

Rachel L Bedder, PhD

CV

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rachelbedder.com

Currently based in NJ/NY (USA)

Postdoctoral Research Associate at Princeton Neuroscience Institute & Department of Psychology (advised by Yael Niv). Research interests include **mood, decision making, and rumination** using cognitive **computation models** (Bayesian and reinforcement learning), **behavioral testing** and **fMRI**. I have a **PhD in Computational Psychiatry** from the Max Planck Centre at UCL. I am an advocate for making computational methods accessible to other researchers and students and have a **strong history of public engagement and science communication**.

EDUCATION

- 2017- 2021 **PhD Computational Psychiatry: Asymmetries in Gains and Losses for Mood and Decision-making**
Advisor: Robb Rutledge, Max Planck Centre for Computational Psychiatry & Ageing Research, UCL (London, UK)
- 2015-2016 **MSc Cognitive Neuroscience (Distinction)**, Advisors: Neil Burgess & Dan Bush
Institute for Cognitive Neuroscience, UCL (London, UK)
- 2009-2013 **BA (Hons) Art & Psychology (1st Class, British Psychological Society Accredited)**
Advisor: Eugene McSorley, University of Reading (Reading, UK)

ACADEMIC EMPLOYMENT

- 07/2021 – Present **Postdoctoral Research Associate**, Advisor: Yael Niv
Princeton Neuroscience Institute & Department of Psychology (Princeton, NJ USA)
- 03/2014 – 12/2016 **Research Assistant**, Advisor: Gill Livingston
Division of Psychiatry, UCL (London, UK)
- 09 – 12/2016 **Postgraduate Research Intern**, Advisor: Anil Seth & Keisuke Suzuki
Sackler Centre for Consciousness Science, University of Sussex (Sussex, UK)

TEACHING & SUPERVISING

- 2021-Ongoing **Project Supervisor**, including visiting MSc students, and summer interns (Princeton University).
- 2022 - Ongoing **Tutor** Pre-college Math (East Jersey State Prison, through Raritan Valley Community College)
- Fall 2022 **Facilitator** Junior Project Tutorial Seminar (Princeton University)
- Spring 2022 **Assistant Instructor**, Undergraduate Level, *Animal Learning to Changing People's Minds*. Using a teaching without grades methodology. (Princeton University)
- Fall/Spr 2021 **Facilitator**, Graduate Student Journal Club (Princeton University)
- Fall 2020 **Lecturer**, Graduate Level *Introduction to Matlab* (Institute of Cognitive Neuroscience, UCL)
- 2017-2019 **Project Supervisor**, MSc/MRes Student projects (Max Planck UCL Centre)

GRANTS AND AWARDS

- 2017-2021 **IMPRS PhD Studentship** Max Planck Society
- 2016 **Computational Neuroscience Summer School Scholarship** OIST (Okinawa, Japan)
- 2016 **Best Oral Presentation (Audience Award)** Aspects of Neuroscience Conference (Warsaw, Poland)
- 2012 **Undergraduate Research Opportunity Program Bursary** (University of Reading, UK)

SELECTED PREPRINTS & PUBLISHED WORK

Bedder, R.L., Pisupati, S & Niv, Y (2023) Modelling Rumination as a State Inference Process. *Proceedings of the annual meeting of the cognitive science society*.

Bedder, R.L., Vaghi, M, Dolan, R.J & Rutledge R.B (2023) Risk taking for potential losses but not gains increases throughout the day. *Scientific Reports*.

Jangraw., D, Keren., H, **Bedder., R.L** ...Stringaris., (2022) Passage-of-Time Dysphoria: A Highly Replicable Decline in Mood During Rest and Simple Tasks that is Moderated by Depression. *Nature Human Behavior*.

Bedder*, R.L., Bush*, D.... Burgess, N (2018). A mechanistic account of bodily resonance and implicit bias. *Cognition*.

MANUSCRIPTS IN PREPARATION

Bedder*, R.L., & Hitchcock*, P, Sharp P: Using reinforcement learning to explain repetitive negative thought dynamics

Bedder, R L., Blain, B & Rutledge R.B: A Computational Model of Mood Dynamics and Future Prospects

EXTERNAL TALKS

CONFERENCE TALKS

2023 *Modelling Rumination as State Inference Process* – **CogSci Conference 2023**, Sydney, Australia

2023 *Using Reinforcement Learning to Understand Dynamics of Repetitive Negative Thinking* at **Society for Affective Science**, Long Beach CA USA (Symposium).

2022 *Repetitive Negative Thinking and Simulation in Natural and Artificial Cognition* at **Reinforcement and Decision-Making Conference**, Brown University RI, USA. (Workshop Speaker and Co-organisor).

2022 *The Good, the Bad, and the Sticky Examining the Algorithmic and Neural Locus of Perseverative Behavior across Affective Disorders* at **Winter brain Conference**, Aspen CO, USA (Panel). Invited, but unable to attend due to Covid-19 pandemic.

2016 *A Mechanistic Account of Bodily Resonance and Implicit Bias*

Aspects of Neuroscience Conference (Warsaw, Poland) – *Received Best Oral Presentation Award*

EXTERNAL LAB MEETINGS

2023 *Modelling Rumination as a State Inference Process* – invited speaker by Amit Goldenberg (Harvard University, USA); Eran Eldar (Hebrew University, Israel); Nitzan Shahar (Tel-Aviv University, Israel); Oliver Rosier & Jon Robinson Lab (UCL, UK); Steve Fleming (UCL, UK).

2020 *Asymmetry between Positive and Negative Expectations in Mood and Decision Making* – invited speaker at Dalgleish Lab (University of Cambridge, UK); Niv Lab (Princeton University, USA); Hartley Lab (New York University, NY USA); Gu Lab (Mt Sinai, NY USA); Stringaris Lab (NIMH, MA USA)

TUTORIALS

2019 *Introduction to Computational Modelling & Introduction to Reinforcement Learning*
Computational Psychiatry Annual Course, Invited Speaker (NY, USA)

CONFERENCE POSTER PRESENTATIONS

2019 *Risk Taking for Potential Losses but Not Gains Increases Throughout the Day*
Society of Economics (Dublin, Ireland)

2018 *A Computational Model of Mood Dynamics and Future Prospects*
Society for Biological Psychiatry (NY, USA)

AD-HOC REVIEWER

Biological Psychiatry & Biological Psychiatry: Global Open Science, PLOS One, Mental Health Science

PUBLIC ENGAGEMENT & SCIENCE COMMUNICATION

Since 2013 I have developed and facilitated arts based public engagement and science communication projects. These projects were worked on as a co-director of a community interest company or in a freelance capacity. I have worked with UK institutions including the Science Museum (London) and Ashmolean Gallery (Oxford). I have received grants from the Wellcome Trust, Arts Council England and Kings College London for this work. See my website (rachelbedder.com) for documentation of individual projects. I continue to give ad-hoc talks on arts-based science engagement.