Linden Parkes, Ph.D.

K99/R00 Postdoctoral Research Fellow, University of Pennsylvania

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Research Interests

I am a **computational neuroscientist** seeking to uncover the pathways that track the emergence of psychopathology. I approach this goal from a neurobiological perspective by studying how complex neural systems shape behavior and cognition, and how dysfunction in these systems predicts psychopathology.

Academic Positions

Postdoctoral Research Fellow   **Philadelphia, PA**
University of Pennsylvania, Department of Bioengineering   *July 2019 - present*
- 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

Career Transition Awards

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
- $1,424,194 USD

Fellowships & Scholarships

Young Investigator Award   *Jan. 2021 - Jan. 2023*
Brain & Behavior Research Foundation
- Project: Hybrid neurodevelopmental normative models for psychosis
- $70,000 USD

Monash University Postgraduade Publication Award   *2018*
Monash University
- $6,300 AUD

Monash University Graduate Research Scholarship   *2014 - 2018*
Monash University
- $20,000 AUD

Australian Postgraduate Award Research Scholarship   *2014 - 2018*
Australian Government
- $91,000 AUD

Grants

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

- $50,000 AUD
- Associate investigator

Travel Awards

Domestic Travel Fellowship Award *2022*
Society of Biological Psychiatry
- $2,000 USD

Abstract Merit Award *2021*
Organization for Human Brain Mapping
- virtual, no monetary component

Abstract Merit Award *2020*
Organization for Human Brain Mapping
- $3,000 USD

Donders-Monash Erasmus Travel Award *2018*
Donders Institute for Brain, Cognition and Behaviour | Monash University
- $3,200 AUD

Future Leaders Travel Award *2015*
Monash Institute of Cognitive and Clinical Neurosciences
- $5,000 AUD

Select Publications

For a complete list of my publications and preprints see my Google Scholar

Postdoc papers

1. **Parkes L**, Moore TM, Calkins ME, Cieslak M, Roalf DR, Wolf DH, Gur RC, Gur RE, Satterthwaite TD & Bassett DS (2021). Network controllability in transmodal cortex predicts positive psychosis spectrum symptoms. *Biological Psychiatry*.

2. **Parkes L**, Moore TM, Calkins ME, Cook PA, Cieslak M, Roalf DR, Wolf DH, Gur RC, Gur RE, Satterthwaite TD & Bassett DS (2021). Transdiagnostic dimensions of psychopathology explain individuals' unique deviations from normative neurodevelopment in brain structure. *Translational Psychiatry*.

3. **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*.
- Invited opinion piece

PhD papers

4. **Parkes L**, Tiego J, Aquino K, Braganza L, Chamberlain SR, Fontenelle L, Harrison BJ, Lorenzetti V, Paton B, Razi A, 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*.

5. **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*.
- *The 4th most cited paper in NeuroImage since 2018*

6. **Parkes L**, Fulcher B, Yucel M, & Fornito A (2017). Transcriptional signatures of connectomic subregions of the human striatum. *Genes, Brain and Behavior*.
- Amongst the top 20 downloaded from the journal in 2017

7. *Prochazkova L, ***Parkes L**, Dawson A, Youssef G, Ferreira GM, Lorenzetti V, Segrave RA, Fontenelle LF, & Yucel M (2017). Unpacking the role of self-reported compulsivity and impulsivity in obsessive-compulsive disorder. *CNS spectrums*.

These authors contributed equally

Undergraduate papers

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

Book chapters

9. 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*. Cambridge University Press

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`	

Predictive Clinical Neuroscience	Python
`https://github.com/amarquand/PCNtoolkit`	

Reproducibility

`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

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*

Posters (first-author)

Network controllability in transmodal cortex predicts positive psychosis spectrum symptoms Organization for Human Brain Mapping	*2021*
Network controllability in transmodal cortex predicts positive psychosis spectrum symptoms Society of Biological Psychiatry	*2021*
Psychopathology explain individual's unique deviations from normative neurodevelopment Organization for Human Brain Mapping	*2020*
Impulsivity and compulsivity correlate with effective connectivity in corticostriatal circuits Organization for Human Brain Mapping	*2019*
Impulsivity and compulsivity correlate with effective connectivity in corticostriatal circuits Australasian Cognitive Neuroscience Conference	*2018*
Evaluating the efficacy and sensitivity of motion correction strategies for rs-fMRI Organization for Human Brain Mapping	*2018*
Efficacy, reliability, and sensitivity of motion correction strategies for resting-state functional MRI IEEE International Symposium on Biomedical Imaging	*2017*
Efficacy, reliability, and sensitivity of motion correction strategies for resting-state functional MRI Students of Brain Research	*2017*

Academic Service

Journal Peer Review

- Science Advances, Nature Protocols, NeuroImage, Human Brain Mapping, Network Neuroscience, Scientific Reports, Biological Psychiatry, Psychological Medicine, Neuropsychologia, Developmental Cognitive Neuroscience, NeuroImage: Clinical, Psychiatry Research: Neuroimaging, Harvard Review of Psychiatry, International Gambling Studies, Journal of Cerebral Blood Flow & Metabolism

Committees

Organization for Human Brain Mapping, Open Science Special Interest Group Treasurer	*2022 - 2023*
Organization for Human Brain Mapping, Student and Postdoc Special Interest Group Treasurer	*2019 - 2021*
Australasian Cognitive Neuroscience Society, Early Career Researchers Committee Committee Member	*2017*
Australasian Cognitive Neuroscience Society, Executive Committee	*2017*

ECR Representative

Students of Brain Research *2016*

Treasurer

Supervision & Mentorship

Ashlea Segal *2018 - present*

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

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

International Mentoring Programme *2021*

Organization for Human Brain Mapping, Student and Postdoc Special Interest Group

- Mentor

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