Max Planck UCL Centre for Computational Psychiatry and Ageing Research

Photo: Centre members in Berlin

Directors

Raymond J. Dolan (Wellcome Centre for Human Neuroimaging, London, UK)
Ulman Lindenberger (MPI for Human Development, Berlin, Germany)

Deputy Directors

Peter Dayan (MPI for Biological Cybernetics, Tübingen, Germany)
Quentin Huys (University College London, UK)
Arno Villringer (MPI for Human Cognitive and Brain Sciences, Leipzig, Germany)

Researchers (Berlin Site)

Andreas M. Brandmaier, Douglas D. Garrett, Ulman Lindenberger, Nicolas W. Schuck

Overview

MAX PLANCK
UCL CENTRE
for Computational Psychiatry
and Ageing Research

www.mps-ucl-centre.mpg.de

The behavioral neurosciences and related disciplines have seen spectacular scientific advances that make them rich in scientific opportunity. These advances have made it possible to work toward a mechanistic understanding of behavioral aging and psychopathology, two empirically overlapping fields of great importance to science and society. In both fields, it is of key importance to take a personalized lifespan approach by identifying neural and behavioral parameters that predict more or less favorable trajectories, with the intent to intervene in time when undesirable outcomes are expected.

With these goals in mind, the Max Planck Society and University College London (UCL) established the Max Planck UCL Centre for Computational Psychiatry and Ageing Research. The Centre's opening ceremony took place in London at the Royal Society on 1 April 2014; the Max Planck Society and UCL provided an initial 5 years of funding. In 2019, the Centre was positively evaluated by the Max Planck Society and extended for another 5 years (2019–2024). The Centre has two sites, one in London (Russell Square) and the other in Berlin-Dahlem (MPI for Human Development). The Centre's foundation was preceded by a 3-year preparatory phase, which also included the organization of the *First Symposium and Advanced Course on Computational Psychiatry and Ageing Research* in 2012 at Ringberg Castle, Bavaria. During the reporting period, the Centre organized a similar symposium in 2018, again at Ringberg Castle. Following the 2016 launch of the *International Max Planck Research School on Computational Methods in Psychiatry and Ageing Research* (COMP2PSYCH) to extend the Max Planck UCL Centre's reach into graduate education (see pp. 287 ff. for details), the COMP2PSYCH program has continued to grow both in scope and number of students.
In Berlin, three research groups form part of the Centre: The project *Formal Methods in Lifespan Psychology,* led by Andreas Brandmaier at the Center for Lifespan Psychology, see pp. 151 ff.); the Emmy Noether Group *Lifespan Neural Dynamics Group,* led by Douglas D. Garrett (also affiliated with the Center for Lifespan Psychology, see pp. 195 ff.); and the Max Planck Research Group *Neural and Computational Basis of Learning, Decision Making and Memory,* led by Nicolas Schuck (see pp. 227 ff.). A full overview of the Centre's activities, including those primarily based in London, can be found on the Centre's website.

Researchers (Berlin Site)

Andreas M. Brandmaier
Douglas D. Garrett
Ulman Lindenberger

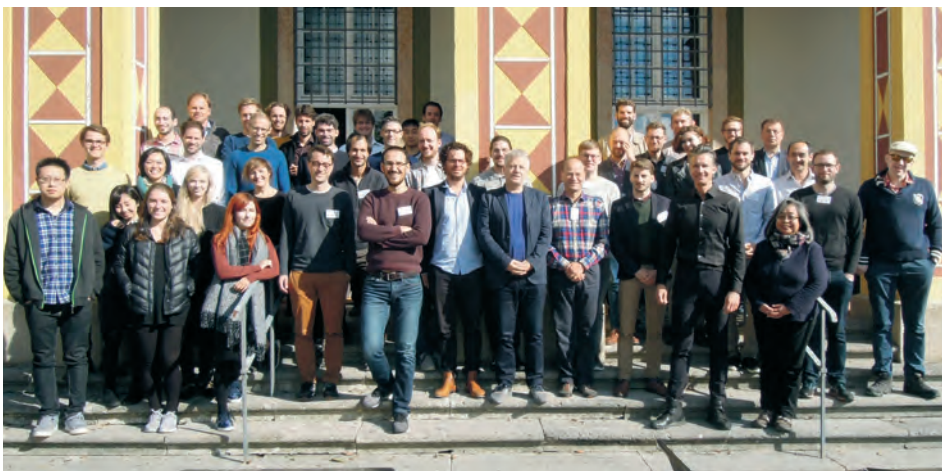

Figure 1. Participants of the 4th Symposium and Advanced Course for Computational Methods in Psychiatry and Ageing Research, Castle Ringberg, Tegernsee, Germany.

Berlin Site Publications 2017–2019/20

(last update: April 2020)

Anand, C., **Brandmaier, A. M.,** Arshad, M., Lynn, J., Stanley, J. A., & **Raz, N.** (2019). White-matter microstructural properties of the corpus callosum: Test-retest and repositioning effects in two parcellation schemes. *Brain Structure and Function, 224*(9), 3373–3385. https://doi.org/10.1007/s00429-019-01981-y

Arnold, M., Oberski, D. L., **Brandmaier, A. M.,** & **Voelkle, M. C.** (2019). Identifying heterogeneity in dynamic panel models with individual parameter contribution regression. *Structural Equation Modeling.* Advance online publication. https://doi.org/10.1080/10705511.2019.1667240

Blakemore, S.-J., & **Lindenberger, U.** (Section Eds.). (2020). I. Brain circuits over a lifetime. In D. Poeppel, G. Mangun, & M. Gazzaniga (Eds.-in-Chief), *The cognitive neurosciences* (6th ed., pp. 3–101). MIT Press.

Blakemore, S.-J., & **Lindenberger, U.** (2020). Introduction [to the section "I. Brain circuits over a lifetime"]. In D. Poeppel, G. Mangun, & M. Gazzaniga (Eds.-in-Chief), *The cognitive neurosciences* (6th ed., pp. 3–5). MIT Press.

Beese, C., Werkle-Bergner, M., Lindenberger, U., Friederici, A. D., & Meyer, L. (2019). Adult age differences in the benefit of syntactic and semantic constraints for sentence processing. *Psychology and Aging, 34*(1), 43–55. https://doi.org/10.1037/pag0000300

Bender, A. R., Brandmaier, A. M., Düzel, S., Keresztes, A., Pasternak, O., **Lindenberger, U.,** & **Kühn, S.** (2020). Hippocampal subfields and limbic white matter jointly predict learning rate in older adults. *Cerebral Cortex, 30*(4), 2465–2477. https://doi.org/10.1093/cercor/bhz252

Bender, A. R., Keresztes, A., Bodammer, N. C., Shing, Y. L., Werkle-Bergner, M., Daugherty, A. M., Yu, Q., **Kühn, S., Lindenberger, U.,** & **Raz, N.** (2018). Optimization and validation of automated hippocampal subfield segmentation across the lifespan. *Human Brain Mapping, 39*(2), 916–931. https://doi.org/10.1002/hbm.23891

Brandmaier, A. M., Driver, C. C., & **Voelkle, M. C.** (2018). Recursive partitioning in continuous time analysis. In K. van Montfort, J. H. L. Oud, & M. C. Voelkle (Eds.), *Continuous time modeling in the behavioral and related sciences* (pp. 259–282). Springer.

Brandmaier, A. M., Ghisletta, P., & **von Oertzen, T.** (2020). Optimal planned missing data design for linear latent growth curve models. *Behavior Research Methods.* Advance online publication. https://doi.org/10.3758/s13428-019-01325-y

Brandmaier, A. M., Ram, N., **Wagner, G. G.,** & Gerstorf, D. (2017). Terminal decline in well-being: The role of multi-indicator constellations of physical health and psychosocial correlates. *Developmental Psychology, 53*(5), 996–1012. https://doi.org/10.1037/dev0000274

Brandmaier, A. M., von Oertzen, T., Ghisletta, P., **Lindenberger, U.,** & Hertzog, C. (2018). Precision, reliability, and effect size of slope variance in latent growth curve models: Implications for statistical power analysis. *Frontiers in Psychology, 9,* Article 294. https://doi.org/10.3389/fpsyg.2018.00294

Brandmaier, A. M., Wenger, E., Bodammer, N. C., Kühn, S., Raz, N., & **Lindenberger, U.** (2018). Assessing reliability in neuroimaging research through intra-class effect decomposition (ICED). *eLife, 7,* Article e35718. https://doi.org/10.7554/eLife.35718

Brosnan, M. B., Demaria, G., Petersen, A., Dockree, P. M., Robertson, I. H., & **Wiegand, I.** (2018). Plasticity of the right-lateralized cognitive reserve network in ageing. *Cerebral Cortex, 28*(5), 1749–1759. https://doi.org/10.1093/cercor/bhx085

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