Sofie Louise Valk

Research group leader | Cognitive neurogenetics
cng-lab.github.io

Employment and education

2020-present	Otto Hahn Research Group leader 'Cognitive Neurogenetics' Max Planck Institute for Human Cognitive and Brain Sciences Leipzig, Germany
2020-present	Research Group leader 'Cognitive Neurogenetics' FZ Jülich, Jülich, Germany
2017-2020	Postdoctoral researcher, Institute of Systems Neuroscience, Medical Faculty, Heinrich Heine University Düsseldorf, Düsseldorf, Germany
2017-2020	Guest researcher, Max Planck Institute for Human Cognitive and Brain Sciences Leipzig, Germany
2012-2017	PhD in social neurosciences: *The structure of the social brain: Dissociating socio-affective and socio-cognitive networks through the study of individual differences, brain plasticity, and disease models'* Supervisor: Prof. Dr. Tania Singer, Psychology Lebenswissenschaftliche Fakultät der Humboldt-Universität zu Berlin. Grade: *summa cum laude* IMPRS NeuroCom, PhD program, Max Planck Institute of Human Cognitive and Brain Sciences, Dept. Social Neuroscience, Stephanstrasse 1a 04103 Leipzig, Germany
2010-2012	MSc. Brain and Cognitive Sciences, Direction: Cognitive Sciences. University of Amsterdam, Science Park 904, 1098 XH, Amsterdam, the Netherlands.
2005-2010	BSc. BetaGamma; Artificial Intelligence and Philosophy. University of Amsterdam, Science Park 904, 1098 XH, Amsterdam, the Netherlands.

Publications

1. **Sofie L. Valk** et al (accepted) Shaping Brain Structure: Genetic and Phylogenetic Axes of Macro Scale Organization of Cortical Thickness.
2. **Sofie L. Valk**, Felix Hoffstaedter, Julia Camilleri, Peter Kochunov, B.T.Thomas Yeo, Simon B. Eickhoff (2020) Personality and local brain structure: their shared genetic basis and reproducibility. *NeuroImage*
3. Natalia Z. Bielczyk, Ayaka Ando, AmanPreet Badhwar, Chiara Caldinelli, Mengxia Gao, Amelie Haugg, Leanna M. Hernandez, Kaori L. Ito, Dan Kessler, Dan Lurie, Meena M. Makary, Aki Nikolaidis, Michele Veldsman, Christopher Allen, Adriana Bankston, Katherine L. Bottenhorn, Ricarda Braukmann, Vince Calhoun, Veronika Cheplygina, Catarina Costa Boffino, Ece Ercan, Karolina Finc Heidi Foo, Ali Khatibi, Christian LaDavid, M.A. Mehler, Sridar Narayanan, Russell A. Poldrack, Pradeep Reddy Raamana, Taylor Salo, Claire Godard-Sebillotte, Lucina Q. Uddin, Davide Valeriani, **Sofie L. Valk**, Courtney C. Walton, Phillip G.D. Ward, Julio A. Yanes, and Xinqi Zhou, and

OHBM Student and Postdoc Special Interest Group (2020) Effective self-management for early career researchers in the natural sciences. *Neuron*

4. Masoud Tahmasian, Fateme Samea, Habibolah Khazaie, Mojtaba Zarei, Shahrzad Kharabian, Felix Hoffstaedter, Julia A. Camilleri, Peter Kochunov, B.T. Thomas Yeo, Simon B. Eickhoff, **Sofie L. Valk** (2020) Phenotypic and genetic correlation between sleep, behavior, and macroscale cortical grey matter. *Nature Communications Biology*
5. Shahrzad Kharabian Masouleh, Simon B. Eickhoff, Yashar Zeighami, Lindsay B. Lewis, Robert Dahnke, Christian Gaser, Francois Chouinard-Decorte, Claude Lepage, Lianne H. Scholtens, Felix Hoffstaedter, David C. Glahn, John Blangero, Alan C. Evans, Sarah Genon, **Sofie Valk** (2020), Influence of processing pipeline on cortical thickness measurement, *Cerebral Cortex*
6. Roman Linz, **Sofie L Valk**, Pascal Vrticka, Reinder Vos der Wael, Andrea Bernasconi, Neda Bernasconi, Benoit Caldairou, Ioannis Papassotiriou, George P Chrousos, Boris C Bernhardt, Tania Singer, Veronika Engert. (2019) The association between hippocampal structure and serum brain-derived neurotrophic factor (BDNF) in healthy adults: a proposed registered report.
7. Vos de Wael R, Benkarim O, Paquola C, Larivière S, Royer J, Tavakol S, Hong S, Xu T, **Valk SL**, Milham MP, Margulies DS, Smallwood J, Bernhardt BC (2019) BrainSpace: a toolbox for the analysis of macroscale gradients in neuroimaging and connectomics datasets. *Nature Communications Biology*
8. Pullman, L., **Valk, S.L**., Engert, V. Bernhardt B.C., Lin, J., Epel, E.S. Vritcka, P., Singer, T., (2019) Short-term change in leukocyte telomere length: relation to cortical thickness and effects of mental training in a randomized clinical trial. *Jama Open*
9. Martijn van den Heuvel et al., (2019) 10Kin1day: A bottom-up neuroimaging initiative. *Frontiers in Neurology.*
10. Hong, S.J., Smallwood, J., **Valk, S.L**., Margulies, D., Bethlehem, R., Di Martino, A., Milham, M.P., Bernhardt, B.C. (2019) Atypical functional connectome hierarchy in autism. *Nature Communications*
11. Lumma, A.L.*, **Valk, S.L.***, Boeckler, A., Vrticka, P., Singer, T., (2018) Change in Emotional Self-Concept following Socio-Cognitive Training relates to Structural Plasticity of the Prefrontal Cortex. *Brain and Behavior*
12. Hong, **S.J., Valk**, S.L., Di Martino, A., Milham, M.P., Bernhardt, B.C., (2017) Multidimensional Neuroanatomical Subtyping of Autism Spectrum Disorder. *Cerebral Cortex*, 1-11
13. **Valk, S.L**., Bernhardt B.C., Trautwein, F-M., Böckler, A., Kanske, P., Guizard, N., Louis Collins, D., Singer, T., (2017) Structural Plasticity of the Social Brain: Differential change after socio-affective and cognitive mental training, *Science Advances*
14. **Valk, S.L.***, Bernhardt B.C.*, Böckler, A., Kanske, P., Singer, T., (2016) Evidence for domain-specificity of metacognition on perception versus higher-order cognition at the level of behavior, cortical morphology, and white matter diffusion. *Human Brain Mapping*, 37(10), 3388-99
15. **Valk, S.L.**, Bernhardt B.C., Böckler, A., Trautwein, F-M., Kanske, P., Singer, T., (2016) Socio-cognitive phenotypes differentially modulate large-scale structural covariance networks. *Cerebral Cortex*

16. **Valk, S.L.**, DiMartino, A., Milham, M., Bernhardt, B.C., (2015). Multi-center mapping of structural network alterations in autism. *Human Brain Mapping*, 36(6), 2364-73
17. **Valk, S.L.***, Bernhardt, B. C*., Silani, G., Bird, G., Frith, U., & Singer, T. (2014). Selective disruption of socio-cognitive structural brain networks in autism and alexithymia. *Cerebral Cortex*, 24(12), 3258-3267. doi: 10.1093/cercor/bht182

(* indicates joint first authorship)

Book chapters

Bernhardt, B. C., Di Martino, A., Valk, S. L., Wallace, G. L.: Neuroimaging-based phenotyping of the autism spectrum. In: Current Topics in Behavioral Neurosciences. Springer, Berlin 2016

Presentations and invited talks

1. Nature and nurture of large-scale gradients, Feindel Lecture, MNI, Montreal
2. IMPRS Neurocom lecture 'Large-scale brain organization'
3. Shape of brain structure, Gradient workshop pre-OHBM (2020)
4. Cognitive Neurogenetics, INM-7, FZ Juelich – lab presentation (2020)
5. The shape of brain structure, OHBMx, (2020)
6. Nature and Nurture of Brain and Behavior, University of Oslo, Norway (2019)
7. Social behavior and brain structure, Brainstorm Festival, Vienna, Austria (2019)
8. Neurogenetic basis of personality, Cognomics conference, Nijmegen, The Netherlands (2019)
9. Interdisciplinary perspective on compassion and the effects of compassion training, symposium at ISRE 2019, Amsterdam, The Netherlands (2019)
10. Statistical methods, INSAR pre-conference nitty gritties, Montreal, Canada
11. Examining social influences on brain and behavior across development and aging, symposium at Psychologie und Gehirn, Giessen, Germany (2018)
12. Valk, S.L., Breaking the wall between us. Falling Walls Lab, Berlin, Germany (2017, November) – Global Final
13. Valk, S.L., Breaking the wall between us. Falling Walls Lab, Jülich, Germany (2017, September)
14. Valk, S.L., The structure of the social brain, presentation at Social Neuroscience lab, Max Planck Institute of Psychiatry, Munich, Germany (2017, April)
15. Möller, H. E., Bazin, P.-L., Mueller, K., Valk, S. L., Anwander, A., Schreiber, J., Steele, C., Neumann, J., Klados, M., Mehnert, J.: Spin resonance II & measurement and analysis of structural and functional brain data. Vorlesung: Lecture SS 2015, Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany, April 22, 2015 - July 15, 2015

Poster

1. Valk, S.L., Shaping Brain Structure. OHBM online conference (2020)
2. Valk, S.L., Shaping Brain Structure: OHBMx twitter conference (2020)
3. Valk, S.L., Genetic basis of macroscale functional and structural cortical organization, 25th Annual Meeting of the Organization for Human Brain Mapping (OHBM), Rome, Italy (2019)

4. Valk, S.L., Influence of parcellation granularity on heritability of brain cortical brain structure, 25th Annual Meeting of the Organization for Human Brain Mapping (OHBM), Rome, Italy (2019)
5. Hong SJ, Vos de Wael R, Bethlehem R, Larivière S, Paquola C, Valk S, Milham M, DiMartino A, Smallwood J, Margulies DS, Bernhardt BC (2018, November). Mapping atypical functional connectome organization and hierarchy in autism spectrum disorders. Abstract submitted to the 27th Annual Meeting of the International Society for Magnetic Resonance in Medicine, Montréal, Canada.
6. Valk, S.L., Shared genetic influences between personality traits and brain structure, 24th Annual Meeting of the Organization for Human Brain Mapping (OHBM), Singapore, Singapore (2018)
7. Valk, S. L., Bernhardt, B. C., Böckler, A., Singer, T.: Perceptual and cognitive metacognition have divergent structural substrates: A multi-modal MRI study. 21st Annual Meeting of the Organization for Human Brain Mapping (OHBM), Honolulu, HI, USA (2015)
8. Valk, S. L., Bernhardt, B. C., Böckler, A., Kanske, P., Trautwein, F.-M., Singer, T.: Divergent network substrates of individual differences in empathy and mentalizing. 21st Annual Meeting of the Organization for Human Brain Mapping (OHBM), Honolulu, HI, USA (2015)
9. Valk, S.L., Structural network markers of inter-individual differences in empathy and mentalizing, IMPRS Summerschool, London, UK (2014)
10. Skottnik, L., Bernhardt, B. C., Engen, H. G., Valk, S. L., Cordemans, B., Ricard, M., Singer, T.: Expert compassion meditators show cortical thickness increases in socio-affective brain networks. 20th Annual Meeting of the Organization for Human Brain Mapping (OHBM), Hamburg, Germany (2014)
11. Bernhardt, B. C., Valk, S.L., Silani, G., Bird, G., Frith, U., Singer, T. Disruption of socio-cognitive networks in autism and alexithymia: an MRI covariance analysis. 19th Annual Meeting of the Organization for Human Brain Mapping (OHBM), Seattle, WA, USA (2013).
12. Valk, S.L., Divergent disruption in social-cognitive structural networks in autism and alexithymia, Mind and Brain symposium, Berlin, Germany (2013)

Students

1. Nevena Kraljevic - MSc thesis, now PhD student at INM-7, FZ Jülich
2. Shared supervision of Lara Pullman and Roman Linz on brain-imaging projects
3. Seyma Bayrak – PhD student / lab member
4. Bin Wan – PhD student / lab member

Funding and awards

1. Otto Hahn Award : 3 to 5-year research group including 2 PhD students + 1 postdoctoral researcher + Sachmittel
2. Otto Hahn medal: 7500 euros awarded for doctoral thesis
3. Poster award: Social and Affective Neuroscience Society Meeting 2019
4. Lindau Nobel conference: Participation
5. Falling walls Germany: Finalist in Global final
6. IMPRS Neurocom stipend: Monthly PhD stipend from 08/2012 until 01/2017 (1365 euros)
7. Amsterdam University Fund: 500 euros funding for internship Berkeley University, 2012

8. Erasmus mundus scholarship: Funding for internship MPI in Leipzig, 2011

Reviewer

Biological Psychiatry, NeuroImage, Brain and Behaviour, Journal of Personality, PlosOne, Scientific Reports, Cerebral cortex, SCAN, Brain, Cortex, Nature Communications, Alexander von Humboldt Stiftung, Croatian Science Foundation

Extracurricular activities

2020	Gradient workshop, Montreal Canada (moved online)
2020	Mentor in mentoring program University of Aachen, Germany
2019	RealScientist, 1-week twitter curation
2019	Jury, Falling Walls lab Rheinland
2019	Hackathon, FZ Jülich, INM-ISN Retreat, co-initiator
2018	Mentor in mentoring program, University of Bonn, Germany
2017	Falling Walls Global Final, Berlin, Germany (Breaking the walls between us)
2017	Falling Walls Germany, Jülich, Germany (Breaking the walls between us)
2014-2016	OHBM student and postdoc SIC, student and postdoc social event in Honolulu Hawaii and Geneva Switzerland
2014-2016	Summer and winter party organization at Max Planck for Human Cognitive and Brain Sciences
2010	25th lustrum of rowing club Nereus, head of 'Lustrum rowing-games' and Lustrum committee
2009	Rowing world championship under 23, Racice, Czech Republic, lightweight quadruple
2008	Rowing world championship under 23, Brandenburg, Germany, lightweight double
2005	Rowing junior world championship, Brandenburg, Germany

Internships

2012	Attention training in order to reduce anxiety. Prof. Dr. Sonia Bishop, University of California, Berkeley, Affective Neuroscience Lab, 5315 Tolman Hall #1650, Dept Psychology, UC Berkeley, Berkeley, CA, 94720-1650
2012	Literature thesis: MRI-based network analysis on brain connectivity and its disruptions in Schizophrenia.
2011-2012	Structural network disruptions in Autism Spectrum Disorders. Prof.Dr. Tania Singer, Max Planck Institute of Human Cognitive and Brain Sciences, Dept. Social Neuroscience, Stephanstrasse 1a 04103 Leipzig, Germany
2010-2011	Altruistic punishment and revenge. Dr. Elise C. Seip, University of Amsterdam, Dept. Social Psychology, Roetersstraat 15, 1018 WB Amsterdam, the Netherlands
2010	BSc. Thesis (Philosophy): Difference in understanding counterfactual statements in young children and adults. Prof. Dr. Michiel van Lambalgen, University of Amsterdam, Faculty of Humanities

	Logic and Language, Oude Turfmarkt 141, 1012 GC, Amsterdam, the Netherlands
2010	BSc. Project (Artificial Intelligence): Logic of dynamical reasoning models. Prof. Dr. B. Bredeweg, University of Amsterdam, Informatics Institute, Science Park 107, 1098 XG Amsterdam, the Netherlands
2008	BSc. Thesis (Bèta-Gamma): Effects of caffeine as a performance-enhancing drug. Dr. P. Pekelharing, University of Amsterdam, Philosophy and Public Affairs, Science Park 107, 1098 XG Amsterdam, the Netherlands

Referees

Prof Dr. Boris Bernhardt
MICA neuroimaging Lab
MNI, McGill University
Montreal, Canada
eMail: boris.bernhardt@mcgill.ca

Prof Dr. Daniel Margulies
Neuroconnectivity and Anatomy Lab
Centre national de la recherche scientifique (CNRS)
CNRS UMR 7225, Institut du Cerveau et de la Moelle epiniere
eMail: daniel.margulies@icm-institute.org

Prof Dr. Simon Eickhoff
Director, Institute of Systems Neuroscience
Heinrich Heine University Düsseldorf
40225 Düsseldorf, Germany
eMail: Simon.Eickhoff@uni-duesseldorf.de
Director, Institute of Neuroscience and Medicine
(INM-7: Brain and Behaviour)
Research Centre Jülich,
52425 Jülich, Germany
eMail: S.Eickhoff@fz-juelich.de