University of Birmingham

Dr Simon Hanslmayr PhD

Senior Lecturer

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About

Dr Simon Hanslmayr is an expert in the role of brain oscillations for human cognition. His research addresses the question of how brain oscillations mediate long-term memory and attention in the human brain.

Qualifications

PhD in Psychology (University of Salzburg, Austria)
MA in Psychology (University of Salzburg, Austria)

Biography

Dr Simon Hanslmayr studied Psychology at the University of Salzburg and finished his PhD in 2005 on the role of alpha oscillations for attention and perception under the supervision of Professor Wolfgang Klimesch. From 2006 until 2010 he did a Postdoc in the lab of Karl-Heinz Bäuml at the University of Regensburg where he focused on the role of brain oscillations for episodic memory. In 2010 he started his own independent research group at the University of Konstanz, funded by a prestigious Emmy-Noether award (1.2 Mio) from the German Research Foundation (DFG), where he continued his research on the role of brain oscillations for episodic memory formation. In September 2013 Dr Simon Hanslmayr joined the School as a Senior Lecturer.

Teaching

Dr Hanslmayr teaches a 1st year module on “Perception & Attention”. He is also a statistics advisor supporting 3rd year Psychology students with their research projects.

Postgraduate supervision

Dr Hanslmayr supervises talented and motivated students who are interested in any of the following areas:

- Brain oscillations and episodic memory

- Alpha oscillations and attention / visual perception

- Brain oscillations and cognitive control

- Computational modelling of brain oscillations

Hanslmayr's lab has access to a range of research facilities, including a 3T MRI scanner, 64-channel EEG with concurrent neurostimulation (tACS/tDCS), Transcranial Magnetic Stimulation and behavioural testing equipment. Furthermore, access to MEG and intracranial recordings is available via established collaborations. Students who are interested in a PhD or Master’s project in one of the above mentioned areas should directly contact Dr Hanslmayr via email **s.hanslmayr@bham.ac.uk (mailto:s.hanslmayr@bham.ac.uk)** .

Research

Researcher ID: F-9356-2010
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Google Scholar: **http://scholar.google.com/citations?user=DaiCRJkAAAAJ&hl=de (http://scholar.google.com/citations?user=DaiCRJkAAAAJ&hl=de)**

Research interests

My research projects currently focus on two areas. One area regards the role of brain oscillations for episodic memory formation and retrieval. Recently I became especially interested in the role of desynchronized neural activity for episodic memory and its possible links to mathematical information theory. A second research area is concerned with the role of ongoing alpha oscillatory activity for attention on one hand and for perception on the other hand. Therein I am interested in how fluctuations of prestimulus alpha activity gate subsequent perceptual processing.

See Dr Hanslmayr's Cognition and Oscillations Lab (http://www.psychologie.uni-konstanz.de/en/cognition-and-oscillations-lab/)

Publications

Selected papers in peer reviewed journals

Waldhauser, G., Bäuml, K.H.T., Hanslmayr, S. (2014) Brain oscillations mediate successful suppression of unwanted memories. *Cerebral Cortex, in press.*

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.

Anderson, M.C., Hanslmayr, S. (2014) Neural mechanisms of motivated forgetting. *Trends in Cognitive Sciences,* 18, 279-292.

Ferreira, C.S., Marful, A., Staudigl, T., Bajo, T., Hanslmayr, S. (2014) Prefrontal theta oscillations track the time course of interference during selective memory retrieval. *Journal of Cognitive Neuroscience*, 26, 777–791.

Hanslmayr, S., Staudigl, T. (2014) How brain oscillations form memories - a processing based perspective on oscillatory subsequent memory effects. *NeuroImage*, 85, 648-655.

Hanslmayr, S., Volberg, G., Wimber, M., Dalal, S., Greenlee, M.W. (2013) Prestimulus oscillatory phase at 7 Hz gates cortical information flow and visual perception. *Current Biology*, 23, 2273-2278.

Staudigl, S., Hanslmayr, S. (2013) Theta oscillations at encoding mediate the context-dependent nature of human episodic memory. *Current Biology*, 23, 1101-1106.

Fellner, M.C., Bäuml, K.-H.T., Hanslmayr, S. (2013) Brain oscillatory subsequent memory effects differ in power and long-range synchronization between semantic and survival processing. *NeuroImage*, 79, 361-370.

Hanslmayr, S., Backes, H., Straub, S., Popov, T., Langguth, B., Hajak, G., Bäuml, K.-H.T., Landegrebe, M. (2013). Enhanced resting-state oscillations in schizophrenia are associated with decreased synchronization during inattentional blindness. *Human Brain Mapping*, 34, 2266–2275.

Wimber, M., Maaß, A., Staudigl, T., Richardson-Klavehn, A., Hanslmayr, S. (2012) Rapid memory reactivation revealed by oscillatory entrainment. *Current Biology*, 22, 1482-1486.

Hanslmayr, S., Volberg, G., Wimber, M., Oehler, N., Staudigl, T., Hartmann, T., Raabe, M., Greenlee, M.W., Bäuml, K.-H.T. (2012) Prefrontally driven down-regulation of neural synchrony mediates goal-directed forgetting. *The Journal of Neuroscience*, 32, 14742-14751.

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*.

Waldhauser, G., Johansson, M., Hanslmayr, S. (2012) Brain oscillations indicate inhibition of interfering visual memories. *The Journal of Neuroscience*, 32, 1953-1961.

Hanslmayr, S., Volberg, G., Wimber, M., Raabe, M., Greenlee, M.W., Bäuml, K.-H.T. (2011) The relationship between brain oscillations and BOLD signal during memory formation: a combined EEG-fMRI study. *The Journal of Neuroscience*, 31, 15674-15680.

Hanslmayr, S., Gross, J., Klimesch, W., Shapiro, K.L. (2011) The role of alpha oscillations in temporal attention. Brain Res Rev., 67, 331-343.

Hanslmayr, S., Staudigl, T., Aslan, A., Bäuml, K.-H. (2010) Theta oscillations predict the inhibitory effects of memory retrieval. *Cognitive, Affective, & Behavioral Neuroscience*, 10, 329-338.

Staudigl, T., Hanslmayr, S., Bäuml, K.-H. (2010) Theta oscillations reflect the dynamics of intereference in episodic memory retrieval. *The Journal of Neuroscience*, 30, 11356-11362

Bäuml, K.-H., Hanslmayr, S. (2010) Forgetting in the no-think paradigm: interference or inhibition. *Proceedings of the National Academy of Science USA*, 107, E3.

Hanslmayr, S., Spitzer, B., Bäuml, K.-H. (2009) Brain oscillations dissociate between semantic and non-semantic encoding of episodic memories. *Cerebral Cortex,* 19, 1631-1640.

Hanslmayr, S., Leipold, P., Pastötter, B., Bäuml, K.-H. (2009) Anticipatory signatures of voluntary memory suppression. *The Journal of Neuroscience*, 29, 2742-2747.

Hanslmayr, S., Pastötter, B., Bäuml, K.-H., Gruber, S., Wimber, M., Klimesch, W. (2008) The Electrophysiological Dynamics of Interference during the Stroop Task. *Journal of Cognitive Neuroscience*, 20, 215-225.

Hanslmayr, S., Aslan, A., Staudigl, T., Klimesch, W., Herrmann, C.S., Bäuml, K.-H. (2007) Prestimulus Oscillations Predict Visual Perception Performance Between and Within Subjects. *Neuroimage*, 37, 1465-1473.

Hanslmayr, S., Klimesch, W., Sauseng, P., Gruber, W., Doppelmayr, M., Freunberger, R., Pecherstorfer, T., Birbaumer, N. (2007) Alpha phase reset contributes to the generation of ERPs. *Cerebral Cortex,* 17, 1-8.

Klimesch W, Sauseng P, Hanslmayr S. (2007) Alpha desynchronization revisited: The Inhibition/timing hypothesis.*Brain Research Reviews*, 53, 63-88.

Hanslmayr, S., Sauseng, P., Doppelmayr, M., Schabus, M., Klimesch, W. (2005) Increasing individual upper alpha power by neurofeedback improves cognitive performance in human subjects. *Applied Psychophysiology and Biofeedback*, 30, 1-10.

Hanslmayr, S., Klimesch, W., Sauseng, P., Gruber, W., Doppelmayr, M., Freunberger, R., Pecherstorfer, T. (2005) Visual discrimination performance is related to decreased alpha amplitude but increased phase locking.*Neuroscience Letters*, 375, 64-68.

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