

ROSEMARY A. COWELL
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EDUCATION

- 2002 - 2006 Lincoln College, University of Oxford, UK (affiliated with University of Cambridge, UK)
PhD, Experimental Psychology
- 1998 - 2001 Pembroke College, University of Cambridge, UK
BA (Hons) Natural Sciences, with specialisation in Experimental Psychology

RESEARCH POSITIONS

- Fall 2013 - Department of Psychology, University of Massachusetts, Amherst
Assistant Professor
- 2009 - 2013 Department of Psychology, University of California at San Diego
Research Scientist
- 2007 - 2009 Research Councils UK Academic Fellow, University of Kent, UK, Centre for Cognitive
Neuroscience and Cognitive Systems
- 2008 University of California, San Diego, Computer Science and Engineering Department
Visiting Scholar
- 2006 - 2007 LEAD-CNRS, Université de Bourgogne, Dijon, France
Post-doctoral Fellow
- 2002 Department of Experimental Psychology, University of Cambridge, UK
Graduate Research Assistant

GRANTS

- 1) University of California San Diego, Academic Senate
Title: Discriminating object representations in human visual cortex
Goal: (Seed funding) Investigating the hierarchical nature of object representations by using fMRI to measure neural activation patterns from early visual cortex through to medial temporal lobe.
Role: Principal Investigator
Total Direct Costs: \$13,080
Date: July 2011–June 2012
- 2) NIMH R01-MH092345 (2010-2015)
Title: Adaptive allocation of attention during perception, working memory, and decision making.
Role: Co-I (PI: John Serences, UCSD)
Total Direct Costs: \$1,250,000
Date: 2010–2015
- 3) International Travel Grant
Royal Society, UK
Value: £3,010
Date: April, 2009
- 4) BBSRC–ISIS Grant (Biotechnology and Biological Sciences Research Council, UK –International Scientific Interchange Scheme)
Value: £4,100
Date: April, 2008

AWARDS AND FELLOWSHIPS

- Cermak Travel Award, Memory Disorders Research Society, 2013.
- Perception/Action Modeling Prize of the *Cognitive Science Society*, for a paper: “Virtual Brain Reading: A connectionist approach to understanding fMRI”, July 2009.
- Travel award from *Brain, A Journal of Neurology*, July 2009.
- Travel award from the British Academy, July 2009.
- *Research Councils UK* Academic Fellowship, October 2007 – September 2009.
- Newton Abraham Studentship in Biomedical Sciences, *Oxford University*, 2002-2005.
- Book Prize for final examinations, *Pembroke College, University of Cambridge*, June 2001.

PUBLICATIONS

Peer-Reviewed Journal Articles

- Yeung, L-K., Ryan, J.D., **Cowell, R.A.**, Barense, M.D. (in press). Recognition Memory Impairments Caused by False Recognition of Novel Objects. *Journal of Experimental Psychology: General*.
- **Cowell, R.A.** & Cottrell, G.W. (in press). What evidence supports special processing for faces? A cautionary tale for fMRI interpretation. *Journal of Cognitive Neuroscience*.
- **Cowell, R.A.** (2012). Computational Models of Perirhinal Cortex Function. *Hippocampus*, 22: 1952-1964.
- **Cowell, R.A.**, Bussey, T.J. & Saksida, L.M. (2012). Empiricists are from Venus, Modelers are from Mars: Reconciling Experimental and Computational Approaches in Cognitive Neuroscience. *Neuroscience and Biobehavioral Reviews*, 36(10): 2371-9.
- Forwood, S.E., **Cowell, R.A.**, Bussey, T.J., and Saksida, L.M. (2012). Multiple Cognitive Abilities from a Single Cortical Algorithm. *Journal of Cognitive Neuroscience*, 24(9):1807-25.
- **Cowell, R.A.** & French, R.M. (2011). Noise and the emergence of rules in category learning: A connectionist model. *IEEE Transactions on Autonomous Mental Development*, 3 (3): 194-206.
- van Dantzig, S., **Cowell, R.A.**, Zeelenberg, R., Pecher, D. (2011). A sharp image or a sharp knife: Norms for the modality-exclusivity of 774 concept-property items. *Behavior Research Methods*, 43 (1): 145-154.
- McTighe, S.M., **Cowell, R.A.**, Winters, B.D., Bussey, T.J. & Saksida, L.M. (2010) Paradoxical false memory for objects after brain damage. *Science*, 330: 1408-1410.
- **Cowell, R.A.**, Bussey, T.J. & Saksida, L.M. (2010). Components of recognition memory: dissociable cognitive processes or just differences in representational complexity? *Hippocampus*, 20 (11): 1245-1262.
- Huber, D.E. & **Cowell, R.A.** (2010). Theory-driven modeling or model-driven theorizing? A comment on McClelland et al./Griffiths et al. *Trends in Cognitive Sciences*, 14 (8): 343-344.
- **Cowell, R.A.**, Bussey, T.J. & Saksida, L.M. (2010). Functional dissociations within the ventral object processing pathway: cognitive modules or a hierarchical continuum? *Journal of Cognitive Neuroscience*, 22 (11): 2460–2479.
- Bartko, S.J., **Cowell, R.A.**, Winters, B.D., Saksida, L.M. and Bussey, T.J. (2010). Increased susceptibility to interference in a rat model of object amnesia: impairment in both storage and retrieval. *Neuropsychologia*, 48 (10): 2987-2997.
- Bartko, S.J., Winters, B.D., **Cowell, R.A.**, Saksida, L.M. and Bussey, T.J. (2007a). Perceptual functions of perirhinal cortex in rats: zero-delay object recognition and simultaneous oddity discriminations. *Journal of Neuroscience*, 27 (10): 2548-2559.
- Bartko, S.J., Winters, B.D., **Cowell, R.A.**, Saksida, L.M. and Bussey, T.J. (2007b). Perirhinal cortex resolves feature ambiguity in configural object recognition and perceptual oddity tasks. *Learning & Memory*, 14: 821-832.
- Abreu, A., French, R. M., **Cowell, R. A.** & de Schonen, S. (2007). Local-Global visual deficits in Williams Syndrome: Stimulus presence contributes to diminished performance on image-reproduction. *Psychologica Belgica*, 46(4): 269-281.
- **Cowell, R.A.**, Bussey, T.J. & Saksida, L.M. (2006). Why does brain damage impair memory? A connectionist model of object recognition memory in perirhinal cortex. *Journal of Neuroscience*, 26 (47): 12186-12197.

- Winters, B.D., Forwood, S.E., **Cowell, R.A.**, Saksida, L.M. & Bussey T.J. (2004). Double dissociation between the effects of peri-postrhinal and hippocampal lesions on tests of object recognition and spatial memory: heterogeneity of function within the temporal lobe. *Journal of Neuroscience* 2004; 24: 5901-8.
- Di Ciano, P., Cardinal, R.N., **Cowell, R.A.**, Little, S.J. & Everitt, B.J. (2001). Differential involvement of NMDA, AMPA/kainate, and dopamine receptors in the nucleus accumbens core in the acquisition and performance of pavlovian approach behavior. *Journal of Neuroscience* 2001; 21: 9471-7.

Peer-Reviewed Conference Proceedings

- **Cowell, R.A.**, Huber, D.E., and Cottrell, G.W. (2009). Virtual Brain Reading: A connectionist approach to understanding fMRI. *Proceedings of the 31st Annual Meeting of the Cognitive Science Society, 2009. Winner of the Perception/Action Modeling Prize, 2009.*
- **Cowell, R.A.** & French, R.M. (2007). An unsupervised dual-network connectionist model of rule emergence in category learning. *Proceedings of the European Conference of the Cognitive Science Society, 2007.*

Book Chapters

- **Cowell, R.A.**, Bussey, T.J. & Saksida, L.M. (2011). Using Computational Modelling to Understand Cognition in the Ventral Visual-Perirhinal Pathway. In, Alonso, E. & Mondragón, E. (Eds.), *Computational Neuroscience for Advancing Artificial Intelligence: Models, Methods and Applications* (pp. 15-45). Hershey, PA: IGI Global Publishing.

INVITED TALKS

- Department of Psychology, University of Massachusetts, Amherst, February 2013.
- Department of Psychology, University of California, Riverside, November 2012.
- Department of Cognitive Science, University of California San Diego, October 2012.
- Department of Psychology, University of Kent, UK, October 2012.
- Southern California Learning and Memory Symposium, UCSD, California. May 2012.
- Department of Psychology, University of Bristol, UK. March 2012.
- Fifth International Conference on Memory Research (ICOM5), Perception & Memory Symposium, University of York, UK. July 2011.
- Medical Research Council Cognition and Brain Sciences Unit (MRC-CBU), Cambridge, UK. July 2011.
- Cognitive Science Colloquium, University of Arizona. September 2010.
- "Looking Back at Mount Ararat" Memory Workshop, Yerevan, Armenia. April 2010.
- Department of Psychology, University of Kent, UK. June 2009.
- Department of Psychology, University of California, San Diego. April 2009.
- Reinagel Lab, Department of Neurobiology, University of California, San Diego. November 2008.
- Department of Psychology, University of California, San Diego. November 2008.
- Birkbeck College, London, UK, February 2008.
- Centre for Cognitive Neuroscience and Cognitive Systems, University of Kent, UK, February 2008.
- Laboratory Seminar, LEAD-CNRS, Université de Bourgogne, France. November 2006.
- Behavioural Neuroscience Seminar Series, University of Cambridge. November 2005.
- Medical Research Council Cognition and Brain Unit (MRC-CBU), Cambridge, UK. July 2004.

CONFERENCE TALKS

- Cowell, R.A. (2013) A novel method for fMRI analysis: Inferring neural mechanisms from voxel tuning. *Vision Sciences Society Conference*, Naples, Florida, May 2013.
- Cowell, R.A. (2012) Paradoxical False Recognition: New objects look old in a model of amnesia. *Southern California Learning and Memory Symposium*, UCSD, California, May 2012.
- Cowell, R.A. (2011). Simulating Memory: Do amnesics forget because old things look new, or because new things look old? *Fifth International Conference on Memory Research (ICOM5), Perception & Memory Symposium*, University of York, UK, July 2011.

- Cowell, R.A. (2011). What is the Blood Oxygenation Level Dependent (BOLD) signal? *Tenth Annual Summer Interdisciplinary Conference (ASIC)*, Boi Valley, Pyrenees, Spain, July 2011.
- Cowell, R.A., Bussey, T.J. & Saksida, L.M. (2011). Simulating Memory: Do amnesics forget because old things look new, or because new things look old? *Annual Interdisciplinary Conference*, Jackson, Wyoming, January 2011.
- Cowell, R.A., Huber, D.E., and Serences, J.T. (2010). Inferring neural tuning functions from the voxel tuning functions of fMRI. *Ninth Annual Summer Interdisciplinary Conference (ASIC)*, Bend, Oregon, July 2010.
- Cowell, R.A., Huber, D.E., and Cottrell, G.W. (2009). Virtual Brain Reading: A connectionist approach to understanding fMRI. *31st Annual Meeting of the Cognitive Science Society*, Amsterdam, Netherlands, July 2009.
- Cowell, R.A., Huber, D.E., and Cottrell, G.W. (2009). Virtual Brain Reading: A connectionist approach to understanding fMRI. *Eighth Annual Summer Interdisciplinary Conference (ASIC)*, Val d'Aoste, Italy, July 2009.
- Cowell, R.A., Huber, D.E. & Cottrell, G.W. (2008). Predicting fMRI data from the Fusiform Face Area with a model of visual cognition. *Meeting of the Perceptual Expertise Network*, Chicago, October 2008.
- Cowell, R.A., Bussey, T.J. & Saksida, L.M. (2008). Why does anterior temporal lobe damage make us forget objects? *Meeting of the Perceptual Expertise Network*, Banff, Alberta, May 2008.
- Cowell, R.A., Bussey, T.J. & Saksida, L.M. (2008) The Effect of Brain Lesions in the Ventral Visual Object Processing Pathway. *Seventh Annual Summer Interdisciplinary Conference (ASIC)*, Madonna di Campiglio, Italy, July 2008.
- Cowell, R.A. & French, R.M. (2007). An Unsupervised Connectionist Model of Category Learning: Using Noise to Extract Rules. *Second Meeting of the European Cognitive Science Society*, Athens, Greece, May 2007.
- Cowell, R.A. & French, R.M. (2007). From Associations to Rules in Category Learning: A Connectionist Model. *Tenth Neural Computation & Psychology Workshop*, Dijon, France.
- Cowell, R.A. & French, R.M. (2007). From Associations to Rules in Category Learning: A Connectionist Model. *Associative Learning Symposium XI*, Gregynog, Wales, April 2007.

CONFERENCE POSTER PRESENTATIONS

- Cowell, R. A., Huber, D. E., & Serences, J. T. (2013). A novel method for fMRI analysis: Inferring neural mechanisms from voxel tuning. *Computational and Systems Neuroscience (COSYNE)*, Salt Lake City, Utah.
- Cowell, R.A., Huber, D.E., Cottrell, G.W. & Serences, J.T. (2010). Virtual Multi-Unit Electrophysiology: Inferring neural response profiles from fMRI data. *Vision Sciences Society Conference*, Naples, Florida.
- Cowell, R.A., Huber, D.E., & Cottrell, G.W. (2009). Virtual Brain Reading: A connectionist approach to understanding fMRI data. *Vision Sciences Society Conference*, Naples, Florida.
- Cowell, R.A., Huber, D.E., and Cottrell, G.W. (2009). Virtual Brain Reading: A connectionist approach to understanding fMRI data. *Computational Systems Neuroscience (COSYNE) Conference*, Salt Lake City, Utah.
- McTighe, S.M., Cowell, R.A., Winters, B.D., Bussey, T.J. & Saksida, L.M. (2008) Novel objects appear familiar following perirhinal cortical damage. *Society for Neuroscience Annual Conference*, Washington DC.
- Cowell, R.A. & French, R.M. (2008). The Emergence of Rules in Category Learning. *30th Annual Conference of the Cognitive Science Society*, Washington DC.
- Cowell, R.A. & French, R.M. (2007). A Semi-supervised Connectionist Model of Category Learning: Using Noise to Extract Rules. *Computational Cognitive Neuroscience Conference*, San Diego.
- Cowell, R.A., Bussey, T.J. and Saksida, L.M. (2006). How does brain damage impair memory? A connectionist model of object recognition memory in perirhinal cortex. *Computational Cognitive Neuroscience Conference*, Houston.
- Cowell, R.A., Bartko, S.J., Bussey, T.J. & Saksida, L.M. (2005). A computational model of recognition memory in perirhinal cortex: a critical role for complex conjunctive representations. *European Brain and Behaviour Society Conference*, Dublin.
- Cowell, R.A., Bussey, T.J. & Saksida, L.M. (2004) Are there perceptual and mnemonic modules in the brain? A connectionist model of the effects of lesions in the ventral visual stream. *Federation of European Neurosciences Conference*, Lisbon.

- Cowell, R.A., Bussey, T.J. & Saksida, L.M. (2004) Are there perceptual and mnemonic modules in the brain? A connectionist model of the effects of lesions in the ventral visual stream. *Autumn School in Cognitive Neuroscience*, University of Oxford.

TEACHING

- Lecturer at a graduate student Mini-School focusing on interdisciplinary approaches to memory. Yerevan, Armenia, April 2010.
- Junior Honors Research Seminar, Feb 2010, Feb 2011, University of California San Diego.
- Supervision of a final year undergraduate independent research project, University of California San Diego, Winter 2010.
- Supervision of an undergraduate student for a ten-week experimental summer project. Department of Experimental Psychology, University of Cambridge, 2005.
- Supervision of two third year undergraduates for a Part II Experimental Psychology Project. University of Cambridge, 2004-2005.
- Part II (third year undergraduate) supervision of Experimental Psychology. University of Cambridge, 2004-2005.
- Part 1B (second year undergraduate) supervision of Experimental Psychology for Pembroke College and Robinson Colleges. University of Cambridge, 2003.
- Demonstration (acting as a TA) in laboratory practicals for Part 1B Experimental Psychology. University of Cambridge, 2003-2004.
- Lecture for the *Methods and Techniques in Cognitive and Clinical Neuroscience* module of the Neuroscience masters degree. Goldsmith's College, University of London, 2005.

PUBLIC UNDERSTANDING OF SCIENCE

- Presenter at "Café Scientifique", in which scientists explain their latest research findings to members of the public. University of Kent, Canterbury, March 2009.
- Participant in "L'Experimentarium" project, in which researchers present a workshop explaining their research to local schoolchildren and the general public, University of Burgundy, Dijon, 2007.
- Participant in Science Week, in which researchers demonstrate and explain an aspect of their research to the public, University of Cambridge, 2004, 2005.

PEER REVIEW

- Review Editor of *Frontiers in Cognitive Science*.
- Ad hoc reviewer for:
 - Journal of Neuroscience*
 - Cortex*
 - Frontiers in Perception Science*
 - Hippocampus*
 - Memory and Cognition*
 - Neurobiology of Aging*
 - Visual Cognition*
 - Behavioral Neuroscience*
 - Learning and Memory*
 - Cognitive Neuroscience*
 - PLoS One*
 - Brain Research*
 - Connection Science*
 - IEEE Transactions on Autonomous Mental Development*
 - Psychological Reports*
- Reviewer, annual meeting of the Cognitive Science Society.

PRO BONO

Chair of the Board of Directors of Network4Africa, USA.