

# Linden Parkes, Ph.D.

K99/R00 Postdoctoral Research Fellow, University of Pennsylvania

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 lindenmp

 LindenParkes

## Research Interests

I am a **computational neuroscientist** working on understanding the biological basis of **psychiatric disorders**. My research uses **magnetic resonance imaging** and draws on tools from **network science** and **data science** to better understand the brain-phenotype relationships that are relevant to, and predictive of, mental illness.

## Academic Positions

### Postdoctoral Research Fellow

University of Pennsylvania, Department of Bioengineering

○ Advisors: Prof. Dani S. Bassett, Associate Prof. Theodore D. Satterthwaite

Philadelphia, PA

July 2019 - present

### Visiting Scholar

Donders Institute for Brain, Cognition and Behaviour

○ Advisors: Prof. Christian Beckmann, Dr. Andre Marquand

Nijmegen, The Netherlands

Sept. 2018 - Oct. 2018

## Education

### Doctor of Philosophy, Neuroscience & Psychiatry

Monash University

○ 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

Melbourne, Australia

March 2014 - June 2019

### Bachelor of Science (with Honors), Psychology/Psychophysiology

Swinburne University of Technology

○ Thesis: Mapping language processes using Magnetoencephalography.

○ Advisor: Associate Prof. Conrad Perry

○ Honors: First Class. Dux

Melbourne, Australia

2009 - 2013

## Funding

### Career Transition Awards

#### K99/R00 Pathway to Independence Award

National Institute of Mental Health (NIMH)

○ Project: Developing prognostic neuroimaging biomarkers of the psychosis spectrum using network control theory

○ \$1,424,194 USD

Sept. 2021 - 2026

### Fellowships & Scholarships

#### Young Investigator Award

Brain & Behavior Research Foundation

○ Project: Hybrid neurodevelopmental normative models for psychosis

○ \$70,000 USD

Jan. 2021 - Jan. 2023

#### Monash University Postgraduate Publication Award

Monash University

○ \$6,300 AUD

2018

#### Monash University Graduate Research Scholarship

Monash University

○ \$20,000 AUD

2014 - 2018

#### Australian Postgraduate Award Research Scholarship

Australian Government

○ \$91,000 AUD

2014 - 2018

### Grants

#### Innovations Connections Grant

Department of Industry, Innovation and Science, Australia

2016 - 2017

- \$50,000 AUD
- Associate investigator

## Travel Awards

### 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 (9 of 31)

Citations = 794, h-index = 15, i10-index = 18

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**, Tiegio 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

University of Pennsylvania, Department of Bioengineering

- Class: Network Neuroscience
- Course evaluation score: 3.57/4

Philadelphia, PA

2020

### Guest Lecturer

University of Pennsylvania, Department of Bioengineering

- Class: Network Neuroscience

Philadelphia, PA

2019

### Guest Lecturer

Monash University

- Class: Neuroscience Methods

Melbourne, Australia

2017 - 2018

### Recitation Tutor

Swinburne University

- Class: Undergraduate Psychology

Melbourne, Australia

2014 - 2015

### Recitation Tutor

Swinburne University

- Class: Undergraduate Physiology

Melbourne, Australia

2013

## Research Employment

### Research Assistant

Monash Biomedical Imaging

- Analysis of positron emission tomography (PET) data

Melbourne, Australia

2018

### Research Engineer

Torus Games & Cogstate

- Developed gamified cognitive tests for neuroscience research

Melbourne, Australia

2016 - 2017

### Magnetoencephalography Technician

Swinburne University

- Collection, preprocessing, and analysis of Magnetoencephalography (MEG) data

Melbourne, Australia

2013

## Open Science Contributions

### Toolkits

#### Network Control

[https://github.com/BassettLab/control\\_package](https://github.com/BassettLab/control_package)

 Python

#### Predictive Clinical Neuroscience

<https://github.com/amarquand/PCNtoolkit>

 Python

### Reproducibility

[https://github.com/lindenmp/neurodev\\_cs\\_predictive](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](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

### Oral

#### Network controllability in transmodal cortex predicts positive psychosis spectrum symptoms

2021

Organization for Human Brain Mapping

- 3-minute summary available on [YouTube](#)

#### Network Neuroscience

2021

DataPhilly

- Invited talk

- Available on [YouTube](#)

**Average controllability better predicts cognition when compared to strength** 2020

Organization for Human Brain Mapping

- Symposium

**Psychopathology explain individual's unique deviations from normative neurodevelopment** 2020

Organization for Human Brain Mapping

**Dimensional psychiatry in corticostriatal circuits: lessons learnt from resting-state fMRI data** 2018

University of Pennsylvania

- Invited talk

**Transdiagnostic biomarkers in psychiatry** 2018

Centre of Excellence for Integrative Brain Function, Melbourne, Australia

- Invited talk

**Confounds in rs-fMRI processing** 2016

Swinburne University, Melbourne, Australia

- Invited talk

**Transcriptional signatures of connectomic subregions of the human striatum** 2015

Students of Brain Research, Melbourne, Australia

**Examining the N400m in affectively negative sentences. A magnetoencephalography study** 2013

Australasian Cognitive Neuroscience Conference

## Posters (first-author).....

**Network controllability in transmodal cortex predicts positive psychosis spectrum symptoms** 2021

Organization for Human Brain Mapping

**Network controllability in transmodal cortex predicts positive psychosis spectrum symptoms** 2021

Society of Biological Psychiatry

**Psychopathology explain individual's unique deviations from normative neurodevelopment** 2020

Organization for Human Brain Mapping

**Impulsivity and compulsivity correlate with effective connectivity in corticostriatal circuits** 2019

Organization for Human Brain Mapping

**Impulsivity and compulsivity correlate with effective connectivity in corticostriatal circuits** 2018

Australasian Cognitive Neuroscience Conference

**Evaluating the efficacy and sensitivity of motion correction strategies for rs-fMRI** 2018

Organization for Human Brain Mapping

**Efficacy, reliability, and sensitivity of motion correction strategies for resting-state functional MRI** 2017

IEEE International Symposium on Biomedical Imaging

**Efficacy, reliability, and sensitivity of motion correction strategies for resting-state functional MRI** 2017

Students of Brain Research

## Academic Service

### Journal Peer Review.....

- 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, 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

### 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