

PERSONAL AND CONTACT INFORMATION

Full name Eelke Spaak Born 2 December 1985
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ACADEMIC EXPERIENCE AND EDUCATION

- 2018 – 2022 **Research fellow / Veni laureate**
 Donders Institute, Radboud University Nijmegen, The Netherlands
 Advisor: prof. dr. Floris de Lange
 Veni project: "Consciousness in context: Disentangling the paradoxical effects of prior expectations on subjective visual experience"
- 2010 – now **FieldTrip developer**
 Member of the core team responsible for developing the FieldTrip software package for analysis of electrophysiological data
- 2017 – 2019 **Junior Research Fellow**
 New College, University of Oxford
- 2015 – 2018 **Postdoctoral research fellow**
 University of Oxford; advisor: dr. Mark Stokes
 Project: "Temporary connective architectures in mind and brain: The role of functional connectivity in working memory"
- 2010 – 2014 **PhD in Cognitive Neuroscience**
 Donders Institute, Radboud University Nijmegen, The Netherlands
 Supervisors: prof. dr. Ole Jensen, prof dr. Floris de Lange
 Thesis title: "On the role of alpha oscillations in structuring neural information processing"
- 2009 – 2010 **MSc in Philosophy**
 University of Edinburgh, United Kingdom; supervisor: dr. Tom Roberts
 Thesis title: "Why stuff is real" (on the ontological equivalence of the micro- and macrophysical worlds)
- 2007 – 2009 **MSc in Cognitive Neuroscience (*cum laude*)**
 Radboud University Nijmegen, The Netherlands
 Supervisors: prof. dr. Stan Gielen, dr. Magteld Zeitler
 Thesis title: "Hippocampal theta modulation of neocortical spike times and gamma rhythm: A biophysical model study"
- 2006 – 2008 **Research assistant**
 Supervisor: prof. dr. Anne Cutler
 Max Planck Institute for Psycholinguistics, Nijmegen, The Netherlands
- 2005 – 2009 **BA in Philosophy (*bene meritum*)**
 Radboud University Nijmegen, The Netherlands; supervisor: prof. dr. Marc Slors
 Thesis title: "Interpreting causality" (on the metaphysical nature of causality and its relation to free will)
- 2003 – 2008 **BSc in Artificial Intelligence (*bene meritum*)**
 Radboud University Nijmegen, The Netherlands; supervisor: dr. Pim Haselager
 Thesis title: "From imitation to action understanding: On the evolution of mirror neurons"

PEER-REVIEWED PUBLICATIONS

- Fritsche, M., **Spaak, E.**, & De Lange, F.P. (2020). A Bayesian and efficient observer model explains concurrent attractive and repulsive history biases in visual perception. *eLife*. doi: 10.7554/eLife.55389.
- Tankelevitch, L., **Spaak, E.**, Rushworth, M.F.S., & Stokes, M.G. (2020). Previously reward-associated stimuli capture spatial attention in the absence of changes in the corresponding sensory representations as measured with MEG. *The Journal of Neuroscience*. doi: 10.1523/jneurosci.1172-19.2020.
- Manahova, M.E., **Spaak, E.**, & De Lange, F.P. (2020). Familiarity increases processing speed in the visual system. *Journal of Cognitive Neuroscience*. 32(4), 722-733. doi: 10.1162/jocn_a_01507.
- Spaak, E.** & De Lange, F.P. (2020) Hippocampal and prefrontal theta-band mechanisms underpin implicit spatial context learning. *The Journal of Neuroscience*. 40(1), 191-202. doi: 10.1523/jneurosci.1660-19.2019.
- Wasmuht, D.F., **Spaak, E.**, Buschman, T.J., Miller, E.K., & Stokes, M.G. (2018) Intrinsic neuronal dynamics predict distinct functional roles during working memory. *Nature Communications*. doi: 10.1038/s41467-018-05961-4.
- Spaak, E.**, Watanabe, K., Funahashi, S., & Stokes, M.G. (2017) Stable and dynamic coding for working memory in primate prefrontal cortex. *The Journal of Neuroscience*. 37(27), 6503-6516. doi:10.1523/jneurosci.3364-16.2017.
- Jensen, O., **Spaak, E.**, & Park, H. (2016) Discriminating valid from spurious indices of phase-amplitude coupling. *eNeuro*. 3(6). doi:10.1523/eneuro.0334-16.2016.
- Stokes, M.G. & **Spaak, E.** (2016) The importance of single-trial analyses in cognitive neuroscience. *Trends in Cognitive Sciences*. 20(7), 483-486, doi: 10.1016/j.tics.2016.05.008.
- Spaak, E.**, Fonken, Y., Jensen, O., & De Lange, F.P. (2016) The neural mechanisms of prediction in visual search. *Cerebral Cortex*. 26(11), 4327-4336, doi: 10.1093/cercor/bhv210.
- Stokes, M.G., Wolff, M.J., & **Spaak, E.** (2015) Decoding rich spatial information with high temporal resolution. *Trends in Cognitive Sciences*. 19(11), 636-638, doi:10.1016/j.tics.2015.08.016.
- Jensen, O., **Spaak, E.**, & Zumer, J.M. (2019/2014) Human brain oscillations: From physiological mechanisms to analysis and cognition. In Supek, S., & Aine, C.J. (Eds.), *Magneto-encephalography: From signals to dynamic cortical networks*. Berlin: Springer.
- Spaak, E.**, De Lange, F.P., & Jensen, O. (2014). Local entrainment of alpha oscillations by visual stimuli causes cyclic modulation of perception. *The Journal of Neuroscience*. 34(10), 3536-3544, doi:10.1523/jneurosci.4385-13.2014
- Spaak, E.**, Bonnefond, M., Maier, A., Leopold, D.A., & Jensen, O. (2012). Layer-specific entrainment of gamma-band neural activity by the alpha rhythm in monkey visual cortex. *Current Biology*, 22(24), 2313-2318. doi: 10.1016/j.cub.2012.10.020
- Spaak, E.**, Zeitler, M., & Gielen, C.C.A.M. (2012). Hippocampal theta modulation of neocortical spike times and gamma rhythm: A biophysical model study. *PLoS ONE*, 7(10): e45688. doi:10.1371/journal.pone.0045688
- Spaak, E.** (2009). No one is tricking anyone: A critique of Wegner's theory of conscious will. *Splijtstof*, 37(3), 15-26.
- Spaak, E.** & Haselager, P.F.G. (2008). Imitation and mirror neurons: An evolutionary robotics model. In A. Nijholt, M. Pantic, M. Poel, & H. Hondorp (Eds.) *Proceedings of BNAIC 2008, the Twentieth Belgian-Dutch Artificial Intelligence Conference*. (pp. 249-256). Enschede: University of Twente.

GRANTS AND AWARDS

- 2018 – 2021 VENI fellowship, Netherlands Organisation for Scientific Research (NWO)
- 2017 – 2019 Junior Research Fellowship, New College, Oxford
- 2017 Postdoctoral Fellow Award, Cognitive Neuroscience Society
- 2016 nVidia Academic Hardware Grant
- 2015, 2017 Guarantors of Brain Travel Grant (2x)
- 2012, 2013 Radboud University Internationalization Grant (2x)
- 2009 – 2010 Huygens Talent Programme (HSP) Grant
- 2009 – 2010 VSBfonds scholarship

SELECTED PRESENTATIONS

- 2020 *Hippocampal and prefrontal theta-band mechanisms underpin implicit spatial context learning.* eLife Early Career Researcher online talk.
- 2019 *Implicit context learning in hippocampus and prefrontal cortex.* Free University Amsterdam. [invited talk]
- 2019 *Implicit context learning in hippocampus and prefrontal cortex.* Brain & Cognition Meeting, University of Amsterdam. [invited talk]
- 2017 *Rapid synaptic plasticity as a substrate for working memory maintenance.* Cognitive Neuroscience Society, San Diego, USA. [**postdoctoral fellow award poster**]
- Rapid synaptic plasticity as a substrate for working memory maintenance.* School of Psychology, University of Birmingham. [invited talk]
- 2016 *The neural basis of dynamic coding during a spatial working memory task.* Society for Neuroscience (SfN), San Diego, USA. [symposium speaker]
- Stable and dynamic coding for working memory in primate prefrontal cortex.* International Conference on Biomagnetism (BioMAG), Seoul, South Korea. [**symposium speaker, organizer, and chair**]
- Multivariate analyses of primate prefrontal cortex activity reveal simultaneously stable and dynamic coding for working memory.* Cognitive Neuroscience Society (CNS), New York, USA. [poster]
- 2015 *Stable and dynamic coding for working memory in primate prefrontal cortex.* Society for Neuroscience (SfN), Chicago, USA. [poster]
- 2014 *Phase coding in the visual system & Sensorimotor predictions during resumed visual search* Oxford Centre for Human Brain Activity, University of Oxford. [invited talk]
- 2013 *Phase coding in the visual system.* NeuroSpin Center, Université Paris-Saclay. [invited talk]
- Phase coding in the visual system.* Institut du Cerveau et de la Moelle Épineière, Paris, France. [invited talk]
- Entrainment of alpha oscillations by visual stimuli and its effect on perception.* Philips Research, Eindhoven, The Netherlands. [invited talk]
- 2012 Participation in *The Cultural Meaning of the Natural Sciences*, Royal Dutch Academy of Sciences. With philosopher Prof Daniel Dennett, in honour of his receiving the Erasmus Prize from HRH Prince Willem-Alexander. [**all-day 'inner circle' panelist**]

Layer-specific entrainment of gamma field potential power by alpha rhythm in the monkey visual cortex. International Conference on Biomagnetism (BioMAG), Paris, France. [poster]

Layer-specific entrainment of gamma-range band neural activity by the alpha rhythm in the monkey visual cortex. Society for Neuroscience (SfN), New Orleans, USA. [poster]

2011 *Cross-laminar cross-frequency interactions in Monkey V1.* Champalimaud Neuroscience Symposium, Lisbon, Portugal. [poster]

2008 *From imitation to action understanding: On the evolution of mirror neurons.* European Society for Philosophy and Psychology, Utrecht, The Netherlands.

TEACHING EXPERIENCE

2011 – 2019 **Lecturer and tutorial supervisor** at the 'Toolkit for Cognitive Neuroscience', a course on MEG/EEG advanced data analysis at the DCCN

2015 – 2017 **Tutor** in the course 'Advanced Option: Working Memory' at the Department of Experimental Psychology, University of Oxford.

2015 Obtained **qualification: Teaching and Learning Part 1** at the University of Oxford

2011 – ongoing **(Co-)supervision** of several MSc and PhD students

2013 – 2015 **Lecturer** in the course 'Cognitive Neuroimaging and Neuroscience' for third-year Biology students at the Radboud University Nijmegen

2012 – ongoing Several **FieldTrip data analysis workshops** (Max Planck Institute for Human Brain and Cognitive Sciences, Leipzig; Eberhard-Karls University Tübingen; Zürich University; King's College London; University of Exeter); **invited speaker and organizer**

ORGANIZATIONAL EXPERIENCE

2019 – now **city coordinator Pint of Science**, international popular science festival.

2019 – now **Postdoc/early career researcher representative** at the Donders Centre for Cognitive Neuroimaging (DCCN).

2012 – 2015 **Founder and co-chair of the Foundations meeting** at the DCCN, discussing theoretical and philosophical perspectives on neuroscience

2010 – 2013 **Chair of the Electrophysiological Data Analysis meetings** at the DCCN

2011 – 2013 **PhD representative** at the DCCN

2011 – 2013 **Member and chair** of the DCCN **board of representatives** for staff

2006 – 2008 **Faculty Student Council** of the Faculty of Philosophy at the RU Nijmegen

2006 – 2007 **Educational Committee**, Department of Artificial Intelligence, RU Nijmegen

2004 – 2005 **Organisation of BNAIS, an international student symposium** on artificial intelligence

OTHER PROFESSIONAL EXPERIENCE

2008 – ongoing Co-owner at Spaak & Van Caspel Internet Presence, a small business dedicated to designing, developing and maintaining professional (e-commerce) websites

(ongoing) Contributions to various open source software projects