

# Tommaso Ghilardi, Ph.D.

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## Work Experience

- 2018 – . . . . **Ph.D., Donders Center for Cognition** in developmental cognitive psychology. I am part of the the **MOTION** European project (MSCA): "Mobile Technology for Infant Social-Cognitive Neuroscience working in the **BABYBrain group**.. My main interest is to understand how infants are able to extract complex statistical information from the environment around them and use this knowledge to predict what will happen. I use EEG and fNIRS to explore the neural correlates of action observation and prediction in infancy. I use eye-tracking (pupillometry) to study how infants can predict the value of upcoming information.
- 2020 – . . . . **DCC lab committee.** As part lab committee of the Donders Center for Cognition I represent the **Baby & Child Research Center** in the meetings held to discuss laboratory management and equipment.
- 2022 **Visiting PhD** visit to the Centre for Brain and Cognitive Development at Birkbeck University. During the visit I have strengthen my fNIRS project design and analysis skills. Furthermore, a collaborative project involving fNIRS and eye-tracking was initiated.
- 2019 – 2022 **DCC EEG lab Support.** As part of the EEG lab support group of the Donders Center for Cognition my tasks are to train researchers who want to use the EEG labs by teaching practical and administrative steps of a session. I also take care of the supplies of the EEG labs.
- 2015 – 2018 **Intern at Affiliative Behavior and Physiology Lab.** I had the opportunity to be involved in physiological (ECG, EMG, EDA) and behavioural studies in the context of social interactions.
- 2016 – 2017 **Thesis Research during Erasmus+ Japan.** Thesis research projects conducted during a five months internship to the Department of Neurobiology and Behavior of Nagasaki University, Japan. The influence of ethnicity in the recognition ability of emotional faces. Research project that aimed to investigate how the ability to recognize emotional faces with graded emotional intensities could be affected by the ethnicity of the stimulus. Study conducted analyzing 64 channel EEG, ECG and behavioural data.

## Teaching

- 2021 – 2022 **Thesis supervision.** Supervision of 3 master students in the preparation of their thesis.
- 2020 – 2021 **Teacher assistant "Brain & Cognition 1".** The goal of this course was to provide insight into the way which these behaviours and cognitive processes can be explained from the workings of the brain. As assistant teacher I weekly supervised groups of students guiding them through the work-group material and administering tests.

**Assistant for the EEG hands-on session of the "Developmental Cognitive Neuroscience" course.** I assisted during the EEG hands-on session of the Developmental Cognitive Neuroscience course led by Sabine Hunnius. Goal of the class was to provide an hands-on introduction to EEG analysis of adult and infant EEG signal.

2017 **Lesson organizer of "Developmental Clinical Neuroscience".** I participated in the organization of the course material under the supervision of Professor Gianluca Esposito. Goal of the class was to provide an introduction to the Social and Affective Neuroscience and increase students multidisciplinary knowledge of physiological mechanism underlying social interaction.

2016 **Lesson organizer of "Social and Affective Neuroscience (SAN)".** I participated in the organization of the course material under the supervision of Professor Gianluca Esposito. Goal of the class was to: provide an introduction to the Social and Affective Neuroscience, increase students multidisciplinary knowledge of physiological mechanism underlying social interaction and improve students' skills regarding human physiology research. Lecture given: *"Processing Infant Direct Speech"*

## Outreach

2021 **University promotional video.** Participation to the video series *"Donders Labs"* to talk about the Baby and Child Research Center ([Video](#)).

**Scientific podcast.** Participation to the podcast [Scientificast](#) talking about my research and more in general about infants' action prediction abilities ([Episode](#)).

2018 – 2021 **Divulgative blog.** Contribution to the [MOTION](#) European project (MSCA) [blog](#).

## Skills

Languages	Italian native speaker. Strong reading, writing and speaking competencies for English (C1 Advanced user certified by Cambridge English) and basic reading, writing and speaking competencies for Dutch.			
Research techniques	EEG, fNIRS, Eye-tracking, ECG, EMG, EDA, Behavioural			
Coding	Python	<div><div></div></div>	Matlab	<div><div></div></div>
	R	<div><div></div></div>		
Experiment design	Psychopy	<div><div></div></div>	Pavlovia	<div><div></div></div>
	Presentation	<div><div></div></div>		
Media Softwares	Photoshop, Premiere Pro, Illustrator.			
Misc.	Github, Academic research, Teaching, Training, L <sup>A</sup> T <sub>E</sub> X typesetting.			

## Education

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- 2016 – 2018      **M.Sc. Psychology-Neuroscience, Trento University, Italy**  
*First Class Honours. Thesis title: Ethnicity and gender modulate the recognition of emotional facial expressions.*
- 2013 – 2016      **B.Sc. Sciences and techniques of cognitive psychology, Trento University, Italy.**

## Awards

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- 2022      **Internationalization travel grant.** Radboud internationalization grant.
- 2019      **Travel award.** Sackler Colloquium “The Brain Produces Mind by Modelling”.
- 2018      **Merit Award.** 2017 edition Trento University.

## Talks & Posters

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- 2022      **Poster:** Predicting the value of information: an infant study. The International Congress of Infant Studies (ICIS) \Lancaster Conference on Infant & Early Child Development (LCICD)
- Poster:** Statistics in motion: Does the infant motor system predict actions based on their transitional probability?. The International Congress of Infant Studies (ICIS)
- Talk:** Statistics in motion: predicting actions based on their transitional probability. Conference on Interdisciplinary Advances in Statistical Learning (StatLearnBCBL)
- 2020      **Poster:** Building action expectations in infants: An fnirs study. Budapest CEU Conference on Cognitive Development(BCCCD).
- 2018      **Poster:** The influence of ethnicity in the recognition ability of emotional faces and voices, Cognitive Science Arena (CSA).
- 2017      **Poster:** Genetic factors and adults’ expectations towards relationships interact in affecting physiological responses to social distress, Workshop on Cognition Evolution (CogEvo)

## Research

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### Journal Articles

- 1      Ghilardi, T., Meyer, M. & Hunnius, S. (2023). Predictive motor activation: Modulated by expectancy or predictability? *Cognition*, 231, 105324.
- 2      Bonassi, A., Ghilardi, T., Gabrieli, G., Truzzi, A., Borelli, J. L., Lepri, B., Shinohara, K., Esposito, G. Et al. (2021). The recognition of cross-cultural emotional faces is affected by intensity and ethnicity in a japanese sample. *Behavioral Sciences*, 11(5), 59.
- 3      Bonassi, A., Ghilardi, T., Truzzi, A., Cataldo, I., Azhari, A., Setoh, P., Shinohara, K. & Esposito, G. (2017). Dataset on genetic and physiological adults’ responses to social distress. *Data in brief*, 13, 742–748.

### Inproceedings

- 1      Poli, F., Ghilardi, T., Mars, R. B., Hinne, M. & Hunnius, S. (2021). 8-month-old infants meta-learn from sparse evidence, PsyArXiv. <https://doi.org/10.31234/osf.io/dc9s6>
- 2      Ghilardi, T. (2021). Statistics in motion: Does the infant motor system predict actions based on their transitional probability?, Open Science Framework, RegisteredReport.