TOM WILLEMS

Cognitive Neuroscientist | Data Scientist, PhD

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EXPERIENCE

Post-Doc

Henke Lab, University of Bern

01/2024 - present Bern, CH

- Focus: brain metabolites that contribute to memory and forgetting

Short Research Stay

Inria Research Centre

03/2024 - 05/2024 Paris-Saclay, FR

- Models and Inference for Neuroimaging Data (MIND) Group, Prof. Bertrand Thirion
- Focus: across-subject fMRI decoding using self-supervised contrastive learning

PhD

Henke Lab, University of Bern

10/2018 – 12/2023 Bern, CH

- Grade: insigni cum laude
- Cognitive Neuroscience of Memory and Consciousness
- Focus: memory, natural forgetting, accessibility of memories

Research Internship

Donders Centre for Cognition

02/2018 – 05/2018 Nijmegen, NL

- Artificial Intelligence Department, Prof. Marcel van Gerven
- Focus: data collection (eye-tracking) and multivariate analysis (decoding of presented patterns)

Master of Science: Neuroscience

University of Bonn

10/2015 – 02/2018 Bonn, DE

- Grade: insigni cum laude
- Focus: cognitive and clinical neuroscience
- Master Thesis: Effects of social anxiety traits on social decision-making: a behavioural and fMRI-study

STRENGTHS

Data Analysis | Writing | Study Design

NEURO-METHODS

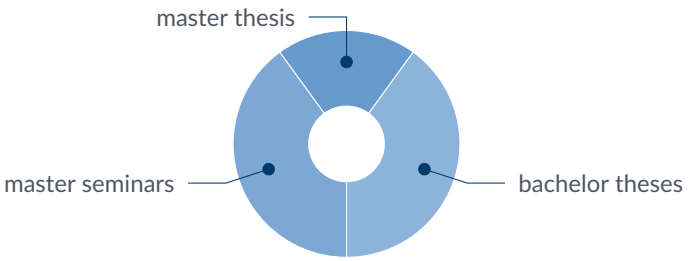
(functional) MRI at 7T

MR Spectroscopy

RESEARCH

- I am currently involved in a research project that utilizes both functional magnetic resonance imaging as well as magnetic resonance spectroscopy (fMRI and MRS) to investigate human memory. As part of this work, I am receiving training in the application of MRS from Prof. Roland Kreis.
- During my PhD, I used fMRI with a field strength of 7T to investigate human memory and forgetting with high spatial resolution (Piredda et al., 2023; Willems & Henke, 2021). Our findings suggest that early forgetting may reflect a failure of conscious access rather than a loss of the memory itself. The results of this project are currently available as a preprint and accepted for publication at eLife (Willems, Zervas, Rabe, Federspiel, & Henke, 2025).
- For my master thesis, I contributed to data collection and analysis for two fMRI studies investigating social avoidance and guilt (Gädeke et al., 2025; Schultz et al., 2019).

TEACHING / MENTORING



Teaching:

- 5 seminars for master level psychology students, on topics such as the hippocampal role in memory processing, neurogenesis in the adult hippocampus, and language and semantics.

Mentoring:

- 4 bachelor thesis
- 1 master thesis

REFERENCES

Prof. Katharina Henke
@ Institute of Psychology
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University of Bern, Fabrikstrasse 8, 3012 Bern, Switzerland

Prof. Bertrand Thirion
@ Head of science (délégué scientifique) Inria Saclay
bertrand.thirion@inria.fr
Neurospin, CEA Saclay, 91191 Gif sur Yvette, France

Prof. Roland Kreis
@ Magnetic Resonance in Medicine Group
roland.kreis@insel.ch
Clinical Neuroscience Bern, Freiburgstrasse 3, 3010 Bern

LANGUAGES

English
full professional
work proficiency

German
native

French
limited work proficiency

PUBLICATIONS

- Gädeke, M., Willems, T., Ahmed, O. S., Weber, B., Hurlemann, R., & Schultz, J. (2025, March). Contributions of insula and superior temporal sulcus to interpersonal guilt and responsibility in social decisions. doi:10.7554/elife.105391.1
- Willems, T., Zervas, K., Rabe, F., Federspiel, A., & Henke, K. (2025, June). Neural Traces of Forgotten Memories Persist in Humans and are Behaviorally Relevant. doi:10.1101/2025.06.02.656652
- Piredda, G. F., Caneschi, S., Hilbert, T., Bonanno, G., Joseph, A., Egger, K., … Radojewski, P. (2023). Submillimeter T1 atlas for subject-specific abnormality detection at 7T. *Magnetic Resonance in Med*, *89*(4), 1601–1616. doi:10.1002/mrm.29540
- Willems, T., & Henke, K. (2021). Imaging human engrams using 7 Tesla magnetic resonance imaging. *Hippocampus*, *31*(12), 1257–1270. doi:10.1002/hipo.23391
- Schultz, J., Willems, T., Gädeke, M., Chakkour, G., Franke, A., Weber, B., & Hurlemann, R. (2019). A human subcortical network underlying social avoidance revealed by risky economic choices. *eLife*, *8*, e45249. doi:10.7554/eLife.45249