Dinner

The conference dinner will be held at The Case, 4-6 Hotel Street on Thursday 16th April at 8.00pm. The restaurant is located in an old suitcase factory in the heart of the city. Please arrive early (or stay late) for informal drinks in the Champagne bar. The cost will be £30, for three courses and includes wine and coffee. EPS members can make reservations for the conference dinner with the enclosed booking form, which should be returned to Kevin Paterson, before 31st March 2009. Cheques must be made payable to “University of Leicester” and sent to Kevin Paterson, School of Psychology, Henry Wellcome Building, University of Leicester, University Road, Leicester LE1 9HN.

Places of Interest

The City of Leicester dates back to Roman times and has many historical curiosities. But it also has some of the most up to date places of interest, such as the National Space Centre (Exploration Drive, 0116 261 0261, www.spacecentre.co.uk). The Leicester Tourist Guide website is a useful place for information: www.traveltoleicester.co.uk. If you have time, take the opportunity to wander along New Walk, which runs parallel to London Road, and is reputed to be the oldest pedestrian walkway in the country. The New Walk Museum and Art Gallery is about half-way along, and is Leicester’s oldest museum, and features wide-ranging collections spanning the natural and cultural world. It is said to have inspired Lord Attenborough and Sir David Attenborough, who pursued their love of art and natural history as a result of spending their formative years as regular visitors to the gallery. Other places of interest include the Abbey Pumping Station (Corporation Rd, 0116 299 5111), which is now Leicester’s Museum of Science and Technology, and the Jewry Wall Museum (St. Nicholas Circle, 0116 225 4971), which is sited at the remains of the Roman town’s public baths, and which tells the story of Leicester through the ages.