Linden Parkes, Ph.D.

Assistant Professor, Rutgers University

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Research Interests

I am a **computational neuroscientist**. My research program focuses on two areas: (i) developing mechanistic computational models to study the biological basis of large-scale neural systems and (ii) using these models to understand the developmental emergence of psychopathology.

Academic Positions

Assistant Professor — **Piscataway, NJ**
Rutgers University, Department of Psychiatry — *August 2023 - present*

Postdoctoral Research Fellow — **Philadelphia, PA**
University of Pennsylvania, Department of Bioengineering — *July 2019 - June 2023*
- Advisors: Prof. Dani S. Bassett, Associate Prof. Theodore D. Satterthwaite

Visiting Scholar — **Nijmegen, The Netherlands**
Donders Institute for Brain, Cognition and Behaviour — *Sept. 2018 - Oct. 2018*
- Advisors: Prof. Christian Beckmann, Dr. Andre Marquand

Education

Doctor of Philosophy, Neuroscience & Psychiatry — **Melbourne, Australia**
Monash University — *March 2014 - June 2019*
- Thesis: Mapping brain networks in health and mental disorder with structural and functional Magnetic Resonance Imaging
- Advisors: Prof. Murat Yucel, Prof. Alex Fornito, Dr. Ben Fulcher

Bachelor of Science (with Honors), Psychology/Psychophysiology — **Melbourne, Australia**
Swinburne University of Technology — *2009 - 2013*
- Thesis: Mapping language processes using Magnetoencephalography.
- Advisor: Associate Prof. Conrad Perry
- Honors: First Class. Dux

Funding

Grants

K99/R00 Pathway to Independence Award — *Sept. 2021 - 2026*
National Institute of Mental Health (NIMH)
- Project: Developing prognostic neuroimaging biomarkers of the psychosis spectrum using network control theory

Young Investigator Award — *Jan. 2021 - Jan. 2023*
Brain & Behavior Research Foundation
- Project: Hybrid neurodevelopmental normative models for psychosis

Innovations Connections Grant — *2016 - 2017*
Department of Industry, Innovation and Science, Australia

Fellowships & Scholarships

Monash University Postgraduade Publication Award — *2018*
Monash University

Monash University Graduate Research Scholarship — *2014 - 2018*
Monash University

Australian Postgraduate Award Research Scholarship — *2014 - 2018*
Australian Government

Travel Awards

Domestic Travel Fellowship Award — *2022*
Society of Biological Psychiatry

Abstract Merit Award *2021*
Organization for Human Brain Mapping

Abstract Merit Award *2020*
Organization for Human Brain Mapping

Donders-Monash Erasmus Travel Award *2018*
Donders Institute for Brain, Cognition and Behaviour | Monash University

Future Leaders Travel Award *2015*
Monash Institute of Cognitive and Clinical Neurosciences

Select Publications

For a full list of my publications, see my *Google Scholar*.

First author

Parkes L, & Bassett DS (2023). Tracking Disordered Brain Dynamics in Psychiatry. *Biological Psychiatry*, 94 (7), 528-530.

Parkes L, Kim JZ, ..., Satterthwaite TD, & Bassett DS (2023). Using network control theory to study the dynamics of the structural connectome. *bioRxiv*.

Parkes L, ..., Satterthwaite TD & Bassett DS (2021). Network controllability in transmodal cortex predicts positive psychosis spectrum symptoms. *Biological Psychiatry*, 90 (6), 409-418.

Parkes L, ..., Satterthwaite TD & Bassett DS (2021). Transdiagnostic dimensions of psychopathology explain individuals' unique deviations from normative neurodevelopment in brain structure. *Translational Psychiatry*, 11 (1), 1-13.

Parkes L, Satterthwaite TD & Bassett DS (2020). Towards precise resting-state fMRI biomarkers in psychiatry: synthesizing developments in transdiagnostic research, dimensional models of psychopathology, and normative neurodevelopment. *Current Opinion in Neurobiology*, 65, 120-128.

Parkes L, ..., Fornito A, & Yucel M (2019). Transdiagnostic variations in impulsivity and compulsivity in obsessive-compulsive disorder and gambling disorder correlate with effective connectivity in cortical-striatal-thalamic-cortical circuits. *NeuroImage*, 202, 116070.

Parkes L, Fulcher B, Yucel M, & Fornito A (2018). An evaluation of the efficacy, reliability, and sensitivity of motion correction strategies for resting-state functional MRI. *NeuroImage*, 171, 415-436.

*Prochazkova L, ***Parkes L**, ..., Fontenelle LF, & Yucel M (2018). Unpacking the role of self-reported compulsivity and impulsivity in obsessive-compulsive disorder. *CNS spectrums*, 23 (1), 51-58.

**These authors contributed equally*

Parkes L, Fulcher B, Yucel M, & Fornito A (2017). Transcriptional signatures of connectomic subregions of the human striatum. *Genes, Brain and Behavior*, 16 (7), 647-663.

Parkes L, Perry C, & Goodin P (2016). Examining the N400m in affectively negative sentences. A magnetoencephalography study. *Psychophysiology*, 53 (5), 689-704.

Senior author

Betzel RA, ... & **Parkes L** (2024). Controlling the human connectome with spatially diffuse input signals. *bioRxiv*.

Kim JZ, Larsen B, & **Parkes L** (2023). Shaping dynamical neural computations using spatiotemporal constraints. *arXiv*.

Segrave RA, Hendrikse J, & **Parkes L** (2019). DBS, TMS and tDCS for obsessive compulsive disorder. In *A Transdiagnostic Approach to Obsessions, Compulsions and Related Phenomena*, 255-278. Cambridge University Press.

Consortium papers

Richie-Halford A, Cieslak M, Ai L, Caffarra S, Covitz S, Franco AR, Karipidis II, Kruper J, Milham M, Avelar-Pereira B, Roy E, Sydnor VJ, Yeatman J, **Fibr Community Science Consortium**, Satterthwaite TD, & Rokem A (2022). An open, analysis-ready, and quality controlled resource for pediatric brain white-matter research. *bioRxiv*.

Teaching Experience

Teacher's Assistant **Philadelphia, PA**
University of Pennsylvania, Department of Bioengineering *2020*
- Class: Network Neuroscience
- Course evaluation score: 3.57/4

Guest Lecturer **Philadelphia, PA**

University of Pennsylvania, Department of Bioengineering *2019*
- Class: Network Neuroscience

Guest Lecturer **Melbourne, Australia**
Monash University *2017 - 2018*
- Class: Neuroscience Methods

Recitation Tutor **Melbourne, Australia**
Swinburne University *2014 - 2015*
- Class: Undergraduate Psychology

Recitation Tutor **Melbourne, Australia**
Swinburne University *2013*
- Class: Undergraduate Physiology

Research Employment

Research Assisstant **Melbourne, Australia**
Monash Biomedical Imaging *2018*
- Analysis of positron emission tomography (PET) data

Research Engineer **Melbourne, Australia**
Torus Games & Cogstate *2016 - 2017*
- Developed gamified cognitive tests for neuroscience research

Magnetoencephalography Technician **Melbourne, Australia**
Swinburne Univerisity *2013*
- Collection, preprocessing, and analysis of Magnetoencephalography (MEG) data

Open Science Contributions

Toolkits

Network Control *Python*
`https://github.com/BassettLab/control_package`

Reproducibility

`https://github.com/lindenmp/nct_hierarchy` *Python*
- Code to reproduce results presented in *Parkes et al. (2022) Science Advances*

`https://github.com/lindenmp/neurodev_cs_predictive` *Python*
- Code to reproduce results presented in *Parkes et al. (2021) Biological Psychiatry*

`https://github.com/lindenmp/normative_neurodev_cs_t1` *Python*
- Code to reproduce results presented in *Parkes et al. (2021) Translational Psychiatry*

`https://github.com/lindenmp/rs-fMRI` *Matlab*
- Code to reproduce results presented in *Parkes et al. (2018) NeuroImage* and *Parkes et al. (2019) NeuroImage*

Presentations

Invited Lectures & Presentations

Association for Psychological Science, Chicago, IL *May 2022*
Available on YouTube

Feindel Virtual Brain and Mind Lecture Series, McGill University, Canada *May 2022*

Mount Sinai, New York City, NY *Mar. 2022*

Vanderbilt University, Nashville, TN *Mar. 2022*

Rutgers University, New Brunswick, NJ *Mar. 2022*

University of Manchester, Manchester, United Kingdom *Feb. 2022*

The Douglas Research Centre, Montreal, Canada *Feb. 2022*

University of California, Los Angeles, CA *Feb. 2022*

Georgia State University, Atlanta, GA *Nov. 2021*

University of Pittsburgh, Pittsburgh, PA *Oct. 2021*
Available on YouTube

Organization for Human Brain Mapping, Oral Presentation *Jun. 2021*

DataPhilly, Philadelphia, PA *Mar. 2021*
Available on YouTube

Organization for Human Brain Mapping, Symposium *Jun. 2020*

Organization for Human Brain Mapping, Oral Presentation *Jun. 2020*

University of Pennsylvania, Philadelphia, PA *Sep. 2018*

Centre of Excellence for Integrative Brain Function, Melbourne, Australia *Mar. 2018*

Swinburne Univerisity, Melbourne, Australia *Jun. 2016*

Students of Brain Research, Melbourne, Australia *Jun. 2015*

Australasian Cognitive Neuroscience Conference, Melbourne, Australia *Jun. 2013*

Academic Service

Journal Peer Review

- Biological Psychiatry, Communications Biology, Current Opinion in Behavioral Sciences, Developmental Cognitive Neuroscience, Harvard Review of Psychiatry, Human Brain Mapping, Imaging Neuroscience, International Gambling Studies, Journal of Cerebral Blood Flow & Metabolism, Journal of the American Academy of Child and Adolescent Psychiatry, Nature Protocols, Nature, Network Neuroscience, NeuroImage, NeuroImage: Clinical, Neuropsychologia, Proceedings of the National Academy of Sciences of the United States of America, Progress in Neuropsychopharmacology & Biological Psychiatry, Psychiatry Research: Neuroimaging, Psychological Medicine, Science Advances, Scientific Reports

Committees

Organization for Human Brain Mapping, Open Science Special Interest Group *2022 - 2023*
Treasurer

Organization for Human Brain Mapping, Student and Postdoc Special Interest Group *2019 - 2021*
Treasurer

Australasian Cognitive Neuroscience Society, Early Career Researchers Committee *2017*
Committee Member

Australasian Cognitive Neuroscience Society, Executive Committee *2017*
ECR Representative

Students of Brain Research *2016*
Treasurer

Supervision & Mentorship

Ahmad Beyh *2023 - present*
Postdoctoral Scholar, Rutgers University

Ashlea Segal *2023 - present*
Postdoctoral Scholar, Yale University

Ashlea Segal *2018 - 2022*
Graduate Student, Monash University

Tayla Currie *2018*
Undergraduate Honors Student, Monash University

John Fallon *2017*
Undergraduate Honors Student, Monash University

Luisa Prochazkova *2016*
International Visiting Scholar, Monash University

Kristina Sabaroedin *2016*
Undergraduate Honors Student, Monash University

Lauren Den Ouden *2016*
Undergraduate Honors Student, Monash University

Stuart Oldham *2016*
Undergraduate Honors Student, Monash University

Danielle Amiet *2016*
Undergraduate Honors Student, Monash University

Outreach & Community Engagement

International Mentoring Programme *2021-2024*
Organization for Human Brain Mapping, Student and Postdoc Special Interest Group

- Mentor

Neuroimaging Best Practices Beyond Open Science *2021*
Organization for Human Brain Mapping, Student and Postdoc Special Interest Group

- Moderator

Link with Mentors *2021*
Organization for Human Brain Mapping, Student and Postdoc Special Interest Group

- Moderator

Network Control Theory for Neuroscientists, Education Workshop *2020*
Organization for Human Brain Mapping

- Organizer, presenter

Link with Mentors *2020*
Organization for Human Brain Mapping, Student and Postdoc Special Interest Group

- Moderator

NeuroDay *2018*
Methodist Ladies' College, Melbourne, Australia

- Organizer, presenter

BMH Mentor Forum *2018*
Brain & Mental Health Research Hub, Monash University

- Organizer, mentor

MBI Student Forum *2014 - 2015*
Monash Biomedical Imaging, Monash University

- Organizer, mentor, presenter