

# Madeleine IR Brodbeck, PhD

Quantitative Linguistics, Eberhard Karls University of Tübingen  
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## Education

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University of Western Ontario, Canada

Completed 2023

*Ph.D in Psychology (Cognitive and Developmental Brain Sciences)*

- **Dissertation:** Neural responses to magnetic orientation information in songbirds.  
**PIs:** Dr. Scott MacDougall-Shackleton & Dr. David Sherry

University of Western Ontario, Canada

Completed 2017

*M.Sc in Psychology (Behavioural and Cognitive Neuroscience)*

- **Thesis:** Development of new methods to investigate the role of the avian hippocampus in memory formation in brown-headed cowbirds.  
**PIs:** Dr. Scott MacDougall-Shackleton & Dr. David Sherry

Algoma University, Canada

Completed 2015

*B.Sc. in Psychology (Governor General's Gold Medal; Magna Cum Laude)*

- **Thesis:** The short term effects of action and non-action video game play on attention.  
**PI:** Dr. Paul Dupuis.
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## Publications

- **Brodbeck MIR**, Bingman VP, Cole LJ, Sherry DF & MacDougall-Shackleton SA. (2023). Neuronal activation in the geomagnetic responsive region Cluster N covaries with nocturnal migratory restlessness in white-throated sparrows (*Zonotrichia albicollis*). *The European Journal of Neuroscience*, 57(11).
- **Brodbeck MIR**, & Dupuis P. (2020). The Short Term Effects of Action and Non Action Videogame Play on Attention. *Intersect: The Stanford Journal of Science, Technology, and Society*, 14(1).
- Brodbeck DR, **Brodbeck MIR**, & Rosso K. (2019). Domestication and cognitive complexity. *Animal Sentience*, 4(25), 32.
- Brodbeck DR, & **Brodbeck MIR**. (2017). Cognitive continuity in cognitive dissonance. *Animal Sentience: An Interdisciplinary Journal on Animal Feeling*, 1(12), 8.

- **Brodbeck MIR & Brodbeck DR. (2015).** It's just evolution. Commentary: A crisis in comparative psychology: where have all the undergraduates gone? *Front. Psychol.* 6:1873.
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## Research Experience

**Eberhard Karls University of Tübingen, Germany**

**2024 – Present**

**Dr. Harald Baayen's Quantitative Linguistics lab**

*Research Assistant*

- Assisting with research on subliminal learning in the Mandarin lexicon.

**University of Western Ontario, Canada**

**2015 – 2023**

- Doctoral work on magnetoreception in songbirds.  
**PIs:** Dr. Scott MacDougall-Shackleton & Dr. David Sherry
  - Article published in *The European Journal for Neuroscience*.
  - Conducted extensive research on the role of Cluster N in geomagnetic orientation and migratory behaviour in birds.
  - Contributed to the growing understanding of navigation by examining brain activity in non-migratory species, challenging previous assumptions.
  - Honed skills in immunohistochemistry, microscope slide preparation, microscopy, and stereology.
- Master's work on spatial memory and the hippocampus in brown-headed cowbirds  
**PIs:** Dr. Scott MacDougall-Shackleton & Dr. David Sherry
  - Gained hands-on experience with cutting-edge techniques for reversible brain deactivation.
  - Developed spatial and non-spatial versions of a touchscreen task to explore hippocampal involvement in spatial memory in birds.
  - Developed and successfully implemented an implantable cryoloop to reversibly deactivate the avian hippocampus.
- Supervised honour's thesis students across different disciplines.
  - Mentored honour's thesis project on correlation between flight length and Cluster N activation in yellow-rumped warblers (Psychology).

- Mentored honour's thesis project on developing Cluster N immunohistochemistry techniques in white-throated sparrows (Neuroscience).
- Mentored honour's thesis project on spatial memory sex differences in brown-headed cowbirds (Biology).
- Supervised several (>10) undergraduate research assistant students on bird care, behavioural testing, microscope work, and immunohistochemistry procedures.

### University of Guelph, Canada

2022 – 2023

- Co-mentored an undergraduate honours student on an independent research project examining enrichment strategies for captive songbirds in the field of Animal Biology.

### Algoma University, Canada

2012 – 2015

- Undergraduate honour's thesis on video game play and visual attention. **PI:** Dr. Paul Dupuis.
  - Article published in *Intersect: The Stanford Journal of Science, Technology, and Society*.
- Research assistant working on chickadee communication with Dr. Laurie Bloomfield.
  - Supported by two Undergraduate Research Student Assistant (NSERC) awards.
- Research volunteer working on motor control in golfing with Dr. Dwayne Keough.
- Research assistant working on motor control in singers with Dr. Dwayne Keough.

### Conference Presentations

- **Brodbeck MIR**, Henry C, Rodrigo S, Groom DJE, Gerson AR, MacDougall-Shackleton SA & Sherry DF. Are cognitive and perceptual brain regions activated during flight of migratory songbirds? *Annual International Conference on Comparative Cognition*, April 2023, Melbourne Florida, USA.
- **Brodbeck MIR & Samuels B.** (2021). Perspectives on environmental enrichment for wild songbirds used in research. *International Student Symposium on Animal Behaviour and Cognition*, May 2021, The University of Western Ontario, Virtual.
- **Brodbeck MIR**, Huang NX, Sherry DF, & MacDougall-Shackleton SA. (2020). Male brown-headed cowbirds outperform females on a touchscreen task. *Annual Conference of the Animal Behaviour Society*, July 2020, Virtual.
- **Brodbeck MIR.** Nocturnally migrating songbirds and neural processing of Earth's magnetic field: What activates Cluster N? *International Student Symposium on Animal Behaviour and Cognition*, December 2019, Kyoto University, Kyoto, Japan.

- Huang NX, **Brodbeck MIR**, & MacDougall-Shackleton SA. (2019). Sex-specific differences in brown-headed cowbirds' (*Molothrus ater*) use of featural and geometric cues in an allocentric spatial memory task. *Ontario Ecology, Ethology and Evolution Colloquium*, May 2019, McMaster University, Hamilton, Ontario, Canada.
- Bingman PV, **Brodbeck MIR**, Yuan S, & MacDougall-Shackleton SA. (2019). Cluster N activity in migrating nocturnal birds: circadian control or facultative regulation? *RIN Conference on Animal Navigation*, April 2019, Royal Holloway College, UK.
- **Brodbeck MIR**, Bingman VR, Yuan S, & MacDougall-Shackleton SA. (2019). Migratory songbirds and the Earth's magnetic field: What activates Cluster N? *Annual International Conference on Comparative Cognition*, April 2019, Melbourne Florida, USA.
- **Brodbeck MIR**, Bingman VR, Yuan S, & MacDougall-Shackleton SA. (2018). What happens in the brain of nocturnally migrating birds? *Ontario Ecology, Ethology and Evolution Colloquium*, May 2018, University of Western Ontario, London, Ontario, Canada.
- **Brodbeck MIR**, Lomber SG, MacDougall-Shackleton SA & Sherry DF. (2018). Using reversible brain deactivation to understand the function of the avian hippocampus. *Ontario Ecology, Ethology and Evolution Colloquium*, May 2018, University of Western Ontario, London, Ontario, Canada.
- **Brodbeck MIR**, Bingman VR, Yuan S, & MacDougall-Shackleton SA. (2018). What happens in the brain of nocturnally migrating birds? *Southern Ontario Neuroscience Association*, May 2018, University of Guelph, Guelph, Ontario, Canada.
- **Brodbeck MIR**, Lomber SG, Sherry DF, & MacDougall-Shackleton SA. (2017). The role of the hippocampus in encoding, retention, and retrieval of spatial memory in brown-headed cowbirds. *Annual Conference of the Animal Behaviour Society*, June 2017, University of Toronto's Scarborough Campus, Ontario, Canada.
- **Brodbeck MIR**, Lomber SG, Sherry DF, & MacDougall-Shackleton SA. (2017). Cryoloops in an avian species: A Method to reversibly deactivate the hippocampus. *Annual International Conference on Comparative Cognition*, April 2017, Melbourne Florida, USA.
- **Brodbeck MIR** & Bloomfield L. (2015). Attention to acoustic features in a spatial task. *Annual International Conference on Comparative Cognition*, April 2015, Melbourne Florida, USA.

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## Honours & Awards

- **The Journal of Experimental Biology Travelling Fellowship** **2020**
  - Cambridge University
- **Society of Graduate Students Travel Subsidy** **2020**

- University of Western Ontario
- **Third Place Talk** **2019**
  - *International Student Symposium on Animal Cognition and Behaviour*, Kyoto University
- **Graduate Research Awards Fund** **2019**
  - University of Western Ontario
- **Canadian Council of Departments of Psychology Teaching Assistant's Award** **2018**
  - University of Western Ontario
- **First Place Lightning Talk** **2018**
  - *Ontario Ecology, Ethology and Evolution Colloquium*, University of Western Ontario
- **Award of Excellence in Psychology (science honours)** **2015**
  - Awarded to the student with the highest overall average for the graduating class in the Psychology department, Algoma University
- **The Governor General's Academic Medal (Silver)** **2015**
  - Awarded to the student with the highest overall average for the graduating class at a Canadian institution, Algoma University
- **NSERC Undergraduate Student Research Award** **2015 & 2014**
  - Algoma University

## Scholarships

- **NSERC Canadian Graduate Scholarship - Doctoral (National)** **2021 – 2022**
  - \$90,000 CAD (upgraded from previously awarded PGS-D), University of Western Ontario
- **NSERC Postgraduate Scholarship - Doctoral (National)** **2020**
  - \$21,000 CAD, University of Western Ontario
- **Ontario Graduate Scholarship (Provincial)** **2019**

- \$15,000 CAD, University of Western Ontario
- **Ontario Graduate Scholarship (Provincial)** **2018**
- \$15,000 CAD, University of Western Ontario
- **Ontario Graduate Scholarship (Provincial)** **2016 – 2017**
- \$15,000 CAD, University of Western Ontario
- **NSERC Canada Graduate Scholarship - Master's (National)** **2015 – 2016**
- \$17,500 CAD, University of Western Ontario
- **NSERC Canada Graduate Scholarship - Master's (National)** **Not accepted**
- \$17,500 CAD, Dalhousie University
- **Edward and Frank McGrath Award of Excellence (Institutional)** **2011-2015**
- \$15,000 CAD, awarded to student entering Algoma with an average from highschool above 90%, Algoma University

### **Teaching Experience**

**Assistant Professor (Part-Time Limited Duties)** **2024**

University of Western Ontario

- Cognitive Psychology (Spring; online)
- Introduction to Cognitive and Behavioural Neuroscience (Spring; online)
- Introduction to Cognitive and Behavioural Neuroscience (Winter; in-person)
- Human Memory (Winter; in-person)
- Animal Cognition (Winter; in-person)

**Lecturer** **2022 – 2023**

University of Western Ontario

- Evolution and Psychology (Spring 2023; online)
- Evolution and Psychology (Winter 2023; online)
- Evolution and Psychology (Spring 2022; online)

**Guest Lectures**

- Brescia University College, Canada **2023**
  - Research Methods, “Perspectives on graduate school and research positions”
  - Animal Cognition, “Spatial Navigation and Orientation: at night”
- University of Western Ontario, Canada **2021**
  - Individual differences in Cognitive Neuroscience, “Spatial navigation and orientation in non-human animals”
- Wilfred Laurier University, Canada **2021**
  - Cognitive and Behavioural Neuroscience Seminar, “Magnetic field perception in a non-migratory bird (*Taeniopygia guttata*): What activates Cluster N?”
- Brescia University College, Canada **2018**
  - Research Methods, “Perspectives on graduate school and research positions”
- Brescia University College, Canada **2017**
  - Research Methods, “Perspectives on graduate school and research positions”

### **Teaching Assistantships**

**2012 – 2022**

- University of Western Ontario
  - Psychoneuroimmunology, Animal Behaviour, Hormones & Behaviour, Special Topics: Individual Differences in Cognitive Psychology, Statistics for Psychology
- Algoma University
  - Head Teaching Assistant: Advanced Univariate Statistics, Sensation & Perception
  - Introduction to Psychology, Cognition, Scientific Methods and Analysis, Developmental Psychology, Introduction to Statistics

### **Service**

#### **Conference and Workshop Organization**

- Comparative Cognition Society **2024 - Present**

- The International Conference on Comparative Cognition program committee
- The International Student Symposium on Animal Behaviour and Cognition **2021**
  - Chair, Organizing Committee, University of Western Ontario
  - Pioneered continuing the conference from it's first meeting in Kyoto, Japan
  - Symposium has continued meet subsequently in Mexico (2023) and Brazil (2025)
- The Advanced Facility for Avian Research **2020**
  - Writing Group Organizer & Chair, University of Western Ontario

### Invited Panels & Commentaries

- Panel Member. "Perceptions of Scholarly Publishing" (virtual), *The Canadian Association of Learned Journals* **2021**
  - See panel: <https://www.youtube.com/watch?v=v9M-jR38-q0&>
- Rotman Dialogue Commentator. "Enactivism, pragmatism... behaviorism?", The Rotman Institute, Department of Philosophy, The University of Western Ontario. **2019**
  - See commentary: <https://youtu.be/vjFbb085DU4>

### Peer-reviewed Journal Service

Editorial Assistant **2024 - Present**

- Editorial assistant for the *Mental Lexicon*

Reviewer

- *The Western Undergraduate Psychology Journal* **2017-2023**
  - Graduate Reviewer
- *Acta Ethologica* **2021**

### Committees

- Psychology Colloquium Committee **2020 – 2021**
  - Co-Chair, University of Western Ontario
- PSAC Local 610 Union **2018 – 2020**
  - Departmental Steward, Teaching Assistants at University of Western Ontario



- Health and Safety Committee Member
- Mental Health Committee
  - Organized creation of Mental Health Fund resulting in teaching assistants being able to claim up to \$500/year for Mental Health Care
- Animal Communications Committee **2019**
  - Graduate Student Representative, University of Western Ontario
- Science Rendezvous **2018 – 2019**
  - Communications Committee, University of Western Ontario

### **Voluntary Work**

- Judge, Biology Graduate Research Forum **2021**
  - Animal Biology Session Talk Judge, The University of Western Ontario
- Judge, The Western Student Research Conference **2021**
  - Social and Health Sciences Talk Judge, University of Western Ontario, Canada
- London Pride Festival, London, Ontario **2018**
- London Pride Festival, London, Ontario **2017**

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## **Professional Development**

### **Workshops Attended**

- Do's and Don's of Academic Workplace Culture in Germany **2024**
  - The Welcome Centre, University of Tübingen, Tübingen, Germany
- Career Preparation Series **2023**
  - Three Workshops on Employment after your PhD, Own Your Future, The University of Western Ontario
- SFB 1372: Magnetoreception and Navigation in Vertebrates **2021**
  - Young Researchers Symposium: Magnetoreception & Navigation (virtual), University of Oldenburg, Oldenburg, Germany
- Stereology using stereo investigator webinar (virtual) **2021**

- MBF Bio Science
- Data Analysis in R: From Zero to Hero (virtual) **2020**
  - Department of Biology, University of Western Ontario
- International Ecology of Migration Course **2019**
  - CanMove at Lund University, Sweden
  - Intensive 2-week course on animal migration
  - Resulted in collaborative project with Dr. Rachel Muheim

## Media Coverage

- Jeff Renaud. Western News. May 25 2023. Bird brains can flick switch to perceive Earth's magnetic field.
  - <https://news.westernu.ca/2023/05/magnetic-migration/>
- Western Graduate and Post-Doctoral Studies. September 2016. Meet Madeleine Brodbeck, MSc candidate in Psychology.
  - <https://youtu.be/OwFU0yQHxM?feature=shared>
- Western News. December 3, 2016. Work takes flight with new idea on bird brains.
  - <http://news.westernu.ca/2015/12/work-takes-flight-with-new-idea-on-bird-brains/>
- Soo Today. August 20, 2015. About Madeleine and the cool stuff she's going to do with \$17,500.
  - <https://www.sootoday.com/local-news/about-madeleine-and-the-cool-stuff-shes-going-to-do-with-17500-182608>
- Northern Hoot. June 20, 2015. Madeleine Brodbeck: "Do What You Love."
  - <http://northernhoot.com/madeleine-brodbeck-do-what-you-love/>
- Soo Today. June 9, 2015. Whoohoo Madeleine!
  - <https://www.sootoday.com/local-news/whoohoo-madeleine-181079>

## Specialized Skills

- ▶ Immunohistochemistry
- ▶ Microscope slide preparation
- ▶ Microscopy
- ▶ Stereology
- ▶ Perfusion
- ▶ Bird Anesthesia
- ▶ ImageJ
- ▶ Graphpad Prism

## Languages

**English** (native), **French** (proficient: CERF Level C2), **German** (learner)

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