

Dr. Rasmus Bruckner

Curriculum Vitae

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Current Positions

- 2024–now **Post-Doctoral Researcher**, *Universität Hamburg*, Hamburg, Cognitive Modelling and Decision Neuroscience Lab; and Co-PI DFG Research Unit 5389 "Contextual influences on dynamic belief updating in volatile environments: Basic mechanisms and clinical implications".
- 2020–now **Affiliated Researcher**, *Freie Universität Berlin*, Berlin, Learning Lab.

Education

- 2015–2020 **Dr. rer. nat. Psychology** ("Summa cum laude"), *Freie Universität Berlin*, *International Max Planck Research School LIFE*, *Max Planck UCL Centre for Computational Psychiatry and Ageing Research*, Berlin & *Max Planck School of Cognition*
Supervisor: Prof. Dr. Hauke R. Heekeren
- 2012–2015 **M.Sc. Psychology**, *Humboldt-Universität zu Berlin*, Berlin
- 2008–2011 **B.Sc. Psychology**, *Radboud University*, Nijmegen

Publications

- Bruckner, R.**, Nassar, M. R., Li, S.-C., and Eppinger, B. (2025). Differences in learning across the lifespan emerge via resource-rational computations. *Psychological Review*, 132(3):556–580. [Link](#)
- Bruckner, R.**, Heekeren, H. R., and Nassar, M. R. (2025). Understanding learning through uncertainty and bias. *Communications Psychology*, 3:24. [Link](#)
- Ganesh, P., Donner, T. H., Cichy, R. M., Schuck, N. W., Finke, C., and **Bruckner, R.** (2024). Pupil-linked arousal encodes uncertainty-weighted prediction errors. *PsyArXiv*. [Link](#)
- Ganesh, P., Cichy, R. M., Schuck, N. W., Finke, C., and **Bruckner, R.** (2024). Adaptive integration of perceptual and reward information in an uncertain world. *eLife*, 13:RP99266. [Link](#)
- Bruckner, R.** and Nassar, M. R. (2024). Decision-making under uncertainty. In *Encyclopedia of the Human Brain*. Elsevier. [Link](#)
- O'Leary, J. D., **Bruckner, R.**, Autore, L., and Ryan, T. J. (2024). Natural forgetting reversibly modulates engram expression. *eLife*, 12:RP92860. [Link](#)

Koch, C., Zika, O., **Bruckner, R.**, and Schuck, N. W. (2024). Influence of surprise on reinforcement learning in younger and older adults. *PLoS Computational Biology*, 20(8):e1012331. [Link](#)

Dabas, A., **Bruckner, R.**, Schultz, H., and Benoit, R. G. (2024). Learning from imagined experiences via an endogenous prediction error. *bioRxiv*. [Link](#)

Satti, M. H., Wille, K., Nassar, M. R., Cichy, R. M., Schuck, N. W., Dayan, P., and **Bruckner, R.** (2024). Absence of systematic effects of trait anxiety on learning under uncertainty. *Conference on Cognitive Computational Neuroscience*. [Link](#)

Yao, Y.-W., Song, K.-R., Schuck, N. W., Li, X., Zhang, J.-T., Heekeren, H. R., and **Bruckner, R.** (2023). The dorsomedial prefrontal cortex represents subjective value across effort-based and risky decision-making. *NeuroImage*, 279:120326. [Link](#)

Pupillo, F. and **Bruckner, R.** (2023). Signed and unsigned effects of prediction error on memory: Is it a matter of choice? *Neuroscience & Biobehavioral Reviews*, 153:105371. [Link](#)

Pupillo, F., Ortiz-Tudela, J., **Bruckner, R.**, and Shing, Y. (2023). The effect of prediction error on episodic memory encoding is modulated by the outcome of the predictions. *npj Science of Learning*, 8(18). [Link](#)

Frömer, R., Nassar, M. R., **Bruckner, R.**, Stürmer, B., Sommer, W., and Yeung, N. (2021). Response-based outcome predictions and confidence regulate feedback processing and learning. *eLife*, 10:e62825. [Link](#)

Bruckner, R., Heekeren, H. R., and Ostwald, D. (2020). Belief states and categorical-choice biases determine reward-based learning under perceptual uncertainty. *bioRxiv*. [Link](#)

Nassar, M. R., **Bruckner, R.**, and Frank, M., J. (2019). Statistical context dictates the relationship between feedback-related EEG signals and learning. *eLife*, 8:e46975. [Link](#)

Ostwald, D., Schneider, S., **Bruckner, R.**, and Horvarth, L. (2019). Power, positive predictive value, and sample size calculations for random field theory-based fMRI inference. *bioRxiv*. [Link](#)

Ostwald, D., Schneider, S., **Bruckner, R.**, and Horvarth, L. (2018). Random field theory-based p-values: A review of the SPM implementation. *arXiv*. [Link](#)

van den Bos, W., **Bruckner, R.**, Nassar, M. R., Mata, R., and Eppinger, B. (2018). Computational neuroscience across the lifespan: Promises and pitfalls. *Developmental Cognitive Neuroscience*, 33:42–53. [Link](#)

Nassar, M. R., **Bruckner, R.**, and Eppinger, B. (2016). What do we GANE with age? [Invited peer commentary]. *Behavioral and Brain Sciences*, 39:e218. [Link](#)

Nassar, M. R., **Bruckner, R.**, Gold, J. I., Li, S.-C., Heekeren, H. R., and Eppinger, B. (2016). Age differences in learning emerge from an insufficient representation of uncertainty in older adults. *Nature Communications*, 7:11609. [Link](#)

Eppinger, B. and **Bruckner, R.** (2015). In *Aging and Decision Making: Empirical and Applied Perspectives*, chapter Towards a mechanistic understanding of age-related changes in learning and decision making: A neuro-computational approach, pages 61–77. New York: Academic Press. [Link](#)

Talks

- February 2025 **Berlin, Germany**, *Max Planck Institute for Human Development*, Understanding learning through uncertainty and bias
- June 2024 **Siegen, Germany**, *Universität Siegen*, Understanding learning through uncertainty and bias
- Okt 2023 **Hamburg, Germany**, *Universitätsklinikum Hamburg-Eppendorf*, Understanding learning through uncertainty and bias
- April 2022 **Frankfurt, Germany**, *Goethe-Universität Frankfurt*, POEM Workshop, Forgetting as a form of learning
- June 2021 **Dresden, Germany**, *Technische Universität Dresden*, Decomposing the influences of uncertainty on learning: Normative computations, uncertainty biases, and lifespan differences
- Jan 2020 **Leipzig, Germany**, *MPI for Human Cognitive and Brain Sciences*, Adaptive learning under uncertainty: Computational mechanisms and lifespan differences
- Dec 2019 **Egmond aan Zee, The Netherlands**, *Symposium at the Brain and Cognition Conference of the Dutch Psychonomic Society*, Lifespan age differences in the regulation of learning in changing and uncertain environments
- Dec 2019 **Dublin, Ireland**, *Trinity College Dublin*, Adaptive learning under uncertainty: Computational mechanisms and lifespan differences
- Oct 2019 **Providence, USA**, *Brown University*, Lifespan age differences in the regulation of learning during sequential decisions under uncertainty
- Oct 2019 **Berlin, Germany**, *Freie Universität Berlin*, Science Slam (in German): Computermodule in den Kognitiven Neurowissenschaften
- June 2019 **Dresden, Germany**, *Symposium at "Psychologie und Gehirn" conference*, Computational mechanisms of human state-action-reward contingency learning under perceptual uncertainty
- Dec 2018 **Frankfurt, Germany**, *Goethe-Universität Frankfurt*, Lifespan differences in the regulation of learning rates
- Sep 2018 **Tegernsee, Germany**, *MPS-UCL Symposium and advanced course on computational psychiatry and ageing research at Marbach Castle*, Computational mechanisms of human state-action-reward contingency learning under perceptual uncertainty

- Feb 2018 **Berlin, Germany**, *MPI for Human Development*, Learning to make economic decisions under perceptual uncertainty
- June 2017 **Providence, USA**, *Brown University*, Learning to make economic decisions under perceptual uncertainty
- Oct 2016 **Berlin, Germany**, *IMPRS Research School LIFE Academy*, Value-based decision-making under perceptual uncertainty
- May 2016 **Virginia, USA**, *IMPRS Research School LIFE Academy*, Lifespan differences in the regulation of learning rates
- May 2016 **Berlin, Germany**, *Symposium at "Psychologie und Gehirn" conference*, Individual and age-related differences in the regulation of learning rates

Teaching

- 2024 **Award for outstanding teaching**, *Teaching activities in Psychology, FU Berlin*
- 2020–2024 **Decision Neuroscience**, *Psychology M.Sc. & Cognitive Neuroscience M.Sc. Seminar, FU Berlin*
- 2021–2024 **Empirisch-Experimentelles Praktikum**, *Psychology B.Sc. Seminar, FU Berlin*
- 2022/23 **Grundlagen und Methoden der Allgemeinen Psychologie**, *Psychology B.Sc. Seminar, FU Berlin*
- 2022/24 **General Psychology**, *Psychology B.Sc. Lecture, FU Berlin*, Multiple guest lectures on decision-making
- 2020/21 **Learning and Decision-Making**, *Psychology B.Sc. Seminar, FU Berlin*

Mentoring and Co-Supervision

Ph.D. Students

- 2021-now **Muhammad Hashim Satti**, *Max Planck School of Cognition*, Project: Learning under threat and uncertainty
- 2022 **Yuan-Wei Yao**, *Einstein Center for Neuroscience Berlin (final year of dissertation)*, Project: Subjective value across effort-based and risky decision-making
- 2020-2025 **Prashanti Ganesh**, *Berlin School of Mind and Brain*, Project: Interaction between perceptual and reward uncertainty in economic decisions

Lab-Rotation

- 2021 **Max Hinrichs**, *Max Planck School of Cognition*

Bachelor and Master Students

Lennart Wittkuhn (TU Dresden, 2017), Julia Pilarski (FU Berlin 2020/21), Bärbel Aschenberg (FU Berlin 2022), Zoe Kaiser (FU Berlin, 2022), Amanda Meira Lins (FU Berlin, 2023), Charlotte Fahnert (FU Berlin, 2023), Katharina Wille (FU Berlin, 2023/24), Pavel Syarov (FU Berlin, 2023/24), Magda Malinowska (FU Berlin, 2023/24), Lisa Hofmann (FU Berlin, 2024), David Sergej von Dehn (Uni Hamburg, 2024), Luise Karkhoff (FU Berlin, 2024), Jarla Utecht (FU Berlin, 2024)

Professional Service

Ph.D. Committees

Felix Molter (FU Berlin, 2022), Lennart Wittkuhn (MPIB Berlin, 2022), Stefan Appelhoff (MPIB Berlin, 2022), Lou Haux (MPIB Berlin, 2022), Yuan-Wei Yao (FU Berlin, 2022)

Boards and committees

2022–2024 **Member of examination board**, *M.Sc. Cognitive Neuroscience FU Berlin*

2020 **Member of selection committee for a professorship at FU Berlin**

Organization

2015–2020 **CCNB Seminar Series**, *Organization of the CCNB seminar series at FU Berlin*

2019 **CCNB 10-Year Anniversary**, *Organization of the CCNB two-day 10-year anniversary*

2019/20 **MPS Cognition 0-year student**, *Support of the organization team and the first cohort of the graduate school*

2015/16 **LIFE fellow speaker**, *Fellow speaker of the International Max Planck Research School on the Life Course*

Research Experience and Visits

2022 **Brown University**, *Prof. Matthew R. Nassar*, Visiting researcher (July–Aug)

2014 **Brown University**, *Prof. Michael J. Frank, Dr. Matthew R. Nassar*, Training in computational modeling, Development of an EEG paradigm, Supported by DAAD Promos grant (Aug–Oct)

2013–2015 **Technische Universität Dresden**, *Prof. Shu-Chen Li, Prof. Ben Eppinger*, Data analysis and data collection, Establishment of new EEG laboratory

2011/12 **Max Planck Institute for Human Development**, *Prof. Shu-Chen Li, Prof. Ben Eppinger*, Research assistant with focus on data collection and analysis

2010/11 **Donders Institute Nijmegen**, *Prof. Markus Ullsperger*, Research assistant with focus on programming and EEG data collection

Ad-Hoc Reviewing

Journal Behavior Research Methods, Brain Communications; Brain Research; Cognition; eLife; Journal of Cognition; Human Brain Mapping; Journal of Experimental Psychology: Learning, Memory, and Cognition; Nature Communications; Nature Human Behaviour; Neuroscience & Biobehavioral Reviews; Open Mind; PLoS Computational Biology; Proceedings of the National Academy of Sciences of the United States of America (PNAS); Psychonomic Bulletin & Review; Royal Society Open Science; Scientific Reports; The Journal of Supercomputing

Funding agency French National Research Agency (ANR)

Hobbies

Finance I am interested in stock markets

Sports Running and cycling; previously, I practiced Kung-Fu and gymnastics

References

Prof. Hauke R. Heekeren, *Ph.D. Supervisor*,
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Prof. Sebastian Gluth, *Principal Investigator*,
Cognitive Modelling and Decision Neuroscience
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