# 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

**University of Manchester, Manchester** — *Feb. 2022*

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

**University of California, Los Angeles** *Feb. 2022*
**Georgia State University, Atlanta** *Nov. 2021*
**University of Pittsburgh, Pittsburgh** *Oct. 2021*
—Available on YouTube
**Organization for Human Brain Mapping, Oral Presentation** *Jun. 2021*
**DataPhilly, Philadelphia** *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** *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** *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

- 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** *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

**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