

# HALLEE SHEARER

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BOSTON, MA

## EDUCATION

### UNIVERSITY OF BRITISH COLUMBIA

#### Master of Science, Neuroscience

GPA: 89%; Thesis grade: 95%

- Supervisor: Dr. Tamara Vanderwal
- Thesis: Movie-fMRI as an acquisition state for functional connectivity-based precision psychiatry

Vancouver, BC

2021-2023

### UNIVERSITY OF BRITISH COLUMBIA

#### Bachelor of Science, Behavioural Neuroscience (Co-operative Education Program)

GPA: 83%

Vancouver, BC

2016-2021

## FUNDING & AWARDS

Faculty of Medicine Graduate Award - UBC (\$300)	2023
Best Lightning Talk Award – UBC Psychiatry Research Day (\$500)	2023
Canadian Graduate Scholarship – Master’s - Canadian Institute of Health Research (\$17,500)	2022
UBC Graduate Student Travel Award (\$500)	2022
UBC Graduate Program in Neuroscience Travel Award (\$500)	2022
Faculty of Medicine Graduate Award - UBC (\$4,500)	2021
Faculty of Medicine Summer Student Research Award - UBC (\$2,800)	2021
Virtual Knowledge Exchange Grant - BC Children’s Hospital Research Institute (\$250)	2021
BioTalent Canada’s Student Work Placement Program (\$7,000)	2020
Dean’s Honour List - UBC	2016-2021

## PUBLICATIONS

### PEER-REVIEWED PUBLISHED MANUSCRIPTS

1. Frew, S, Samara, A, **Shearer, H**, Eilbott, J, & Vanderwal, T (2022) Getting the nod: Pediatric head motion in a transdiagnostic sample during movie-and resting-state fMRI. PloS one, 17(4), e0265112.

### MANUSCRIPTS SUBMITTED AND UNDER REVIEW

1. **Shearer, H**, Eilbott, J, Vila-Rodriguez, F, Noble, S, Vanderwal, T (2024) Comparing reliability of functional connectivity between movie and rest in psychiatric regions of interest.
2. **Shearer, H**, Vila-Rodriguez, F, Vanderwal, T (2023) Movie fMRI as an acquisition state for the identification of personalized rTMS targets.

### MANUSCRIPTS IN PREPARATION

1. **Shearer, H** & Noble, S. BrainEffeX: a Shiny web app for exploring typical effect sizes for fMRI studies.
2. **Shearer, H** & Noble, S. Approaches for statistical comparison of test-retest reliability measures.
3. Ge, R, Gregory, L, Samara, A, **Shearer, H**, Humaira, A, MacMillan, E, Barlow, E, Frangou, S, Vanderwal, T, Vila-Rodriguez, F. Acute network-based functional connectivity perturbations induced during 1Hz TMS for Treatment Refractory Depression
4. Fischbach, A, **Shearer, H**, Satpute, A, Quigley, K, Theriault, J, Barrett, L, Noble, S. Comparative analysis of cerebrospinal fluid artifact removal methods in subcortical structures: implications for functional connectivity and task-based activation using 7-Tesla fMRI.

5. Fischbach, A, **Shearer, H**, Satpute, A, Quigley, K, Theriault, J, Barrett, L, Noble, S. Unmasking reliability: the impact of subject-specific masks on intra-subject reliability of subcortical connectivity in resting-state.

## RESEARCH EXPERIENCE

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**NORTHEASTERN UNIVERSITY** **Boston, MA**  
**Center for Cognitive and Brain Health,** **2023-Present**  
**Neuroscience Precision Research & Idiographic Statistical Methods (NeuroPRISM) Laboratory**

- Research Technician
- Supervisor: Dr. Stephanie Noble
- Leveraging large existing fMRI datasets to define typical study effects and developing an interactive web app (R Shiny) to explore the results
- Leading a project to develop recommendations for the statistical comparison of test-retest reliability estimates

**UNIVERSITY OF BRITISH COLUMBIA** **Vancouver, BC**  
**Department of Psychiatry, Naturalistic Neuroimaging Lab** **2021-2023**

- Master's Student
- Supervisor: Dr. Tamara Vanderwal
- Compared test-retest reliability estimates of functional connectivity across movie-watching and resting-state for psychiatric applications

**UNIVERSITY OF BRITISH COLUMBIA** **Vancouver, BC**  
**Department of Psychiatry, Naturalistic Neuroimaging Lab** **2020-2021**

- Research Assistant, Co-operative education position
- Supervisor: Dr. Tamara Vanderwal
- Investigated graph theory metrics of functional connectivity in childhood-onset OCD

**UNIVERSITY OF BRITISH COLUMBIA** **Vancouver, BC**  
**Department of Psychiatry, Non-Invasive Neurostimulation Therapies Lab** **2019-2020**

- Research Assistant, Co-operative education position
- Supervisor: Dr. Fidel Vila-Rodriguez
- Administered Transcranial Magnetic Stimulation treatments in the context of clinical trials

**UNIVERSITY OF BRITISH COLUMBIA** **Vancouver, BC**  
**Department of Psychology, Evolutionary Social Cognition Lab** **2018-2019**

- Research Assistant
- Supervisor: Dr. Mark Schaller
- Investigated the evolutionary basis of political conservatism

## INVITED TALKS

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**University of Melbourne (virtual) - Systems Lab** **2024**

Movie-fMRI as an acquisition state for FC-based precision psychiatry

**Northeastern University - Social Development and Wellbeing Lab** **2024**

Introduction to movie-fMRI

## TEACHING EXPERIENCE

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**NORTHEASTERN UNIVERSITY** **Boston, MA**  
**Department of Psychology** **2024**

- PSYC7250: A data science toolkit for human neuroscience research

## MENTORSHIP EXPERIENCE

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### Research Assistants:

Will Clarke, B.Sc., *Naturalistic Neuroimaging Lab Undergraduate Research Assistant, UBC* **2022-2023**  
 Meghan Smith, B.Sc., *Naturalistic Neuroimaging Lab Undergraduate Research Assistant, UBC* **2022-2023**

### High-school Students:

Samuel Joseph, *NeuroPRISM Summer Intern* **Summer 2024**  
 Ariadne Weber-Madison, *Naturalistic Neuroimaging Lab Summer Intern* **Summer 2023**

## WORKSHOPS & SUMMER SCHOOLS

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**Neurohackademy** **2024**

A two-week summer school at the University of Washington in Seattle, focused on neuroimaging, machine learning, reproducible data science, computer programming, and open science.

**Brainhack Boston: NEU** **2024**

Organized and attended a full-day hackathon centered around developing a center-wide preprocessing pipeline.

**Beyond Blobology: advances in statistical inference for neuroimaging** **2023**

A one-day course at OHBM in Montreal focusing on current topics in neuroimaging statistics.

**UBC fMRI Bootcamp** **2022**

A one-week full-time introduction to fMRI preprocessing and analysis.

**Neuromatch Academy** **2021**

A three-week full-time computational neuroscience course.

## SELECTED COURSES

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**Introduction to Data Science** **2022**

**Psychopathology of the Adult** **2022**

**Intermediate Statistics for Application** **2021**

**Systematic Program Design** **2021**

**Cognitive Neuroscience** **2019**

## AD-HOC REVIEW

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**Review profile:** <https://www.webofscience.com/wos/author/record/KFS-0665-2024>

- Neuron, Human Brain Mapping, Developmental Cognitive Neuroscience, Scientific Reports

## CONFERENCE PRESENTATIONS

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**Shearer H** (2023) Movie-fMRI as an alternative to rest for FC-based precision psychiatric research. *UBC Psychiatry Research Day 2023*.

## CONFERENCE POSTERS

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**Shearer H**, Rosenblatt M, Ye J, Jiang R, Tejavibulya L, Liang Q, Dadashkarimi J, Westwater M, Cheng I, Rolison M, Peterson H, Adkinson B, Mehta S, Camp C, Curtiss J, Scheinost D, Noble S. (2024) BrainEffeX: A Shiny app to explore typical effect sizes in functional neuroimaging research. *Cognitive Neuroscience Society 2024*.

Fischbach A, **Shearer H**, Satpute A, Quigley K, Theriault J, Barrett L, Noble S. (2024) Assessing the impact of subject-specific masks on reliability of subcortical connectivity. *Cognitive Neuroscience Society 2024*.

**Shearer H**, Vila-Rodriguez F, Vanderwal T. (2023) Movie-fMRI as an alternative to rest for FC-based precision psychiatric research. *OHBM 2023*.

Samara A, Ge R, Gregory E, **Shearer H**, Vila-Rodriguez F, Vanderwal T. (2023) Acute FC changes during concurrent rTMS-fMRI for depression: a network-based approach. *OHBM 2023*.

**Shearer H**, Samara A, Eilbott J, Vila-Rodriguez F, Vanderwal T. (2022) On Location: Testing the use of movie-fMRI for individualized target localization for TMS. *OHBM 2022*.

Samara A, Eilbott J, **Shearer H**, Xu T, Vanderwal T. (2022) Gradients go to the movies: Macroscale cortical organization during naturalistic viewing. *OHBM 2022*.

**Shearer H**, Eilbott J, Steward SE, Vanderwal T. (2021) Graph theory analyses in childhood-onset OCD yield negative results. *OHBM 2021*.

Frew S, Samara A, **Shearer H**, Eilbott J, Vanderwal T. (2021) Getting the Nod: Characterizing pediatric head motion in movie- and resting-state fMRI. *OHBM 2021*.

**Shearer H**, Eilbott J, Stewart SE, Vanderwal T. (2021) Graph theory analysis of fMRI data in pediatric OCD. *UBC Multidisciplinary Undergraduate Research Conference 2021*.

## PROFESSIONAL MEMBERSHIPS

<b>Cognitive Neuroscience Society Member</b>	<b>2024</b>
<b>Organization for Human Brain Mapping</b>	<b>2020 - 2024</b>

## LEADERSHIP & SERVICE

<b>Screening Committee for Prospective Graduate Students and Postdocs (NeuroPRISM) Volunteer</b>	<b>2024</b>
<b>Brainy Books</b> Founder and organizer (book club)	<b>2019-Present</b>
<b>Vancouver Brain Bee</b> Exam Writing Committee	<b>2023</b>
<b>UBC Intramural Volleyball League</b> Team lead and coordinator	<b>2016-2023</b>
<b>UBC Neural Network</b> Volunteer Mentor	<b>2022</b>
<b>Graduate Program in Neuroscience Curriculum Development Committee</b> Student Representative	<b>2022-2023</b>
<b>BCCHRI Trainee Networking Committee</b> Event Planning Volunteer	<b>2021-2023</b>
<b>Let's Talk Science Teacher Partnership Program</b> Volunteer Educator	<b>2020-2022</b>
<b>BCCHRI Mini Med School</b> Volunteer Educator	<b>2022</b>
<b>BC Brain Wellness Program</b> Event Volunteer	<b>2019</b>

## SKILLS

**Programming:** R (*lme4*, *tidyverse*, *plotly*, *shiny*), Python (*Nilearn*, *Nipype*), MATLAB, Bash  
**Data analysis:** Jupyter Notebooks, Git/GitHub, High-performance computing (*PBS*, *SLURM*, *parallel processing*)  
**Data processing:** fMRIPrep, FSL, FreeSurfer, Docker, Singularity  
**Research management:** RedCap, RAVE  
**Data Visualization:** Matplotlib, ggplot2, Graphpad Prism, Biorender, Tableau  
**Systems:** Linux, MAC OS, Windows  
**Software:** RStudio, Visual Studio Code, Quarto, FSLEyes, Connectome Workbench, Psychopy