

# 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

*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 (Honors)

*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

*2021 - 2022*

#### 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 = 750, h-index = 14, i10-index = 17

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](#).
- Amongst the top 20 downloaded from the journal in 2018
  - In the top 0.01% most cited publications relative to other publications in 2018 in the field of Neuroscience
  - 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

## 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](#)

|  |      |
|--|------|
| <b>Network Neuroscience</b>  | 2021 |
| DataPhilly   |      |
| <ul style="list-style-type: none"> <li>Invited talk</li> <li>Available on <a href="#">YouTube</a></li> </ul>   |      |
| <b>Average controllability better predicts cognition when compared to strength</b>                             | 2020 |
| Organization for Human Brain Mapping   |      |
| <ul style="list-style-type: none"> <li>Symposium</li> </ul>  |      |
| <b>Psychopathology explain individual's unique deviations from normative neurodevelopment</b>                  | 2020 |
| Organization for Human Brain Mapping   |      |
| <b>Dimensional psychiatry in corticostriatal circuits: lessons learnt from resting-state fMRI data</b>         | 2018 |
| University of Pennsylvania   |      |
| <ul style="list-style-type: none"> <li>Invited talk</li> </ul>   |      |
| <b>Transdiagnostic biomarkers in psychiatry</b>  | 2018 |
| Centre of Excellence for Integrative Brain Function, Melbourne, Australia                                      |      |
| <ul style="list-style-type: none"> <li>Invited talk</li> </ul>   |      |
| <b>Confounds in rs-fMRI processing</b>   | 2016 |
| Swinburne University, Melbourne, Australia   |      |
| <ul style="list-style-type: none"> <li>Invited talk</li> </ul>   |      |
| <b>Transcriptional signatures of connectomic subregions of the human striatum</b>                              | 2015 |
| Students of Brain Research, Melbourne, Australia   |      |
| <b>Examining the N400m in affectively negative sentences. A magnetoencephalography study</b>                   | 2013 |
| Australasian Cognitive Neuroscience Conference   |      |
| <b>Posters (first-author)</b> .....  |      |
| <b>Network controllability in transmodal cortex predicts positive psychosis spectrum symptoms</b>              | 2021 |
| Organization for Human Brain Mapping   |      |
| <b>Network controllability in transmodal cortex predicts positive psychosis spectrum symptoms</b>              | 2021 |
| Society of Biological Psychiatry   |      |
| <b>Psychopathology explain individual's unique deviations from normative neurodevelopment</b>                  | 2020 |
| Organization for Human Brain Mapping   |      |
| <b>Impulsivity and compulsivity correlate with effective connectivity in corticostriatal circuits</b>          | 2019 |
| Organization for Human Brain Mapping   |      |
| <b>Impulsivity and compulsivity correlate with effective connectivity in corticostriatal circuits</b>          | 2018 |
| Australasian Cognitive Neuroscience Conference   |      |
| <b>Evaluating the efficacy and sensitivity of motion correction strategies for rs-fMRI</b>                     | 2018 |
| Organization for Human Brain Mapping   |      |
| <b>Efficacy, reliability, and sensitivity of motion correction strategies for resting-state functional MRI</b> | 2017 |
| IEEE International Symposium on Biomedical Imaging   |      |
| <b>Efficacy, reliability, and sensitivity of motion correction strategies for resting-state functional MRI</b> | 2017 |
| Students of Brain Research   |      |

## Academic Service

|  |             |
|--|-------------|
| <b>Journal Peer Review</b> .....   |             |
| <ul style="list-style-type: none"> <li>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 &amp; Metabolism</li> </ul> |             |
| <b>Committees</b> .....  |             |
| <b>Organization for Human Brain Mapping, Student and Postdoc Special Interest Group</b>  | 2019 - 2021 |
| Treasurer  |             |
| <b>Australasian Cognitive Neuroscience Society, Early Career Researchers Committee</b>   | 2017        |
| Committee Member   |             |

|  |                |
|--|----------------|
| <b>Australasian Cognitive Neuroscience Society, Executive Committee</b><br>ECR Representative  | 2017           |
| <b>Students of Brain Research</b><br>Treasurer   | 2016           |
| <b>Supervision &amp; Mentorship</b> .....  |                |
| <b>Ashlea Segal</b><br>Graduate Student, Monash University   | 2018 - present |
| <b>Tayla Currie</b><br>Undergraduate Honors Student, Monash University   | 2018           |
| <b>John Fallon</b><br>Undergraduate Honors Student, Monash University  | 2017           |
| <b>Luisa Prochazkova</b><br>International Visiting Scholar, Monash University  | 2016           |
| <b>Kristina Sabaroedin</b><br>Undergraduate Honors Student, Monash University  | 2016           |
| <b>Lauren Den Ouden</b><br>Undergraduate Honors Student, Monash University   | 2016           |
| <b>Stuart Oldham</b><br>Undergraduate Honors Student, Monash University  | 2016           |
| <b>Danielle Amiet</b><br>Undergraduate Honors Student, Monash University   | 2016           |
| <b>Outreach &amp; Community Engagement</b> .....   |                |
| <b>Neuroimaging Best Practices Beyond Open Science</b><br>Organization for Human Brain Mapping, Student and Postdoc Special Interest Group | 2021           |
| ○ Moderator  |                |
| <b>Link with Mentors</b><br>Organization for Human Brain Mapping, Student and Postdoc Special Interest Group                               | 2021           |
| ○ Moderator  |                |
| <b>International Mentoring Programme</b><br>Organization for Human Brain Mapping, Student and Postdoc Special Interest Group               | 2021           |
| ○ Mentor   |                |
| <b>Network Control Theory for Neuroscientists, Education Workshop</b><br>Organization for Human Brain Mapping                              | 2020           |
| ○ Organizer, presenter   |                |
| <b>Link with Mentors</b><br>Organization for Human Brain Mapping, Student and Postdoc Special Interest Group                               | 2020           |
| ○ Moderator  |                |
| <b>NeuroDay</b><br>Methodist Ladies' College, Melbourne, Australia   | 2018           |
| ○ Organizer, presenter   |                |
| <b>BMH Mentor Forum</b><br>Brain & Mental Health Research Hub, Monash University   | 2018           |
| ○ Organizer, mentor  |                |
| <b>MBI Student Forum</b><br>Monash Biomedical Imaging, Monash University   | 2014 - 2015    |
| ○ Organizer, mentor, presenter   |                |