

# DR MARIE-CHRISTIN FELLNER

---

Born January 20<sup>th</sup> 1987 in Landshut

**CONTACT**                      Ruhr University Bochum,  
Postfach 21  
Universitätsstr. 150  
44801 Bochum  
+49(0)234-32 28066  
marie-christin.fellner@rub.de

## EDUCATION

2011 -2015                      Dr. rer. nat., summa cum laude  
Department of Psychology, University of Konstanz  
Thesis: Unravelling brain oscillatory correlates of memory encoding  
using multi-modal imaging techniques  
Supervisor: Dr. Simon Hanslmayr, Co-Supervisor: Dr. Sarang S Dalal

2011                                Diplom (M.A.) in Psychology, 1.1  
University of Regensburg, Germany  
Thesis: The impact of survival processing on the electrophysiological  
correlates of recognition memory  
Supervisors: Prof. Karl-Heinz T. Bäuml, Dr. Simon Hanslmayr

## PROFESSIONAL EXPERIENCE

Since 2015                      Postdoctoral researcher: Ruhr University Bochum, Institute for  
Cognitive Neuroscience, Department of Psychology, Neuropsychology  
Head: Prof. Nikolai Axmacher

2011-2015                      Research Scientist: University of Konstanz, Department of Psychology,  
Junior Research Group Cognition and Oscillations,  
Head: Dr. Simon Hanslmayr

2008 - 2011                      Student Research Assistant: Cognitive and Developmental  
Psychology, Dept. of Psychology, University of Regensburg  
Head: Prof. Karl-Heinz T. Bäuml

## RESEARCH

I use a multimodal approach (EEG, MEG, simultaneous EEG-fMRI, EEG-TMS, iEEG & single Unit recordings) to study human memory. I am especially interested in the potential mechanistic role of brain oscillatory activity in memory formation and how memory traces are represented in the human brain.

## JOURNAL ARTICLES

**Fellner M-C**, Gollwitzer S, Rampp S, Kreiselmeier G, Bush D, Diehl B, Hamer H, Hanslmayr S (2019) Spectral fingerprints or spectral tilt? Evidence for distinct oscillatory signatures of memory formation. **PLOS Biology** 17(7): e3000403. doi: 10.1371/journal.pbio.3000403

Paul, M., **Fellner, M-C**, Waldhauser, GT, Minda, JP, Axmacher, N, Suchan, B, Wolf, OT (2018). Stress elevates frontal midline theta in feedback-based category learning of exceptions. **Journal of Cognitive Neuroscience**. 30 (6), 799-813.

**Fellner, M-C**, Volberg, G, Goldhacker, M, Wimber, M, Greenlee, MW, Hanslmayr, S (2016). Spatial Mnemonic Encoding: Theta Power Decreases and Medial Temporal Lobe BOLD Increases Co-Occur during the Usage of the Method of Loci. **eNeuro**, 3 (6). doi: 10.1523/eneuro.0184-16.2016.

**Fellner, M-C**, Volberg, G, Mullinger, K, Wimber, M, Goldhacker, M, Greenlee, MW, Hanslmayr, S. (2016). Spurious correlations in simultaneous EEG-fMRI driven by in-scanner movement. **NeuroImage**, 133:354-66. doi: 10.1016/j.neuroimage.2016.03.031.

Hanslmayr, S, Matuschek, J, **Fellner, M-C** (2014) Entrainment of prefrontal beta oscillations induces an endogenous echo and impairs memory formation. **Current Biology**, 24, 904-909. doi: 10.1016/j.cub.2014.03.007.

**Fellner, M-C**, Bäuml, K-HT, Hanslmayr, S (2013) Brain oscillatory subsequent memory effects differ in power and long-range synchronization between semantic and survival processing. **NeuroImage**, 79, 361-370. doi: 10.1016/j.neuroimage.2013.04.121.

Hanslmayr, S, Staudigl, T, **Fellner, M-C** (2012) Oscillatory power decreases and long-term memory: The information via desynchronization hypothesis. **Frontiers in Human Neuroscience**, 6:74. doi: 10.3389/fnhum.2012.00074.

## JOURNAL ARTICLES IN PREPARATION

**Fellner, M-C**, Waldhauser G, Axmacher N. Tracking selective rehearsal and active inhibition of memory traces in directed forgetting.

Paul, M, **Fellner, M-C**, Waldhauser, GT, Suchan, B, Axmacher, N, & Wolf, OT: Stress sharpens category boundaries by enhancing the generalization of in-category items and the discrimination of out-category items.

**Fellner, M-C**, Bauer, M, & Axmacher N., The impact of semantic processing on memory encoding, brain oscillations and representational similarity in EEG.

Waldhauser, G, Kobelt, M., **Fellner, M-C**, Axmacher, N., Tracking the neural signature of incidental and intentional memory retrieval.

## INVITED BOOK CHAPTERS

**Fellner, M-C**, Hanslmayr, S (2018). Brain Oscillations, Semantic Processing, and Episodic Memory In: Mody, M. Neural Mechanisms of Language. Springer

## PEER REVIEWED CONFERENCE PROCEEDINGS

**Fellner, M-C**, Bauer, M & Axmacher, N. (2019). Using Pareidolia to Study the Impact of Semantic Processing on Brain Oscillations, Memory Encoding, and Representational Similarity in EEG. 10.32470/CCN.2019.1097-0.

## PUBLISHED DATASETS

Hanslmayr, S., & **Fellner, M-C** (2019, July 8). Spectral tilt vs Oscillations. OSF. Retrieved from [osf.io/3csku](https://osf.io/3csku), doi:10.17605/OSF.IO/3CSKU

## CONFERENCE PRESENTATIONS (FIRST AUTHOR ONLY)

Fellner, M-C, Bauer, M, & Axmacher N. (2019). The impact of semantic processing on memory encoding, brain oscillations and representational similarity in EEG. Poster presented at the Annual Meeting of the Cognitive Neuroscience Society, San Francisco, USA.

Fellner, M-C, Waldhauser G, Axmacher N. (2018). Tracking representational similarity and oscillatory correlates of selective rehearsal and active forgetting in EEG. Talk presented at Psychologie und Gehirn, Giessen, Germany.

Fellner, M-C, Waldhauser G, Axmacher N. (2018). Tracking representational similarity and oscillatory correlates of selective rehearsal and active forgetting in EEG. Poster presented at the International Conference on Learning and Memory, Huntington Beach, USA.

Fellner, M-C, Waldhauser G, Axmacher N. (2018). Tracking representational similarity and oscillatory correlates of selective rehearsal and active forgetting in EEG. Poster presented at the International Conference of Cognitive Neuroscience, Amsterdam, Netherlands.

Fellner, M-C, Waldhauser G, Axmacher N. (2017). Tracking representational similarity and oscillatory correlates of selective rehearsal and active inhibition in a directed forgetting paradigm. Poster presented at the Psychologie und Gehirn, Trier, Germany.

Fellner, M-C, Gollwitzer, S, Rampp, S, Axmacher, N, Hamer, H, Hanslmayr, S (2016). Spectral fingerprints of memory encoding: material-specific and material-unspecific

subsequent memory effects. Talk presented at the International Conference on Memory, Budapest, Hungary.

Fellner, M-C, Volberg, G, Goldhacker, M, Wimber, M, Greenlee, MW, Hanslmayr, S (2015). Subsequent memory effects in brain oscillatory activity and BOLD signals during mnemonic encoding strategies. Talk presented at International Convention of Psychological Science, Amsterdam, Netherlands.

Fellner, M-C, Gollwitzer, S, Kreiselmeyer, G, Rampp, S, Hamer, H, Hanslmayr, S (2014). Alpha/Beta desynchronization reflects material specific memory encoding effects in MEG and iEEG. Poster presented at Tübingen MEG Symposium, Tübingen, Germany.

Fellner, M-C, Matuschek, J, Hanslmayr, S (2014) Entrainment of endogenous prefrontal beta oscillations impairs memory encoding. Talk presented at Psychologie und Gehirn 2014, Lübeck, Germany.

Fellner, M-C, Volberg, G, Goldhacker, M, Wimber, M, Greenlee, MW, Hanslmayr, S (2013). Linking theta oscillatory activity and medial temporal BOLD signal during mnemonic encoding strategies. Poster presented at Society for Neuroscience, Annual Meeting 2013, San Diego, USA.

Fellner, M-C, Volberg, G, Goldhacker, M, Wimber, M, Greenlee, MW, Hanslmayr, S. (2013). Brain oscillatory theta activity and BOLD subsequent memory effects during mnemonic encoding strategies. Poster presented at Brain Oscillations and Cognition: A Symposium in the Honour of Prof. Wolfgang Klimesch, Salzburg, Austria.

Fellner, M-C, Volberg, G, Goldhacker, M, Wimber, M, Greenlee, MW, Hanslmayr S (2012). Brain oscillations and BOLD signals related to efficient encoding strategies: A simultaneous EEG-fMRI study. Poster presented at Society for Neuroscience, Annual Meeting 2012, New Orleans, USA.

Fellner, M-C, Bäuml, K-HT, & Hanslmayr, S (2012). Brain Oscillatory Correlates of Successful Memory Encoding differentiate between Survival and Semantic Processing. Poster presented at Psychologie und Gehirn 2012, Jena, Germany.

Fellner, M-C, Bäuml, K-HT, & Hanslmayr, S (2012). Dissociable Brain Oscillatory Correlates of Successful Memory Formation During Survival versus Semantic Processing. Poster presented at 54. Tagung experimentell arbeitender Psychologen, Mannheim, Germany.

Fellner, M-C, Bäuml, K-HT, & Hanslmayr, S (2011). The impact of survival processing on recognition memory: An EEG Study. Poster presented at 5th International Conference on Memory, York, UK.

## INVITED TALKS

Fellner, M-C, (2018, June). Rhythms of the brain Cognitive functions of brain rhythms. MPI workshop 2018: Life Graduate School workshop, Berlin, Germany.

Fellner, M-C, (2017, March). Spectral fingerprints of memory encoding: tracking item- and material-specific processing during memory Formation, Ifado Dortmund, Germany.

Fellner, M-C (2015, May). Spurious effects in simultaneous EEG-fMRI caused by in-scanner motion. Max Plank Institut für Bildungsforschung, Berlin, Germany.

Fellner, M-C (2014, November). Spurious effects in simultaneous EEG-fMRI caused by event related movement. University of Regensburg, Regensburg, Germany.

## CONFERENCES/WORKSHOPS ATTENDED

Symposium EEG-fMRI: from trial to trial in Delmenhorst, May 2012.

Summer School: EEG and fMRI analysis with EEGLab and SPM, Delmenhorst, September 2011.

## AD HOC REVIEWER

Science Advances  
Journal of Neuroscience  
NeuroImage  
Human Brain Mapping  
Psychophysiology  
Neuropsychologia  
Scientific Reports  
Brain and Cognition  
Journal of Neurolinguistics

## TEACHING

Lecture, Basis of Neurophysiology, Winter term 2019  
Seminar practical methods: EEG, Summer term 2019  
Practical course EEG, Summer term 2019  
Seminar practical methods: EEG, Summer term 2017  
Practical course EEG, Summer term 2017  
Seminar practical methods: EEG, Summer term 2016  
Practical course EEG, Summer term 2016

## PRIZES

2019 Trainee Travel Award, Conference on Cognitive and Computational Neuroscience

2017 Poster Prize of DGPs „Fachgruppe Biologische Psychologie und Neuropsychologie“ at  
Psychologie und Gehirn

## SUPERVISION

2019 Markos Apostolakis, MA Thesis, Cognitive Science

2019 Mishal Khan, MA Thesis, Cognitive Science

2018 Susanna Zorn, MA Thesis, Psychology Focus Cognitive Neuroscience

2017 Marius Wolff, MA Thesis, Cognitive Psychology

2016 Martina Bauer, BA Thesis, Psychology

2016 Sebastian Schluenkes, BA Thesis, Psychology