

## Curriculum Vitae

**Prof. Dr. rer. nat. Dorothea Hämmerer**

### Work Address:

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### Personal information:

Born 11.7.1979, in Mainz

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### Present Appointments:

- Professor for Developmental Psychology at the *Psychological Institute of the Leopold-Franzens University of Innsbruck (LFU)*
- Principal investigator at the *Institute of Cognitive Neurology and Dementia Research (IKND), University Clinic Magdeburg*
- Associate research fellow at the *Institute of Cognitive Neuroscience at University College London (ICN)*

### Education

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|---------------------|---|
| 01/2006 – 12/2009   | Dissertation at the <i>Max Planck Institute for Human Development</i> in Berlin with Prof. Ulman Lindenberger and Prof. Shu-Chen Li (grade summa cum laude) |
| 04/ 2005            | Diplom in Psychology at the <i>Albert-Ludwigs-University of Freiburg</i> (grade 1.3)  |
| 10/ 2003 – 07/ 2004 | Diploma thesis at the <i>Max-Planck-Institute for Human Cognitive and Brain Sciences</i> in Leipzig with Markus Ullsperger (grade 1.0)                      |

### Professional development

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|-----------------|---|
| 09/2021-present | Associate research fellow at the <i>Institute of Cognitive Neuroscience, University College London</i>  |
| 09/2019-08/2021 | Alzheimer Research UK Senior research fellow / associate research fellow at the <i>Institute of Cognitive Neuroscience, University College London</i> |

- 04/2019-09/2019      Vertretungsprofessur Developmental Psychology (W2), *Universität Konstanz*
- 09/2017-present      Postdoc, then Principal Investigator at the *Institute of Cognitive Neurology and Dementia Research (IKND), University Clinic Magdeburg*
- 02/2014-08/2017      Research visit at the group for Clinical Neurophysiology and Memory at the *Institute of Cognitive Neuroscience, University College London*
- 01/2010 - 02/2014      Postdoctoral fellow in the project 'Neuromodulation of Lifespan Cognition' with Prof. Shu-Chen Li at the *Max Planck Institute for Human Development* in Berlin and *Chair of Lifespan Psychology and Neuroscience* at the *Technical University* in Dresden
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### Research Interests

- Developmental cognitive neuroscience of decision making, executive functions and memory
  - Neuroimaging of neuromodulatory systems in ageing and Alzheimer's dementia
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### Grants / Awards

- 2022: NIH R01MH126971 '*Representational dynamics for flexible learning in complex environments*' (Subaward for collaborator) (223.706 USD)
- 2022: SFB 1315 Projekt B06 '*Connectivity dynamics related to memory consolidation in cortical layers and subcortical networks*' (508.400€)
- 2021: Forschungsinfrastrukturförderung UIBK '*Zirkadiane Gesundheit*' (73.315€)
- 2021: Brenda Milner Award (7500€)
- 2020: SFB 1436 Project A08 *The noradrenergic system's contribution to neural resource in aging* (502.600€)
- 2019: CBBS 'Neuronetwork' '*Stimulation of the LC-NE system as a personalized therapeutic intervention*', Europäischer Fonds für regionale Entwicklung (EFRE) (205.000€ as PI of one subproject and coordinator of 4 subprojects of 'Neuronetwork', total funding 556.000€)
- 2019: CBBS Events grant: '*Meeting for the development of new in-vivo methods for the noradrenergic system*', Europäischer Fonds für regionale Entwicklung (EFRE) (5000€)
- 2019: International cooperations grant, '*Developing new in-vivo methods for the noradrenergic system*', German Research Foundation (DFG) (3.500€)
- 2018: Senior research fellowship: '*Noradrenergic treatment for Alzheimer's Disease*', Alzheimer Research UK (ARUK) (420.000£)
- 2016: MRC research grant: '*Assessing the role of the noradrenergic locus coeruleus in healthy ageing and early Alzheimer's disease*' (Chief Investigator, Co-Applicant with Emrah Düzel, 233.555£)

- 2013: DAAD: Postdoctoral fellowship (40.000€)
- 2012: DFG: international cooperations grant, '*Altering cognitive functions with transcranial direct current stimulation*', German Research Foundation (DFG) (3.500€)

### Professional outreach

- 32 publications (8 last author, 10 first author), *1922 citations, h-index: 20*
- Conference presentations: 29 talks (14 invited), 14 posters

### Organization of meetings

- December 2019: 2<sup>nd</sup> Locus Coeruleus imaging meeting in Magdeburg ([link](#))
- February 2018: 1<sup>st</sup> Locus Coeruleus imaging meeting in Magdeburg  
(bringing together Biologists, MR Physicists, Cognitive Neuroscientists, and Clinicians to discuss new methods in imaging the Locus Coeruleus in dementia and ageing)

### selected Collaborations / Affiliations

- Since 2018: Member of **Center for Behavioral Brain Sciences (CBBS)**, Magdeburg
- Since 2017: Collaboration with **Prof. Rob Howard, Division of Psychiatry, University College London**, on changes in noradrenergic modulation in early Alzheimer's disease
- Since 2017: Affiliation with the **Cambridge Centre for Ageing and Neuroscience study (Cam-CAN)** and Collaboration with **Dr. Rogier Kievit, Prof. Rik Henson** on lifespan age differences in Locus Coeruleus integrity and noradrenergically modulated cognitive functions.
- Since 2016: Collaboration with **Dr. Martina Callaghan at the Wellcome Trust centre for Neuroimaging** on MR imaging of the noradrenergic system.
- 2016-2019: Collaboration with **Prof. Ray Dolan at the Max Planck UCL Centre for Computational Psychiatry and Ageing** on computational modeling of age differences in noradrenergic function in decision making.
- 2014-2017: Collaboration with **S. Bestmann, *Altering cognitive functions with transcranial direct current stimulation*. Sobell Motor Department, UCL, London, UK.** (concluded, see publications)

### Academic administration

- 2022 – present: Member MRI facility committee
- 2022-2023 Member appointment committee Professorship Applied Psychology
- 2022: Deputy Chairman appointment committee Professorship Affective Neuroscience
- 2022-present: Deputy Chairman curriculum committee
- 2022-present: Deputy member Senate LFU
- 2022-present: Deputy member Ethics committee Psychological Institute LFU

- 2018: Examination Developmental Psychology at University Konstanz, Bachelor level
- 2012 /2013: Examination Psychology for Education at TU Dresden, Master level
- 2009: PhD representative MPI for Human Development, survey on working conditions in Max Planck in the Society

### Memberships

- since 2021: Austrian Neuroscience Association (ANA)
- since 2006: Deutscher Hochschulverband (DHV)
- since 2008: Society for Neuroscience
- since 2015: German Psychological Society (DGP)

### Ad hoc Reviewer:

#### Journals:

NeuroImage, Developmental Psychology, Neurobiology of Aging, Psychology and Aging, Cerebral Cortex, Neuroscience and Biobehavioral Reviews, Human Brain Mapping, Elife (guest editor)

#### Funding / Conferences:

DFG, Schweizerischer Nationalfonds zur Förderung der wissenschaftlichen Forschung, Israel Science Foundation, Abstract selection AAIC

### Public Engagement

- 2018: **Studies after 50:** The relevance of changes in noradrenergic modulation for the early detection of Alzheimer's disease, Otto von Guericke University Magdeburg
- 2013: **Studium Generale:** *Brain development and adaptive behavioral regulation across the lifespan I: Cognitive Control*, Technical University Dresden.
- 2010: **MPS School outreach:** Developmental changes in cognitive control.

### Publikationen

***h-index: 20, 1922 citations, 1322 in last 5 years*** (Citations based on Google Scholar)

1. Lancini, E., F. Bartl, M. Rühling, L. Haag, N.J. Ashton, H. Zetterberg, E. Düzel, D. Hämmerer, D.\* , MJ. Betts\* CSF and PET biomarkers for noradrenergic dysfunction in neurodegenerative diseases: a systematic review and meta-analysis. **Brain communications** (2023) \*shared last, *Journal Impact Factor 4.4*.
2. Ehrenberg, A. J., Kelberman, M. A., Liu, K. Y., Dahl, M. J., Weinshenker, D., Falgàs, N., Dutt, S., Mather, M., Ludwig, M., Betts, M. J., Winer, J. R., Teipel, S., Weigand, A. J., Eschenko, O., Hämmerer, D., Leiman, M., Counts, S. E., Shine, J. M., Robertson, I. H., ... Grinberg, L. T. (2023). Priorities for research on neuromodulatory subcortical systems in Alzheimer's

- disease: Position paper from the NSS PIA of ISTAART. **Alzheimer's & Dementia** <https://doi.org/10.1002/alz.12937>. *Journal Impact Factor* 16.65
3. Yi, Y.-J., Lüsebrink, F., Maaß, A., Ziegler, G., Yakupov, R., Kreißl, M. C., Betts, M., Speck, O., Düzel, E., & Hämmerer, D. (2023). *It is the Locus Coeruleus! Or... is it? : A proposition for analyses and reporting standards for structural and functional magnetic resonance imaging of the noradrenergic Locus Coeruleus* **Neurobiology of Aging**. *Journal Impact Factor* 5.12.
  4. Liebe, T., Kaufmann, J., Hämmerer, D., Betts, M., & Walter, M. (2022). In vivo tractography of human locus coeruleus—Relation to 7T resting state fMRI, psychological measures and single subject validity. **Molecular Psychiatry**, 1–10. <https://doi.org/10.1038/s41380-022-01761-x>. *Journal Impact Factor* 13.5
  5. Ludwig, M., Wienke, C., Betts, M. J., Zaehle, T., & Hämmerer, D. (2021). Current challenges in reliably targeting the noradrenergic locus coeruleus using transcutaneous auricular vagus nerve stimulation (taVNS). **Autonomic Neuroscience**, 236, 102900. <https://doi.org/10.1016/j.autneu.2021.102900>. *Times cited: 2, Journal Impact Factor* 3.15
  6. Liu, K. Y., Acosta-Cabronero, J., Hong, Y. T., Yi, Y.-J., Hämmerer, D., & Howard, R. (2021). FDG-PET assessment of the locus coeruleus in Alzheimer's disease. **Neuroimage: Reports**, 1(1), 100002. <https://doi.org/10.1016/j.ynirp.2020.100002> *Times cited: 1, Journal Impact Factor* 6.55
  7. Farmer, A. D., Strzelczyk, A., Finisguerra, A., Gourine, A. V., Gharabaghi, A., Hasan, A., Burger, A. M., Jaramillo, A. M., Mertens, A., Majid, A., Verkuil, B., Badran, B. W., Ventura-Bort, C., Gaul, C., Beste, C., Warren, C. M., Quintana, D. S., Hämmerer, D., Freri, E., ... Koenig, J. (2021). International Consensus Based Review and Recommendations for Minimum Reporting Standards in Research on Transcutaneous Vagus Nerve Stimulation (Version 2020). **Frontiers in Human Neuroscience**, 0. <https://doi.org/10.3389/fnhum.2020.568051>. *Times cited: 47, Journal Impact Factor* 2.87.
  8. Liu, K. Y., Kievit, R. A., Tsvetanov, K. A., Betts, M. J., Düzel, E., Rowe, J. B., Howard, R., Hämmerer, D. (2020) *Noradrenergic-dependent functions are associated with age-related locus coeruleus signal intensity differences.* (2020) **Nature communications**, 11 (1), 1-9, *Times cited: 37, Journal Impact Factor* 11.88.
  9. Thurm, F. Li, S.-C., Hämmerer, D. (2020) *Maturation-and aging-related differences in electrophysiological correlates of error detection and error awareness.* (2020) **Neuropsychologia**, 107476, *Times cited: 5, Journal impact factor: 2.85.*
  10. Baeuchl, C., Chen, H.-Y., Su, Y.S., Hämmerer, D., Klados, M.A., Li, S.-C. (2019) *Interactive effects of dopamine transporter genotype and aging on resting-state functional networks.* (2019) **Plos ONE** 14(5) e0215849, *Journal Impact Factor* 2.76.
  11. Betts, M. J., Kirilina, E., Otaduy, M. C. G., Ivanov, D., Acosta-Cabronero, J., Callaghan, M. F., Lambert, C., Cardenas-Blanco, A., Pine, K., Passamonti, L., Loane, C., Keuken, M. C., Trujillo, P., Lüsebrink, F., Mattern, H., Liu, K. Y., Priovoulos, N., Fliessbach, K., Dahl, M. J., ... Hämmerer, D. (2019). Locus coeruleus imaging as a biomarker for noradrenergic dysfunction in neurodegenerative diseases. **Brain**, 142(9), 2558–2571.

<https://doi.org/10.1093/brain/awz193>, *Times cited: 134, Journal Impact Factor 10.84. \* shared last*

12. Hämmerer, D., Schwartenbeck, P., Gallagher, M., FitzGerald, T.H.B., Düzel, E. and Dolan, R.J. *Older adults fail to form stable task representations during model-based inference.* (2019) **Neurobiology of Aging** 74, 90-100. *Times cited: 13, Journal Impact Factor 5.12.*
13. Liu, K. Y., Acosta-Cabrero, J., Cardenas-Blanco, A., Betts, M. J., Kievit, R.A., Henson, R.N., Loane, C., Berry, A.J., Düzel, E., Cam-CAN: Howard, R., Hämmerer, D. *In vivo visualization of age-related changes in the locus coeruleus* (2019) **Neurobiology of Aging** 74, 101-111. *Times cited: 64, Journal Impact Factor 5.12.*
14. Betts, M., Ehrenberger, A. J., Hämmerer, D., Düzel, E. (2018) Commentary: Locus Coeruleus Ablation Exacerbates Cognitive Deficits, Neuropathology, and Lethality in P301S Tau Transgenic Mice. **Frontiers in Neuroscience** 12, 401. *Times cited: 10, Journal impact factor: 3.87.*
15. Hämmerer, D., Callaghan, M.F., Hopkins, A., Kosciessa, J., Betts, M., Cardenas-Blanco, A., Kanowski, M., Weiskopf, N., Dayan, P., Dolan, R.J. and Düzel, E. (2018) Locus coeruleus integrity in old age is selectively related to memories linked with salient negative events. **Proceedings of the National Academy of Sciences**, 115 (9), 2228-2233. *Times cited: 90, Journal impact factor: 9.66.*
16. Liu, K.Y.; Marijatta F.; Hämmerer D.; Düzel E.; Howard R.J. (2017) Magnetic resonance imaging of the human locus coeruleus: A systematic review, **Neuroscience and Biobehavioral Reviews**, 83, 325-355. *Times cited: 94, Journal Impact factor: 10.284.*
17. Hämmerer, D., Hopkins, A. Dolan, R. J., Düzel, E. (2017) Emotional arousal and recognition memory are differentially reflected in pupil diameter responses during emotional memory in younger and older adults. **Neurobiology of Aging**, 58, 129-139. *Times cited: 21, Journal impact factor: 5.12.*
18. FitzGerald, T. H. B., Hämmerer, D., Friston, K. J., Li, S.-C., Dolan, R. J. (2017) Sequential inference strategies correlate with individual differences in brain structures. **PLOS Computational Biology**, 13 (5), e1005418. *Times cited: 19, Journal impact factor: 4.58.*
19. Hämmerer, D., Bonaiuto, J., Klein-Flügge, M., Bikson, M., Bestman, S (2016) Selective alteration of human value decision making with medial frontal tDCS is predicted by changes in attractor dynamics. **Nature Scientific Reports**, 6, 25160. *Times cited: 35, Journal impact factor: 5.23*
20. Düzel E., Guitart-Masip M., Maass A., Hämmerer D., Betts M., Speck O., Weiskopf N., Kanowski M. (2015) Midbrain fMRI: Applications, Limitations and Challenges. In: fMRI: From Nuclear Spins to Brain Functions, Springer, New York. *Times cited: 13.*
21. Chen, J. A., Hämmerer, D., Strigaro, G, Liou, L.M., Tsai, C. H., Rothwell, J. C., Edwards, M. J. (2014) Domain-Specific Suppression of Auditory Mismatch Negativity with Transcranial Direct Current Stimulation. **Clinical Neurophysiology**, 125, 585-592. *Times cited: 23, Journal impact factor: 3.40.*

22. Chen, J. A., Hämmerer, D., Marshal, L., Strigaro, G., Liou, L.M., Tsai, C. H., Rothwell, J. C., Edwards, M. J. (2014) Bi-directional Modulation of Somatosensory Mismatch Negativity with Transcranial Direct Current Stimulation. **Clinical Neurophysiology**, 592, 745-757. *Times cited: 32, Journal impact factor: 3.40.*
23. Hämmerer, D., Müller, V., Heekeren, H. R., Lindenberger, U., & Li, S.-C. (2014) Performance monitoring across the lifespan: Still maturing post-conflict regulation in children and declining task-set monitoring in older adults. **Neuroscience & Biobehavioral Reviews**, 46, 105-123. *Times cited: 17, Journal Impact factor: 10.284.*
24. Hämmerer, D., Li, S.-C., Vökle, M., Müller, V., & Lindenberger, U. (2013). A lifespan comparison of the reliability, test-retest stability, and signal-to-noise ratio of event-related potentials assessed during performance monitoring. **Psychophysiology**. *Times cited: 53, Journal impact factor: 3.29.*
25. Hämmerer, D., Biele, G., Müller, V., Thiele, H., Nürnberg, P., Heekeren, H. R. & Li, S.-C. (2013) Striatal Dopamine Signaling and Outcome Updating across the Lifespan: The Effect of PPP1R1B (DARPP-32) Polymorphism on Event-related Potentials. **Frontiers in Decision Neuroscience**. 4(89), 1.8. *Times cited: 16, Journal impact factor: 3.70.*
26. Papenberg, G., Hämmerer, D., Müller, V., Lindenberger, U., & Li, S.-C. (2013) Lower theta inter-trial phase coherence during performance monitoring is related to higher reaction time variability: A lifespan study. **NeuroImage**, 83, 912-920. *Times cited: 77, Journal impact factor: 5.90.*
27. Hämmerer, D. & Eppinger, B. (2012) Dopaminergic and prefrontal contributions to learning and outcome monitoring during childhood and old age. **Developmental Psychology**, 48, 862-874. *Times cited: 86, Journal Impact factor: 3.21.*
28. Hämmerer, D., Li, S.-C., Müller, V., & Lindenberger, U. (2011). Life span differences in electrophysiological correlates of monitoring gains and losses during probabilistic reinforcement learning. **Journal of Cognitive Neuroscience**, 23(3), 1-14. *Times cited: 183, Journal impact factor: 5.18.*
29. Eppinger, B., Hämmerer, D. & Li, S.-C. (2011) Neuromodulation of reward-based learning and decision making in human aging. **Annals of the New York Academy of Sciences**, 1235, 1-17. *Times cited: 225, Journal impact factor: 3.15.*
30. Hämmerer, D., Li, S.-C., Müller, V., & Lindenberger, U. (2010). An electrophysiological study of response conflict monitoring across the lifespan: Assessing the roles of conflict monitoring, cue utilization, response anticipation, and response suppression. **Neuropsychologia**, 40, 3305-3316. *Times cited: 124, Journal impact factor: 3.63.*
31. Li, S.-C., Hämmerer, D., Müller, V., Hommel, B., & Lindenberger, U. (2009). Lifespan development of stimulus-response conflict cost: Similarities and differences between maturation and senescence. **Psychological Research**, 73(6), 777-785. *Times cited: 55, Journal impact factor: 2.31.*

32. Wirtz, M., Farin, E., Bengel, J., Jäckel, W.H., Hämmerer, D. and Gerdes, N. (2005) IRES-24-Patientenfragebogen: Entwicklung der Kurzform eines Assessmentinstrumentes in der Rehabilitation mittels der Mixed-Rasch-Analyse. **Diagnostica**, 51(2), 75-87. *Times cited: 50, Journal impact factor: 0.72.*