Dr. Ondřej Zíka

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EDUCATION

2015 - 2019: PhD in Clinical Neurosciences, **University of Oxford**
Computational modelling and neuroimaging of human aversive learning.
Supervisors: Katja Wiech and Rafal Bogacz.

2013 and 2015: Visiting research, Bangor University (Thierry lab)
Scalp-recorded EEG signal, the ERN, reflects processing of counterfactual outcomes.

2012 - 2013: Visiting student researcher, California Institute of Technology, USA (O'Doherty lab)

2010 - 2014: BScEcon Marketing and Psychology (First Class Honours Degree)
Aberystwyth University, Wales

RELEVANT WORK EXPERIENCE

2019 - present: Post-doc and Deputy Principal Investigator, Max Planck Institute, Berlin
Group of Prof. Schuck. Leading research projects in cognitive computational neuroscience, supervision of MSc and PhD students. **Methods:** fMRI, EEG, pupillometry, computational modelling.

2021 - 2022: Guest Editor at the International Journal of Psychophysiology
Managing manuscript submissions, finding reviewers, facilitating the review process, making editorial suggestions and decisions, writing decision letters.

2020 - 2022: Data scientist, freelance
Helping organisations and start-ups with data analysis, visualisation and web app deployment.
Past clients: German Ministry of Justice, GOOD BANK, Aurum International.

2014 - 2015: Research Assistant at University of Oxford, Functional Magnetic Resonance Imaging of the Brain Centre Role (Bishop lab)
Several projects investigating anxiety and depression, responsible for data collection and curation, coding experimental tasks and analysing data.

HONOURS, AWARDS AND SCHOLARSHIPS

2022 Jacobs Foundation Seed Grant, three year grant, 75 000 CHF

2021 DFG (German Research Foundation) three-year grant award to study neural processing of belief-state uncertainty, with Prof. Nicolas Schuck and Prof. John-Dylan Haynes, €281 786, https://gepris.dfg.de/gepris/projekt/462197630

2017 Medical Research Council Supplementary Training Award: £3 000
Travel Award for Cognitive Computational Neuroscience 2017: $500

2015 - 2018 Medical Sciences Graduate School Studentship

2014 Prize for Best Undergraduate Joint Honours Dissertation Project - awarded by British Psychological Society

2013 The Kellner Foundation Scholarship for talented Czech students: £3 500
Dilys Edmunds Scholarship: £200

2012 The Kellner Foundation Scholarship for talented Czech students: $20 000
Thomas Charles Edwards Scholarship: £180

PUBLICATIONS

Petzka, M., **Zika, O.**, Staresina, B. P., Cairney, S. A. (2023). Better late than never: sleep still supports memory consolidation after prolonged periods of wakefulness. *Learning and Memory*, 30: 245-249.

Zika, O., Appel, J., Klinge, C., Shkreli, L., Browning, M., Wiech, K. A. and Reinecke, A. (2023*, preprint*). Reduction of aversive learning rates by Angiotensin II antagonist losartan. *Under review in Biological Psychiatry.* Preprint: https://psyarxiv.com/e5wdv/

Zika, O. (2023). The relationship between latent state inference and (intolerance of) uncertainty. *Nature and Behavioural Reviews,* 152, https://doi.org/10.1016/j.neubiorev.2023.105321

Zika, O., Wiech, K. A., Reinecke, A., Browning, M. and Schuck, N. W. (2023). Trait anxiety is associated with hidden state inference. *Nature Communications* 14, 4203. https://doi.org/10.1038/s41467-023-39825-3

Morriss, J., Abend, R., **Zika, O.**, Bradford, D. and Mertens, G. (2023). Neural and psychophysiological markers of intolerance of uncertainty. *International Journal of Psychophysiology.* https://doi.org/10.1016/j.ijpsycho.2023.01.003

Koch, C., **Zika**, **O.**, Schuck, N. W. (2022). Age-related difference in how surprise and uncertainty affect learning and choice. https://doi.org/10.31234/osf.io/unx5y

Gagne, C., **Zika, O.**, Dayan, P., & Bishop, S. J. (2020). Impaired adaptation of learning to contingency volatility in internalizing psychopathology. *Elife*, 9, e61387.

Zika, O. (2019). Computational and Neural Mechanisms of Human Aversive Learning, ProQuest Dissertations and Theses. http://solo.bodleian.ox.ac.uk/permalink/f/1lj314/TN_proquest2440365805

Bijsterbosch, J. D., Ansari, T. L., Smith, S., Gauld, O., **Zika, O.**, Boessenkool, S., Browning, M., Reinecke, A. and Bishop, S. J. (2018). Stratification of MDD and GAD patients by resting state brain connectivity predicts cognitive bias. *Neuroimage Clin.*, 19: 425–433.

McNamee, D., Liljeholm, M., **Zika, O.** and O'Doherty, J.P. (2015). Characterizing the associative content of brain structures involved in habitual and goal-directed actions in humans: a multivariate fMRI study. *Journal of Neuroscience*, 35(9), 3764 - 3771.

Gao, S., **Zika, O.**, Rogers, R. and Thierry, G. L. (2015). Second language feedback abolishes the "hot hand" effect during even-probability gambling. *Journal of Neuroscience*, 35(15), 5983-5989.

Zika, O. and Thierry, G. L. (2014). ERP evidence for counterfactual outcome processing in the human brain. *Paper presented at 2nd Annual Welsh Branch of British Psychological Society Student Conference.*

TEACHING AND SUPERVISION EXPERIENCE

Supervision

2022-25 PhD of Luianta Verra, *Aversive generalisation and replay in health and disease*
2021-22 MSc thesis of Luianta Verra, *Behavioural and neural basis of uncertainty*

2020	Katya Yasenska
2019	Verena Sarrazin, Sudeshna Bora
2017	Judith Appel

Teaching

2021	Full-day tutorial on using git and datalad for project management and reproducibility
2021	Guest lecture “The (not so unlikely) relationship between architecture and neuroscience: from grid cells to design”, Polytechnic University of Milan
2021	Guest lecture “Neural and Computational basis of Reinforcement Learning”, Max Planck Graduate School LIFE Seminar
2018 - 2019	Statistics tutor in Biomedical Sciences, University of Oxford
2018	Participation in the in2science programme, hosted a student over summer

INVITED TALKS

August 2023	Reinforcement learning and decision making seminar, Peter Dayan Lab, Tübingen
July 2023	Trinity College Dublin, Department of Psychology
June 2023	UKE Hamburg, Hamburg, Germany
May 2023	European Meeting for Human Fear Conditioning 2023
Feb 2023	UCL Max Planck Computational Psychiatry Seminar series
June 2022	Reinforcement Learning and Decision-Making (RLDM) 2022 Conference
	PAIN Group meeting, University of Oxford, UK
May 2022	European Meeting for Human fear Conditioning 2022, presentation
April 2022	PHI Lab, University of Torun, Poland
Feb 2022	Nassar Lab Meeting, Brown University, US

CONFERENCE PRESENTATIONS AND POSTERS

2023	European Meeting for Human Fear Conditioning 2023, Salzburg, Talk
	Computational Psychiatry 2023, Dublin, Talk/Poster
2022	Reinforcement Learning and Decision Making (RLDM)**,** Providence, Talk
	European Meeting for Human Fear Conditioning, online, Talk
	Computational Properties of the Prefrontal Cortex, Oxford, Poster
2021	Society for Affective Science Annual Meeting (SAS), Pre-recorded talk
	European Meeting for Human Fear Conditioning (EMHFC), Poster
2019	Cognitive Computational Neuroscience (CCN), Poster
	Motivation and Cognitive Control (MCC), Poster
	Orbito-frontal Cortex Meeting, Paris, Poster
2018	Society for Neuroscience, San Diego, Poster
	Bayesian Modelling Course, Amsterdam, Poster
2017	Pain Research Meeting, Antwerp, Poster
	Cognitive Computational Neuroscience (CCN), Poster

COLLABORATIONS AND ONGOING PROJECTS

Metaverse analysis of individual differences in human fear conditioning
with Prof. Tina Lonsdorf, Bielefeldt University

Longitudinal study on anxiety and depression throughout the COVID-19 pandemic
with Dr Claire Gillan, Trinity College Dublin

Temporal state representation in human orbitofrontal cortex
with Dr Katja Wiech and Prof. Rafal Bogacz, Oxford

Uncertainty of partially-observable states and its neural representation

with Prof. John-Dylan Haynes, Humboldt University and Prof. Nicolas Schuck, University of Hamburg

Foraging behaviour in eating disorders
with Dr Sam Hall-McMaster, Harvard University and MPIB

Development of generalisation in adolescent children
with Dr Zoe Ngo, Dr Lennart Luttegau, Dr Nadesha Trudel, Christoph Koch and Elisa Buchberger

Aversive generalisation and the role of replay
with Prof. Schuck and Luianta Verra

AD-HOC REVIEWER FOR

Journal of Neuroscience, Nature Human Behaviour, Brain, European Journal of Pain, The Journal of Pain, NeuroImage, Neuropsychologia, Cerebral Cortex, PLOS Computational Biology, Emotion, The International Journal of Psychophysiology, Translational Psychiatry, Behavioural and Neuroscience Reviews.

IT, METHODS AND ANALYSIS SKILLS

- Research skills: Bayesian modelling, computational modelling, hierarchical models, pupillometry, fMRI, EEG, eye-tracking.
- Highly familiar with all operating systems, Linux/Unix in particular.
- Programming languages: R, Matlab, Python, Shell/Bash, JavaScript.
- Analysis tools: fMRIPrep, FieldTrip, Jupyter, RMarkdown, tidyverse, Bayesian modelling (brms, stan, pymc3, bambi), GLM modelling, power analysis.
- Visualisation tools: ggplot, seaborn, matplotlib, inkscape.
- Reproducibility and management tools: git, Datalad, github/gitlab project management and collaboration toolkit.
- Other technical skills: web applications (shiny, streamlit), AWS, relational databases.

REFEREES

Prof. Nicolas Schuck, Universität Hamburg, Von-Melle-Park 5, 20146 Hamburg, schuck@mpib-berlin.mpg.de.

Dr. Katja Wiech, WIN Center, Nuffield Department of Clinical Neurosciences, Oxford University, FMRIB Building, John Radcliffe Hospital, Headington, Oxford, OX3 9DU. katja.wiech@ndcn.ox.ac.uk