

## David Peebles PhD AFBPsS FHEA

Department of Psychology, University of Huddersfield, Queensgate, Huddersfield, HD1 3DH, UK

**Email:** d.peebles@hud.ac.uk    **Tel:** (+44) 01484 473620    **Fax:** (+44) 01484 473760

### Academic positions

- 2013–present **Director, Centre for Applied Psychological Research.** Department of Psychology, University of Huddersfield.
- 2012–present **Reader in Cognitive Science.** Department of Behavioural & Social Sciences, University of Huddersfield.
- 2002–2012 **Senior Lecturer in Cognitive Psychology.** Department of Behavioural & Social Sciences, University of Huddersfield.
- 1999–2002 **Postdoctoral Associate.** ESRC Centre for Research in Development, Instruction and Training (CREDIT), School of Psychology, University of Nottingham.
- 1997–1999 **Postdoctoral Associate.** *Diagrammatic Reasoning and Knowledge Acquisition project.* AI Group, School of Psychology, University of Nottingham.
- 1996–1997 **School Instructor.** School of Psychology, University of Birmingham.

### Education

- 1993–1997 **PhD Cognitive Science.** University of Birmingham. Awarded February, 1998.
- 1992–1993 **MSc Cognitive Science.** University of Birmingham. Awarded December, 1993.
- 1989–1992 **BA (Hons) Philosophy & Artificial Intelligence.** 1st Class. Middlesex University. Awarded July, 1992.

### Grants

- 2016–2017 **Autonomous agents.** (PI). Defence Science and Technology Laboratory, Defence and Security Analysis Division, Ministry of Defence. £19,250.
- 2016–2017 **Understanding the cyber threat to autonomous vehicles.** (Co-I). Crown Commercial Service (on behalf of the Department for Transport). £30,000.
- 2015 **Human Factors and Psychological Aspects of Designing to Support Collaborative Cyber Sensemaking.** (Co-I, Sub-contract to Inshightlytics). Dstl Centre for Defence Enterprise–Understand and Interacting with Cyber. £4,000.
- 2013–2014 **Computational modelling of human performance with unmanned autonomous systems using the ACT-R cognitive architecture.** (PI). *Autonomous Systems Underpinning Research* (ASUR) programme, Dstl. £40,000.
- 2009–2010 **The effect of graphical format and instruction on the interpretation of three-variable bar and line graphs.** (PI). Higher Education Academy Psychology Network. £6,000.
- 2005–2008 **Modelling map-based orientation in realistic 3D environments.** (PI). Ordnance Survey. £30,450.

### Selected publications

- Pulijala, Y., Ma, M., Pears, M., **Peebles, D.**, & Ayoub, A. (2017). Effectiveness of immersive virtual reality in surgical training—A randomized control trial. *Journal of Oral and Maxillofacial Surgery*.
- **Peebles, D.**, & Cheng, P. C.-H. (2017). *Multiple Representations in Cognitive Architectures.* AAAI Fall Symposium 2017: “A Standard Model of the Mind”, Washington, USA, November 9–11.
- Cooper, R. P., & **Peebles, D.** (2017). On the Relation Between Marr’s Levels: A Response to Blokpoel. *Topics in Cognitive Science.* 1–5.
- **Peebles, D.** & McCluskey, T. L. (2017). *Autonomous Agents.* Report for Defence Science and Technology Laboratory, Defence and Security Analysis Division, Ministry of Defence.
- **Peebles, D.** (2016). Two methods for search and optimising cognitive model parameters. In D. Reitter & F. E. Ritter (Eds.), *Proceedings of the 14th International Conference on Cognitive Modeling* (pp. 234–235). University Park, PA: Penn State.
- **Peebles, D.**, & Ali, N. (2015). Expert interpretation of bar and line graphs: The role of graphicacy in reducing the effect of graph format. *Frontiers in Psychology*, 6:1673. doi: 10.3389/fpsyg.2015.01673.
- **Peebles, D.**, & Cooper, R. P. (2015). Thirty years after Marr’s Vision: Levels of analysis in cognitive science. *Topics in Cognitive Science*, 7, 187–190.
- Cooper, R. P., & **Peebles, D.** (2015). Beyond single-level accounts: The role of cognitive architectures in cognitive scientific explanation. *Topics in Cognitive Science*, 7, 243–258.
- **Peebles, D.** & Ramduny-Ellis, D. (2014). Computational modelling of human performance with unmanned autonomous systems using the ACT-R cognitive architecture. Unpublished report for Dstl funded *Autonomous Systems Underpinning Research* (ASUR) programme project.
- **Peebles, D.** & Jones, C. (2014). A model of object location memory. In P. Bello, M. Guarini, M. McShane, & B. Scassellati (Eds.), *Proceedings of the 36th Annual Conference of the Cognitive Science Society* (pp. 2747–2752). Austin, TX: Cognitive Science Society.
- Ali, N. & **Peebles, D.** (2013). Reactivity effects of concurrent verbalisation during a graph comprehension task. In M. Knauff, M. Pauen, N. Sebanz, & I. Wachsmuth (Eds.), *Proceedings of the 35th Annual Conference of the Cognitive Science Society* (pp. 1720–1725). Austin, TX: Cognitive Science Society.
- **Peebles, D.** (2013). Strategy and pattern recognition in expert comprehension of 2 x 2 interaction graphs. *Cognitive Systems Research*, 24, 43–51.
- Ali, N. & **Peebles, D.** (2013). The effect of Gestalt laws of perceptual organisation on the comprehension of three-variable bar and line graphs. *Human Factors*, 55 (1), 183–203.
- **Peebles, D.** (2012). A cognitive architecture-based model of graph comprehension. In N. Rußwinkel, U. Drewitz, J. Dzaack, & H. van Rijn, *Proceedings of the 11th International Conference on Cognitive Modeling*, Berlin, Germany.
- **Peebles, D.** (2011). The effect of graphical format and instruction on the interpretation of three-variable bar and line graphs. Unpublished project report submitted to the Higher Education Academy Psychology Network
- Ali, N. & **Peebles, D.** (2011). The different effects of thinking aloud and writing on graph comprehension. In L. Carlson, C. Holscher, & T. Shipley (Eds.). *Proceedings of the 33rd Annual Conference of the Cognitive Science Society.* Austin, TX: Cognitive Science Society.
- **Peebles, D.** & Banks, A. P. (2010). Modelling dynamic decision making with the ACT-R cognitive architecture. *Journal of Artificial General Intelligence*, 2(2), 52–68.
- Davies, C. & **Peebles, D.** (2010). Spaces or scenes: Map-based orientation in urban environments. *Spatial Cognition and Computation*, 10, 135–156.
- Howes, A., **Peebles, D.** & Cooper, R.P. (Eds). (2009). *Proceedings of the 9th International Conference on Cognitive Modeling* (ICCM2009). Manchester, UK.
- **Peebles, D.** & Ali, N. (2009). Differences in comprehensibility between three-variable bar and line graphs. In N. Taatgen, H. van Rijn, J. Nerbonne & L. Schomaker (Eds.). *Proceedings of the 31st Annual Conference of the Cognitive Science Society.* Austin, TX: Cognitive Science Society.
- **Peebles, D.** & Davies, C. (2009). *A process model of map-based orientation in urban environments.* Unpublished project report submitted to the Ordnance Survey.

Humphreys, & A. Olson. (Eds.), *Connectionist Models in Cognitive Neuroscience*. London, Springer-Verlag.

- **Peebles, D.** (2008). The effect of emergent features on judgments of quantity in configural and separable displays. *Journal of Experimental Psychology: Applied*, 14, 85–100.
- Cox, A. L. & **Peebles, D.** (2008). Cognitive Modelling in HCI Research. In P. A. Cairns, & A. L. Cox. (Eds.). *Research Methods for Human Computer Interaction*. Cambridge. Cambridge University Press.
- **Peebles, D.**, Davies, C., and Mora, R. (2007). Effects of geometry, landmarks and orientation strategies in the ‘drop-off’ orientation task. In S. Winter, M. Duckham, L. Kulik, & B. Kuipers (Eds.). *Spatial Information Theory*. Springer.
- Davies, C., & **Peebles, D.** (2007) Strategies for orientation: The role of 3D landmark salience and map alignment. In *Proceedings of the 29th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- Ropar, D., & **Peebles, D.** (2007). Sorting preference in children with autism: The dominance of concrete features. *Journal of Autism and Developmental Disorders*, 37, 270–280.
- Davies, C., Mora, R. and **Peebles, D.** (2006) Isovists for orientation: Can space syntax help us predict directional confusion? In *Proceedings of the ‘Space Syntax and Spatial Cognition’ workshop, Spatial Cognition 2006*, Bremen, Germany, 24 September 2006.
- **Peebles, D.** & Cox, A.L. (2006) Modelling interactive behaviour with a rational cognitive architecture. In Zaphiris, P. & Kurniawan, S. (Eds.). *Human Computer Interaction Research in Web Design and Evaluation*. London. Idea Group Inc. Reprinted in E. Szewczak. (Ed.). (2008). *Selected Readings on the Human Side of Information Technology*. IGI Global.
- **Peebles, D.**, & Bothell, D. (2004). Modelling performance in the Sustained Attention to Response Task. In M. Lovett, C. D. Schunn, C. Lebiere & P. Munro (Eds.). *Proceedings of the 6th International Conference on Cognitive Modeling*. Mahwah , NJ : Lawrence Erlbaum.
- **Peebles, D.** (2004). Distortions of perceptual judgement in diagrammatic representations. In K. Forbus, D. Gentner & T. Regier (Eds.). *Proceedings of the 26th Annual Conference of the Cognitive Science Society*. Mahwah , NJ : Lawrence Erlbaum.
- **Peebles, D.**, & Cheng, P. C.-H. (2003). Modeling the effect of task and graphical representation on response latency in a graph reading task. *Human Factors*, 45, 28–46. **Winner of the Jerome H. Ely Human Factors Article Award for the most outstanding article in the 2003 volume of Human Factors.**
- **Peebles, D.**, & Cheng, P. C.-H. (2002). Extending task analytic models of graph-based reasoning: A cognitive model of problem solving with Cartesian graphs in ACT-R/PM. *Cognitive Systems Research*, 3, 77–86.
- **Peebles, D.**, & Cheng, P. C.-H. (2001). Graph-based reasoning: From task analysis to cognitive explanation. In J. D. Moore & K. Stenning. (Eds.). *Proceedings of the 23rd Annual Conference of the Cognitive Science Society*. Mahwah , NJ : Lawrence Erlbaum.
- **Peebles, D.**, & Cheng, P. C.-H. (2001). Extending task analytic models of graph-based reasoning: A cognitive model of problem solving with Cartesian graphs in ACT-R/PM. In E. M. Altmann, A. Cleermans, C. D. Schunn & W. D. Gray. (Eds.). *Proceedings of the 4th International Conference on Cognitive Modeling*. Mahwah , NJ : Lawrence Erlbaum.
- **Peebles, D.**, Cheng, P. C.-H., & Shadbolt, N. R. (1999). Multiple processes in graph-based reasoning. In M. Hahn, & S. C. Stoness (Eds.). *Proceedings of the 21st Annual Conference of the Cognitive Science Society*. Mahwah , NJ : Lawrence Erlbaum.
- Cupit, J., Shadbolt, N., Cheng, P. C.-H., & **Peebles, D.** (1999). Compiling ontologies into structured views and interviews: The design of a graph drawing tool for knowledge elicitation. *Twelfth Workshop on Knowledge Acquisition, Modeling and Management*, Banff , Alberta , Canada (KAW’99).
- **Peebles, D.** & Lamberts, K. (1999). A connectionist model of categorization response times. In D. Heinke, G. W.

## Professional activities and esteem

- Chartered Psychologist and Associate Fellow, British Psychological Society (2001–present).
- Editorial board member, *Journal of Experimental Psychology: Applied* (2016–2018).
- Associate Editor, *Frontiers in Cognitive Science* (2015–present).
- Review Editor, *Frontiers in Cognitive Science* (2010–2015).
- Recipient of the 2004 Human Factors and Ergonomics Society’s *Jerome H. Ely Human Factors Article Award* for the most outstanding article in the 2003 volume of *Human Factors*.
- Editor, Quarterly Newsletter of the Society for the Study of Artificial Intelligence and Simulation of Behaviour (2010–2014).
- Member, Cognitive Science Society (1999–present).
- Fellow, Higher Education Academy (2011–present).
- Chair, 34th Annual Meeting of the Cognitive Science Society (CogSci), Sapporo, Japan, 2012.
- Chair, 9th International Conference on Cognitive Modeling (ICCM), Manchester, UK.
- Committee member, Society for the Study of Artificial Intelligence and Simulation of Behaviour (2009–2014).
- Steering Committee member, International Conference on Cognitive Modeling (2007–present).
- External PhD examiner, University of Sussex (2011) and Robert Gordon University (2013).
- Ad hoc reviewer: *Cognitive Science*, *Human Factors*, *Journal of Experimental Psychology: Learning, Memory and Cognition*, *Journal of Experimental Psychology: Applied*, *Frontiers in Cognitive Science*, *Current Directions in Psychological Science*, *Quarterly Journal of Experimental Psychology*, *Topics in Cognitive Science*, *The International Journal of Human-Computer Studies*, *Computational and Mathematical Organization Theory*, *Psychological Research*, and *Interacting with Computers*. Economic and Social Research Council, the Engineering and Physical Sciences Research Council, and the Royal Society, as well as the Israel Science Foundation, and the US National Science Foundation.

## Research degree supervision

- **Stephanie Dennison**. “The effects of sleep time and power napping on memory and vigilance”. MRes awarded Nov, 2017.
- **Corinna Jones**. “Mental representations of fractions and decimals: Differences, commonalities and implications for understanding”. PhD awarded Sep, 2017.
- **David Dickins**. “Stimulus equivalence: A laboratory artefact of the heart of language?”. PhD awarded Jan, 2016.
- **Momna Sajjid**. “The lived experiences of partners of individuals with stroke and aphasia”. MRes awarded Oct, 2016.
- **Alastair Broadhead**. “Creativity and embodied fluid movements”. MRes awarded Jan, 2016.
- **Lee Priest**. “The effect of physical weight and stimulus spatial location on lexical decision: Implications for embodied cognition”. MRes awarded Apr, 2015.
- **Emily Brown**. “Anxiety and perception of pain: The role of personality and distractor type”. MRes awarded Apr, 2014.
- **Joseph Keeley**. “Visual and auditory recognition memory: An examination of the impact of emotional valence and arousal words on ageing and remembering”. MRes awarded May, 2013.
- **Emma Turley**. “A phenomenological study of the experience of bondage, discipline, dominance & submission, and sadism & masochism (BDSM)”. PhD awarded Mar, 2012.
- **Nadia Ali**. “The interaction of Gestalt laws of perceptual organisation and task demands on the comprehension of three-variable bar and line graphs”. PhD awarded Jul, 2011.