Veith Weilnhammer

CV

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Personal Statement

I am a board-certified psychiatrist, psychotherapist, and computational neuroscientist. I am passionate about understanding how artificial intelligence can improve mental health.

Education and Degrees

2023 — **Habilitation degree in Experimental Psychiatry**, Charité - Universitätsmedizin, Berlin, Germany.
The construction of unambiguous conscious experiences from ambiguous sensory information.

2023 — **Board certificate in Psychiatry & Psychotherapy**.

2015 — **Doctoral degree (MD)**, Charité - Universitätsmedizin, Berlin, Germany.
Frontoparietal cortex mediates perceptual transitions in bistable perception (summa cum laude).

2015 — **Medical degree**, Charité - Universitätsmedizin, Berlin, Germany.

2007-2015 — **Medical school**, Charité - Universitätsmedizin, Berlin, Germany, and Universidade Nova, Lisbon, Portugal.

2006-2007 — **Studium Generale**, Eberhard Karls Universität, Tübingen, Germany.

Professional Experience

2023–present — **Postdoctoral research fellow**, Tsao Lab, Helen Wills Neuroscience Institute, University of California, Berkeley, USA.
Predicting mental health from online behavior | Hallucinations in biological and artificial neural networks

2015–2023 — **Postdoctoral research fellow**, Visual Perception Laboratory, Department of Psychiatry, Charité - Universitätsmedizin, Berlin, Germany.
Visual perception | Neural correlates of consciousness | Neurobiology of schizophrenia

2016–2023 — **Psychotherapist in training**, Center for Psychotherapy, Humboldt Universität, Berlin, Germany.
Cognitive behavioral therapy | Systemic psychotherapy

2015–2023 — **Resident psychiatrist**, Department of Psychiatry, Charité - Universitätsmedizin, Berlin, Germany.
Inpatient unit for psychotic and affective disorders | Liaison psychiatry | Outpatients treatment center for addiction

2012–2013 — **Minerva fellow**, Malach Laboratory, Weizmann Institute, Rehovot, Israel.

Fellowships and Awards

2023–present — **Leopoldina Postdoctoral Fellowship**, German National Academy of Sciences, Halle (Saale), Germany.

2019–2022 — **Clinician Scientist Fellowship**, Berlin Institute of Health, Berlin, Germany.

2017–2018 — **Junior Clinician Scientist Fellowship**, Berlin Institute of Health, Berlin, Germany.

2013 — **Minerva Short Term Fellowship**, Minerva Foundation, Max-Planck Society, Munich, Germany.

2007–2015 — **University Scholarship**, German Academic Scholarship Foundation, Berlin, Germany.

Skills

Clinical — Ketamine-assisted therapy, psychotherapy in schizophrenia and addiction.

Experimental — Psychophysics, computational modeling, machine learning (TensorFlow, PyTorch, Scikit-learn), fMRI, TMS, EEG, Neuropixels.

Code — Python, R, Matlab.

Languages German, English, French, Portuguese, Spanish.

Publications

2024 **Veith Weilnhammer**, Marcus Rothkirch, Deniz Yilmaz, Merve Fritsch, Lena Esther Ptasczynski, Katrin Reichenbach, Lukas Roediger, Philip Corlett, and Philipp Sterzer. N-Methyl-D-aspartate receptor hypofunction causes recurrent and transient failures of perceptual inference. *bioRxiv*, May 2024. doi: https://doi.org/10.1101/2024.05.24.595590.

2024 **Veith Weilnhammer**. Where is the ghost in the shell? *Neuroscience of Consciousness*, volume 2024, page niae015, January 2024.

2024 Katrin Reichenbach, Marcus Rothkirch, Lucca Jaeckel, Philipp Sterzer, and **Veith Weilnhammer**. Anterior insular activity signals perceptual conflicts induced by temporal and spatial context. *bioRxiv*, May 2024. doi: https://doi.org/10.1101/2024.05.29.595872.

2023 **Veith Weilnhammer**, Heiner Stuke, Kai Standvoss, and Philipp Sterzer. Sensory processing in humans and mice fluctuates between external and internal modes. *PLOS Biology*, volume 21, page e3002410, August 2023.

2023 Heiner Stuke, Kathlen Priebe, **Veith Weilnhammer**, Hannes Stuke, and Nikola Schoofs. Sparse models for predicting psychosocial impairments in patients with PTSD: An empirical Bayes approach. *Psychological Trauma: Theory, Research, Practice and Policy*, volume 15, pages 80–87, January 2023.

2023 Laurie-Anne Sapey-Triomphe, Lauren Pattyn, **Veith Weilnhammer**, Philipp Sterzer, and Johan Wagemans. Neural correlates of hierarchical predictive processes in autistic adults. *Nature Communications*, volume 14, page 3640, June 2023.

2023 Merve Fritsch, **Veith Weilnhammer**, Paul Thiele, Andreas Heinz, and Philipp Sterzer. Sensory and environmental uncertainty in perceptual decision-making. *iScience*, volume 26, page 106412, April 2023.

2022 Laurie-Anne Sapey-Triomphe, **Veith Weilnhammer**, and Johan Wagemans. Associative learning under uncertainty in adults with autism: Intact learning of the cue-outcome contingency, but slower updating of priors. *Autism: The International Journal of Research and Practice*, volume 26, pages 1216–1228, July 2022.

2022 Stephan Köhler, **Veith Weilnhammer**, Henrik Walter, Susanne Erk, Philipp Sterzer, and Anne Guhn. Autobiographical Script-Driven Imagery Has No Detectable Effect on Emotion Regulation in Healthy Individuals. *Neuropsychobiology*, volume 81, pages 141–148, 2022.

2021 **Veith Weilnhammer**, Merve Fritsch, Meera Chikermane, Anna-Lena Eckert, Katharina Kanthak, Heiner Stuke, Jakob Kaminski, and Philipp Sterzer. An active role of inferior frontal cortex in conscious experience. *Current Biology*, volume 31, pages 2868–2880.e8, July 2021.

2021 **Veith Weilnhammer**, Meera Chikermane, and Philipp Sterzer. Bistable perception alternates between internal and external modes of sensory processing. *iScience*, volume 24, page 102234, March 2021.

2021 Heiner Stuke, Elisabeth Kress, **Veith Weilnhammer**, Philipp Sterzer, and Katharina Schmack. Overly strong priors for socially meaningful visual signals are linked to psychosis proneness in healthy individuals. *Frontiers in psychology*, volume 12, page 583637, 2021.

2020 **Veith Weilnhammer**, Lukas Röd, Anna-Lena Eckert, Heiner Stuke, Andreas Heinz, and Philipp Sterzer. Psychotic Experiences in Schizophrenia and Sensitivity to Sensory Evidence. *Schizophrenia bulletin*, volume 46, pages 927–936, February 2020.

2018 **Veith Weilnhammer**, Heiner Stuke, Philipp Sterzer, and Katharina Schmack. The Neural Correlates of Hierarchical Predictions for Perceptual Decisions. *The Journal of Neuroscience*, volume 38, pages 5008–5021, May 2018.

2018 Heiner Stuke, **Veith Weilnhammer**, Philipp Sterzer, and Katharina Schmack. Delusion Proneness is Linked to a Reduced Usage of Prior Beliefs in Perceptual Decisions. *Schizophrenia Bulletin*, volume 45, pages 80–86, January 2018.

2017 **Veith Weilnhammer**, Heiner Stuke, Guido Hesselmann, Philipp Sterzer, and Katharina Schmack. A predictive coding account of bistable perception - a model-based fMRI study. *PLOS Computational Biology*, volume 13, page e1005536, May 2017.

2017 Heiner Stuke, Hannes Stuke, **Veith Weilnhammer**, and Katharina Schmack. Psychotic Experiences and Overhasty Inferences Are Related to Maladaptive Learning. *PLOS Computational Biology*, volume 13, page e1005328, January 2017.

2016 **Veith Weilnhammer**, Philipp Sterzer, and Guido Hesselmann. Perceptual Stability of the Lissajous Figure Is Modulated by the Speed of Illusory Rotation. *PloS one*, volume 11, page e0160772, 2016.

2016 Katharina Schmack, **Veith Weilnhammer**, Jakob Heinzle, Klaas E Stephan, and Philipp Sterzer. Learning What to See in a Changing World. *Frontiers in human neuroscience*, volume 10, page 263, 2016.

2014 **Veith Weilnhammer**, Karin Ludwig, Philipp Sterzer, and G Hesselmann. Revisiting the Lissajous figure as a tool to study bistable perception. *Vision research*, volume 98, pages 107–12, May 2014.

2013 **Veith Weilnhammer**, Karin Ludwig, Guido Hesselmann, and Philipp Sterzer. Frontoparietal cortex mediates perceptual transitions in bistable perception. *The Journal of Neuroscience*, volume 33, pages 16009–15, October 2013.

Individual Research Support

Ongoing

2023–present **Online mental health**, Principle Investigator, Leopoldina - National Academy of Sciences, €50,100.
How can AI predict mental health problems from online behavior?

2023–present **Hallucinations in biological and artificial neural networks.**, Principle Investigator, Leopoldina - National Academy of Sciences, €100,800.
How does activity in object recognition networks cause psychotic experiences such as hallucinations?

Completed

2019–2022 **The effect of prefrontal lesions on conscious experience**, Clinican Scientist, Berlin Institute of Health, €151,200.
What is the causal role of prefrontal cortex in conscious perception?

2017–2018 **The influence of prior knowledge on perception in patients with paranoid schizophrenia and healthy controls**, Junior Clinician Scientist, Berlin Institute of Health, €95,600.
How do people with schizophrenia perceive and learn about uncertain sensory signals?

2013 **Dynamic causal modeling of intracranial EEG**, Investigator, Minerva-Foundation, €5,200.
How can dynamic causal modeling be applied to intracranial EEG?

Teaching

2019–2022 **Computational Models of Schizophrenia**, Lecture, Berlin School of Mind and Brain.

2018–2022 **History and Concepts of Schizophrenia**, Online Lecture, Charité - Universitätsmedizin Berlin.

Mentorship

2020–present **Co-supervision of MD thesis**, Katrin Reichenbach, Charité - Universitätsmedizin Berlin.

2019 **Supervision of Master thesis**, Meera Chikermane, NeuroCure Berlin.

2018–2022 **Co-supervision of PhD thesis**, Anna-Lena Eckert, Berlin School of Mind and Brain.

2018–2019 **Co-supervision of Master thesis**, Drew Cooper, NeuroCure Berlin.

2018–2019 **Co-supervision of Master thesis**, Lukas Röd, Berlin School of Mind and Brain.

Memberships

2024–present **Association for the Scientific Study of Consciousness**.

2015–present **Medical Association**, Berlin, Germany.

Reviews

Journals PLOS Computational Biology, Journal of Neuroscience, Neuroscience of Consciousness.