Emma Scholey

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Centre for Human Brain Health | University of Birmingham

EDUCATION

2021 – 2025 **PhD in Psychology**
Centre for Human Brain Health, University of Birmingham, UK

Thesis: **How the brain computes opportunity costs**
Supervisors: Prof. Matthew Apps, Prof. Mark Humphries and Dr Ned Jenkinson
Funding: Medical Research Council IMPACT scholarship

Main achievements:

- Collaborated with Prof. Mark Humphries (University of Nottingham) to develop computational models of foraging decisions in rodents and humans.
- Designed and validated novel paradigms and computational models using reinforcement learning frameworks, to understand how the human brain tracks physical effort costs in the environment over time.
- Designed an fMRI project to identify the brain regions involved in tracking environmental effort costs, including pre-processing and univariate fMRI analysis using SPM.
- Led a research team of 6 colleagues to investigate the role of dopamine in accept-reject style decisions, by administering levodopa to healthy adults.

2015 – 2019 **BSc in Psychology**
University of Surrey, UK

Dissertation: Individual differences in auditory neural entrainment
Supervisors: Dr. Ines Violante
Awarded 1st class honours (received British Psychological Society award for highest marks in cohort)

PUBLICATIONS

Scholey, EV & Apps, MAJ. (2022). Fatigue: Tough days at work change your prefrontal metabolites. Current Biology 32 (16), R876-R879.

Grima, LL, Haberkern H, Mohanta R, Morimoto MM, Rajagopalan AE, **Scholey EV**. (2025) Foraging as an ethological framework for neuroscience. Trends in Neurosciences (in press). *Author order was determined alphabetically; all authors contributed equally.*

Scholey EV, Apps, MAJ & Humphries, MD. Stochastic choice drives variability in patch foraging decisions across species. (in prep).

Scholey EV, Mehta, N, Apps, MAJ. Computational mechanisms underlying how humans adapt their foraging choices to the average effort of the environment. (in prep).

BOOK CHAPTERS

Scholey, EV, Lugtmeijer, S & Apps, MAJ. (2024). The neuroeconomics of work: Computational and neural mechanisms of the dynamics of effort-based decisions. In Neuroeconomics: Core Topics and Current Directions. Springer Nature

CONFERENCE PRESENTATIONS

Selected poster presentations

Scholey, EV & Russo, FA. Music listening in older adults: Hearing loss mitigates psychological and physiological arousal. *48th Annual Lake Ontario Visionary Establishment (LOVE) 2018, 8-9/02/2018,* Niagara Falls, Canada. February 2018.

Scholey, EV, Apps, MAJ & Humphries, MD. A learning mechanism for the opportunity cost of time. *Celebrating research and impact conference 2022, 28-29/06/2023,* University of Birmingham, UK. June 2022.

Scholey, EV, Apps, MAJ & Humphries, MD. Explore/exploit choices drive human and animal foraging decisions. *International conference on Motivational and Cognitive Control,* Lyon, France. October 2023.

Scholey, EV & Apps, MAJ. Learning the landscape: Computational mechanisms for learning the opportunity costs of effort in different environments. *International conference on Motivational and Cognitive Control,* Lyon, France. October 2023.

Scholey, EV, Apps, MAJ & Humphries, MD. Explore/exploit choices drive human and animal foraging decisions. *Bridging Diverse Perspectives on the Mechanistic Basis of Foraging,* Janelia Research Campus, Virginia, USA. February 2024.

Scholey, EV, Apps, MAJ & Humphries, MD. Explore/exploit choices drive variability in foraging decisions across species. *Society for Neuroeconomics 2024,* Cascais, Portugal. October 2024.

Scholey, EV, Mehta, N, Apps, MAJ. Learning the landscape: humans adapt their choices to the opportunity costs of physical effort. Presented at: *Reinforcement Learning & Decision-making,* Dublin, Ireland, June 2025 | *British Association for Psychopharmacology,* Manchester, UK, July 2025 | *UK Neural Computation,* London, UK, June 2025 | *Cognitive Computational Neuroscience,* Amsterdam, Netherlands, August 2025.

Oral presentations

Scholey, EV & Apps, MAJ. Considering effort and fatigue in opportunity cost decisions: Evidence from a physical effort-based paradigm. *Celebrating research and impact conference 2023, 3-4/06/2023,* University of Birmingham, UK. July 2023.

Scholey, EV, Apps, MAJ & Humphries, MD. The explore/exploit trade-off drives variation in patch foraging decisions. *UK Neural Computation 2024,* Sheffield, UK. July 2024.

Scholey, EV, Mehta, N, Apps, MAJ. Computational mechanisms underlying how humans adapt their foraging choices to the average effort of the environment. *Mechanistic Basis of Foraging*, Birmingham, UK, November 2025.

ACADEMIC CONTRIBUTIONS

Supervision

2024 – 2025	**Ms Charlotte Roberts** | *Research Assistant.* Currently: PhD candidate at University of Birmingham, UK
2023 – present	**Ms Kubra Karatas** | *Research Assistant*
2023 – 2024	**Ms Nikita Mehta** | *Research Assistant*. Currently: ESRC-funded PhD candidate at University of Birmingham, UK
2023 – 2024	**Mr Payman Rhoghani** | *MSc Computational Cognitive Neuroscience.* Currently: PhD candidate at Universitat Pompeu Fabra, Barcelona, Spain
2022 – 2023	**Mr Chris Johnston** | *MSc Brain Imaging and Cognitive Neuroscience* Currently: Data Analyst at ebi, UK

Teaching

2026	**Guest lecturer** on BSc/MSci module: What motivates you?

University of Birmingham, Birmingham, UK

2025 **Instructor:** Birmingham-Leiden Summer School, Computational Social Cognition
University of Birmingham, Birmingham, UK

Policy/Outreach

2024 **Invited talk on UKRI policy internship scheme experience**
MRC IMPACT symposium, Nottingham, UK

2023 **3-month PhD policy intern** | *Department for Environment, Food & Rural Affairs (DEFRA)*

2023 **Volunteer at Brain Awareness Week**
University of Birmingham, UK
Discussing and running demos of neuroscience research with the public

2017 **Blog post for Canadian Audiologist**
Wrote blog post titled: A New Study at Ryerson University: Hearing Aids and Emotions. Canadian Academy for Audiology, 4 (*6).*

Administrative

2025 **Co-organiser for local conference:** Mechanistic Basis of Foraging, *University of Birmingham, Birmingham, UK*

2024 **Co-organiser for international conference:** Bridging Diverse Perspectives on the Mechanistic Basis of Foraging
Janelia Research Campus, Virginia, USA

2023 **Co-organiser for virtual Future of Foraging seminar series (s3)**

2023 **Co-organiser for MRC IMPACT student symposium**
University of Leicester, UK

2021 – present **Medical Research Council student representative**
University of Birmingham, UK

Peer review

2025 **Nature Communications:** ECR co-review initiative

Training

2024 **Introduction to Good Clinical Practice** | *NIHR, eLearning*

2022 **Computational Psychiatry Course (CPC)** | *ETH Zurich, Switzerland*

2022 **SPM course, 2022** | *University College London, UK*

2022 **Fundamentals of functional MRI** | MSc module, *University of Birmingham, UK*

Awards/Funding

2022 **MRC Flexible Funding** to attend CPC at ETH Zurich (£1,200)

2021 **MRC IMPACT PhD Studentship** (£~90,000)

2019 **BPS Undergraduate Award** for highest mark in BPS degree

2015 **University of Surrey Chancellors' Scholarship** (£2,000)

Professional membership

2024 - 2025 **Society for Neuroeconomics**

2024 - present **British Association for Psychopharmacology**

RESEARCH & TECHNICAL SKILLS

Programming & software	**Modelling, analysis & visualisation:** *Proficient:* MATLAB, R *Novice/intermediate:* SPSS, JASP, Python, Git **Neuroimaging analysis:** *Proficient:* SPM *Novice/intermediate*: FSL, EEGLab **Experiment building:** *Proficient:* Psychtoolbox *Novice/intermediate:* Qualtrics, jsPsych
Research methods	fMRI, computational modelling, psychopharmacology, EEG, physiology

ADDITIONAL EXPERIENCE

2019 – 2021 **Assistant Statistician** | *Government Statistical Service, UK Civil Service*
Graduate on the Civil Service Fast Stream, with placements in Department for Education & Department for Digital, Culture, Media & Sport

2017 – 2018 **Visiting Research Assistant** | *Toronto Metropolitan University, Canada*
Science of Music, Auditory Research & Technology (SMART) lab
Research placement supervised by Prof. Frank Russo to investigate the impact of hearing loss on perception of emotion in music. Involved using a combination of EEG, psychophysiology, and testing in hearing-impaired older adult populations.