

# RYSSA MOFFAT

POSTDOCTORAL RESEARCHER

## CONTACT

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Professorship for Social Brain Sciences  
ETH Zurich

Web: [ETH Faculty Page](#) | [Personal Website](#)  
[Research Gate](#) | [OSF Profile](#) | [Google Scholar](#)

## ACADEMIC APPOINTMENTS

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- 2023–present      **Postdoctoral Researcher**  
ETH Zurich, Department of Humanities, Social and Political Sciences  
Professorship for Social Brain Sciences, Director: Emily S. Cross
- 2021–2023      **Postdoctoral Research Fellow**  
Macquarie University, Faculty of Medicine, Health and Human Sciences  
Social Brain in Action Lab, Director: Emily S. Cross

## EDUCATION

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- 2022      **Macquarie University, Newcastle University, Universities of Groningen & Potsdam**  
PhD in Cognitive Science (joint degree)  
Thesis: *Recognition and cortical haemodynamics of vocal emotions – an fNIRS perspective*  
Committee: David McAlpine, Deniz Baskent, Lindsey van Yper, Robert Luke
- 2018      **Universities of Eastern Finland, Groningen & Potsdam**  
M.Sc. in Clinical Linguistics (joint degree)  
Thesis: *Coarticulation as a synchronic predictor of reading dysfluency*  
Committee: Martijn Wieling, Aude Noiray
- 2016      **University of Ottawa**  
HBA, Major in German Language and Culture, Minor in Linguistics  
Exchange year at University of Bonn

## RESEARCH OVERVIEW & TECHNICAL SKILLS

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My research spans *social and cognitive neuroscience and psychology*. I am interested in how humans of all ages navigate real-world social interactions. I *combine quantitative and qualitative approaches, including behavioral and neuroimaging methods* (fNIRS, EEG, and fMRI) to study group and individual-level psychological processes using *multivariate statistical approaches*. My technical skills include:

- **Statistical Analysis** using R (Frequentist & Bayesian approaches), MATLAB & Python for signal processing
- **Neuroimaging** expertise (fNIRS), mobile & hyperscanning techniques, including design, recording, analysis
- **Experimental design** and programming (Qualtrics, JavaScript, PsychoPy)

## GRANT FUNDING & INDUSTRY COLLABORATIONS

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- Oct 2023–Jul 2024      **Cortivision – Pathfinder Program**  
Title: “Probing the development of behavioural and neural synchrony in intergenerational interactions via collaborative art tasks”  
Role: PI  
Total Award Amount: Equivalent to €86,000. Loan of two fNIRS devices for duration of project.
- Oct 2023      **Caran D’Ache – Partnership with in-kind support**  
In-kind support: Equivalent to €1000. Donation of 30 sets of NEOCOLOR pastels for research involving intergenerational collaborative art.

## AWARDS & FELLOWSHIPS

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2022	<b><i>Australasian Society for Social and Affective Neuroscience</i></b> Conference Travel Funding, AUD\$ 100
2019	<b><i>Conference on Implantable Auditory Prostheses (CIAP)</i></b> Conference Travel Funding, USD\$ 1000
2019	<b><i>Macquarie University</i></b> Postgraduate Research Funding AUD\$ 5000
2018-2021	<b><i>IDEALAB PhD Fellowship</i></b> Highly competitive fellowship (~5 awarded/year) providing full tuition, stipend, & travel costs
2016-2018	<b><i>EMCL+ Mobility Grant</i></b> Competitive scholarship providing tuition for 2-year MSc program

## PUBLICATIONS & PRESENTATIONS

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\* indicates co-first authorship                      ^ indicates mentored student

### PEER-REVIEWED ARTICLES

1. Casale<sup>\*^</sup>, Moffat<sup>\*</sup> & Cross. (2024). [Aesthetic evaluation of body movements shaped by embodiment and arts experience: Insights from behaviour and fNIRS](#). *Scientific Reports*. \* co-first authorship
2. Cross<sup>\*</sup>, Darda<sup>\*</sup>, Moffat<sup>\*</sup>, Munoz, Humphries & Kirsch. (2024). [Delightful Duets: Motor synchrony and mutual gaze enhance dance enjoyment and perceptions of socialness](#). *Scientific Reports*. \* co-first authorship
3. Moffat & Cross. (2024). [Awareness of embodiment enhances enjoyment and engages sensorimotor cortices](#). *Human Brain Mapping*.
4. Moffat, Roos, Casale & Cross. (2024). [Dyadic body competence predicts movement synchrony during the mirror game](#). *Frontiers in Human Neuroscience*.
5. Moffat, Caruana & Cross. (2024). [Inhibiting responses under the watch of a recently synchronized peer increases self-monitoring: evidence from functional near-infrared spectroscopy](#). *Open Biology*.
6. Moffat & Cross. (2024). [Evaluations of dyadic synchrony: Observers' traits influence quantification and enjoyment of synchrony in mirror-game movements](#). *Scientific Reports*.
7. Moffat, Casale & Cross. (2024). [Mobile fNIRS for exploring inter-brain synchrony across generations and time](#). *Frontiers in Neuroergonomics*.
8. Moffat, Baskent, Luke, McAlpine & van Yper. (2023). [Cortical haemodynamic responses predict individual ability to recognise vocal emotions with uninformative pitch cues but do not distinguish different emotions](#). *Human Brain Mapping*.
9. Caruana, Moffat, Blanco & Cross. (2023). [Perceptions of intelligence & sentience shape children's interactions with robot reading companions](#). *Scientific Reports*.

### PEER-REVIEWED CONFERENCE PROCEEDINGS

10. Caruana, Moffat, Blanco & Cross. (2022). [Talk, listen and keep me company: A mixed methods analysis of children's perspectives towards robot reading companions](#). *Proceedings of the 10th International Conference on Human-Agent Interaction*.

### OTHER PROFESSIONAL PUBLICATIONS

11. Moffat. (2024). [Invisible mechanisms of interpersonal alignment](#). *Nature Reviews Psychology*.

### INVITED TALKS

1. *Hyperscanning: Practicalities & Opportunities*. Talk given at the fNIRS Workshop – Hyperscanning & Developmental Studies, University of Vienna, Sep 2024.
2. *Interpersonal synchrony in movement and the brain*. Talk given to the Precision Psychiatry & Social Physiology Team, CHU Sainte-Justine Research Center, Apr 2024.

3. *Towards an fNIRS paradigm to map emotional prosody processing*. Talk given to the CI Brain Lab, Sunnybrook Health Science Centre, Feb 2020.
4. *Exploring metabolic responses to emotional prosody with fNIRS*. Talk given at Listen and Learn Workshop, Macquarie University, Nov 2019.

## CONFERENCE TALKS

1. **Moffat & Cross**. *Rose-tinted embodiment: Mirroring impacts enjoyment, empathy, and cortical activity when observing synchronous movements*. Talk given at fNIRS UK, Colchester, UK, Sep 2023.
2. **Moffat & Cross**. *Observer's traits predict accuracy of synchrony estimation and enjoyment of dyadic mirror-game movements*. Talk given at the 9th Joint Action Meeting (JAM 9), Budapest, Hungary, Jul 2023.
3. **Moffat, Caruana & Cross**. *Cortical correlates of inhibition when observed by synchronised vs. non-synchronised peers*. Talk given at Neuroscience 2022 (SfN), San Diego, USA, Nov 2022.
4. **Moffat, Baskent, Luke, McAlpine & van Yper**. *Pilot: Processing emotional prosody in normal hearing listeners with fNIRS*. Talk given at Conference on Implantable Auditory Prostheses (CIAP), Lake Tahoe, USA, Jul 2019.

## CONFERENCE POSTERS

1. **Moffat, Portier, Häuselmann, Dumas & Cross**. *Longitudinal insights into motor coordination and neural synchrony within and between generations*. Presented at fNIRS 2024, Birmingham, UK, Sep 2024.
2. **Moffat, Portier, Häuselmann, Casale & Cross**. *Intergenerational social interactions: How do motor and neural synchrony develop over time*. Presented at Social & Affective Neuroscience Society conference (SANS), Toronto, Canada, Apr 2024.
3. **Casale<sup>^</sup>, Moffat & Cross**. *Arts engagement and embodied experience shape our aesthetic perceptions of socially-intentioned body movements*. Australasian Cognitive Neuroscience Society conference (ACNS), Sydney, Australia, Nov 2023.
4. **Peterson<sup>^</sup>, Roberts, Moffat & Polito**. *The relationship between altered states of consciousness, nature relatedness, and pro-environmental behaviour*. 3rd Psychedelic Symposium UW Madison, Madison, USA, Nov 2023.
5. **Moffat & Cross**. *Quantifying observed motor synchrony: Movement predictability and inter-individual traits predict accuracy*. Presented at Experimental Psychology Conference (EPC), Canberra, Australia, Apr 2023.
6. **Casale<sup>^</sup>, Moffat & Cross**. *Art experience enhances enjoyment of dynamic human movement*. Presented at Australian Society for Experimental Psychology Conference (EPC), Canberra, Australia, Apr 2023.
7. **Moffat, Caruana & Cross**. *Cortical activity evoked by synchronised vs. non-synchronised peer observers as detected with fNIRS*. Presented at fNIRS 2022, Boston, USA, Oct 2022.
8. **Caruana, Moffat, Blanco & Cross**. *A welcome social presence: Attentive and responsive robot reading buddies are preferred*. 8th Australasian Society for Social and Affective Neuroscience (AS4SAN) Conference, Sydney, Australia, Jun 2022.
9. **Moffat, Baskent, Luke, McAlpine & van Yper**. *Cortical responses to vocal emotions with attenuated voice pitch variation measured with fNIRS*. Presented at fNIRS 2021 virtual conference, Online, Oct 2021.
10. **Moffat, Baskent, Luke, McAlpine & van Yper**. *Pilot: Mapping emotional prosody in normal hearing listeners with fNIRS*. Presented at Association for Research in Otolaryngology MidWinter Meeting (ARO), San José, USA, Jan 2020.
11. **Moffat, Baskent, Luke, McAlpine & van Yper**. *Pilot: Using fNIRS to explore emotional prosody perception*. Presented at 12th Speech in Noise Workshop (SPIN), Toulouse, France, Jan 2020.

## TEACHING

### ETH Zurich

The Cutting Edge of Social Brain Imaging  
 Learning With and From Robots  
 Mind Meets Machine

Fall 2024  
 Fall 2023, Spring 2024  
 Spring 2025

**Macquarie University**

Delusions and Disorders of the Mind and Brain

Introductory Phonetics and Phonology

Introduction to Psycholinguistics; Phonological Analysis; Language as Evidence

Fall 2020, Spring 2020, Fall 2019

Spring 2020

Fall 2020

**Guest lecture given as part of**

Psychophysiological Methods in Psychology and Neuroscience, New Bulgarian University

Nov 2024

**SUPERVISION & MENTORSHIP****PhD Theses****ETH Zurich:**

Fenella Symes [Sep 2023–Dec 2024]

Courtney Casale [Sep 2024–present]

Tanja Ulrich [Sep 2024–present]

**Masters Theses****ETH Zurich (MSc):**

Luca Naudszus [May 2024–present]

Medea Häuselmann [Feb–Aug 2024]

Tessa Portier [Oct 2023–Apr 2024]

**Macquarie University (MRes):**

Hannah Cahill [Oct 2022–Jan 2025]

Abigayle Peterson [Oct 2022–2023]

Courtney Casale [Sep 2022–2023]

**Undergraduate Interns****ETH Zurich:**

Greta Bramow [Jul–Oct 2024 +thesis]

Leonie Roos [Jul–Sep 2023]

**Macquarie University:**

Jonathon Clare [Apr–Jun 2023]

Annika Richter [Jul–Sep 2022]

Sabrina Diep [Feb–May 2022]

**RECENT TRAINING**

2024	<i>Integrating sustainability in every field</i> , ETH Zurich
2024	<i>Hands-on machine learning with fNIRS using the BenchNIRS Python framework; Cedalion: [...] fNIRS &amp; DOT Data Analysis with Machine Learning Approaches</i> , fNIRS2024 Conference
2024	<i>Machine Learning for Health Data</i> , University of Zurich
2022	<i>Deaf Awareness Training; Mental Health First Aid; Foundations of Supervision</i> , Macquarie University

**RESEARCH POSITIONS**

2021	<b>Social Brain in Action Lab (Prof Emily S. Cross)</b> <i>Research Assistant</i> , Macquarie University Topics: Child-Robot interaction; Artificial agent perception; Qualitative analysis
2018	<b>Laboratory for Oral Language Acquisition (Dr. Aude Noiray) &amp; BabyLAB (Prof Barbara Höhle)</b> <i>Research Assistant</i> , University of Potsdam Topics: Developmental language disorders; Ultrasound tongue imaging; fNIRS
2016	<b>Section for Clinical Cognition Sciences (Prof Ferdinand Binkofski) &amp; Department of Neurology, Stroke/Aphasia Units (Dr. Miriam Abel)</b> <i>Research Assistant</i> , RWTH Aachen University Hospital Topics: TMS; EEG; Language production; Electrical pharyngeal stimulation
2015	<b>School of Rehabilitation Sciences (Dr. Patricia Roberts)</b> <i>Research Assistant</i> , University of Ottawa Topics: Bilingualism; Verbal fluency; Language production

**PROFESSIONAL SERVICE****COMMUNITY OUTREACH**

2024	<b>Apero: Brain activity during social interaction</b> , ETH Zurich Hosted event for participants (122) from longitudinal intergenerational study. Presented study results and recorded participant's feedback.
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- 2022 **Crestwood Secondary School, Canada | Camp Aspire, Macquarie University**  
Ran workshops about measuring motor synchrony and maximising its social benefits for indigenous Australian [Jan 2022] and Canadian [Oct 2022] high school students
- 2021, 2022 **LEAP UP University Experience Day | Widening Participation, Macquarie University**  
Reading robot-buddy activities introducing robots and scientific practice with refugee [May 2021] and indigenous Australian [Apr 2022] high school students

### SERVICE TO SCIENTIFIC COMMUNITY

- 2024–present Vice President of Departmental Scientific Staff Association (ASST)
- 2024–present Member of Education Committee; Society for functional Near-Infrared Spectroscopy (sfNIRS)
- Nov 2024 **R Ladies Zurich Workshop:** Visualising data with ggplot2 – Preparing figures for publication and outreach.
- Nov 2024 **External Thesis Examination:** Masters of Clinical Audiology, Macquarie University
- 2023–present **Ad-Hoc Manuscript Review:** Reviewer for *CHI 2025; International Journal of Social Robotics; Imaging Neuroscience; NeuroImage; Neuropsychologica; Oxford Open Neuroscience; PLOS One; Quarterly Journal of Experimental Science; Review of General Psychology; Scientific Reports; Strategic Entrepreneurship Journal*
- 2023, 2025 **Federal Grant Review:** Reviewer for *National Science Foundation (NSF) Perception, Action, and Cognition Grant; Austrian Science Fund (FWF) ASTRA Awards*
- 2022–present **Commitment to Open Science:** Preregistered all studies and shared all materials, data, and code for manuscripts archived on [OSF](#)