

# Curriculum Vitae – Ambra Ferrari, PhD

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## Research and Professional Experience

- 01/05/2024 – present**      **Marie Skłodowska-Curie Postdoctoral Fellow**  
Affiliation                  CIMEC – Center for Mind/Brain Sciences, University of Trento, Rovereto, Italy  
Project                      Multimodal conceptual knowledge in preverbal infants (ERP and multivariate decoding of infant and adult EEG)  
Supervisor                  Prof. Eugenio Parise
- 01/08/2022 – 30/04/2024**      **Postdoctoral Researcher**  
Affiliation                  Max Plank Institute for Psycholinguistics & Donders Institute for Brain, Cognition and Behaviour, Radboud University, Nijmegen, The Netherlands  
Project                      Multimodal integration and prediction in face-to-face communication (online audiovisual testing, psycholinguistics, Bayesian linear mixed modelling)  
Supervisor                  Prof. Peter Hagoort
- 01/01/2020 – 31/07/2022**      **Postdoctoral Researcher**  
Affiliation                  Donders Institute for Brain, Cognition and Behaviour, Radboud University, Nijmegen, The Netherlands  
Project                      Statistical learning and predictive processing in the human brain (online testing, signal detection theory, univariate and multivariate fMRI)  
Supervisor                  Prof. Floris P. de Lange

## Education

- 23/06/2021**                      **Professional Psychology Qualification (Abilitazione Professionale)**  
National examination to access the Italian register of psychologists (Albo)
- 15/09/2015 – 31/12/2019**      **PhD in Computational Cognitive Neuroscience**  
Affiliation                  Computational Cognitive Neuroimaging Group, School of Psychology, University of Birmingham, Birmingham, United Kingdom  
Thesis title                  The interplay between attention and multisensory integration (psychophysics, Bayesian computational modelling, univariate and multivariate fMRI and EEG)  
Supervisor                  Prof. Uta Noppeney
- 15/09/2014 – 14/09/2015**      **Apprenticeship for National Psychology Certification**  
Affiliation                  G.B. Rossi Hospital, Verona; Sant'Agostino Estense Hospital, Modena, Italy  
Activity                      Clinical neuropsychology assessment and rehabilitation of cognitive disorders following neural damage; cognitive stimulation and monitoring in Alzheimer's Unit; fMRI mapping of linguistic and motor brain areas prior to neurosurgery (epilepsy and neoplasia patients, both adults and children)  
Supervisors                  Dr. Valentina Varalta; Dr. Francesca Benuzzi
- 09/09/2014**                      **Master's Degree in Cognitive Neuropsychology and Neuroscience**  
Passing Grade: 110/110 (cum laude)  
Affiliation                  School of Cognitive Science, University of Trento, Rovereto, Italy  
Thesis title                  Investigating cross-modal plasticity in deafness: an fMRI pilot study on global and biological motion perception  
Supervisor                  Prof. Olivier Collignon
- 11/09/2012**                      **Bachelor's Degree in Cognitive Psychology**  
Passing Grade: 110/110 (cum laude)  
Affiliation                  School of Cognitive Science, University of Trento, Rovereto, Italy  
Thesis title                  Use of a light source for spatial reorientation by the species of fish *Danio Rerio*  
Supervisor                  Prof. Valeria Anna Sovrano

## Teaching and Supervision

<b>01/05/2024 – present</b>	<b>Guest Lecturer</b>
Affiliation	Department of Psychology and Cognitive Science, University of Trento
Activity	Cognitive Neuroscience (Prof. Francesco Pavani) Content: 6 hrs frontal teaching on the computational cognitive neuroscience of multisensory integration (computation, algorithm, implementation)
Affiliation	CIMeC – Center for Mind/Brain Sciences, University of Trento
Activity	Cognitive Neuroscience of Infant Development (Prof. Eugenio Parise) Content: 6 hrs interactive teaching (Journal Club format) on language development (semantics, pragmatics) in preverbal infancy
<b>01/05/2024 – present</b>	<b>Co-supervisor of undergraduate and graduate students</b>
Affiliation	CIMeC – Center for Mind/Brain Sciences, University of Trento, Rovereto, Italy
Activity	Weekly co-supervision of 1 PhD student and 2 MSc students for experimental design, data acquisition, data analysis and manuscript preparation (techniques: online testing; psychophysics; MRI; EEG)
<b>01/09/2020 – 30/04/2024</b>	<b>Co-supervisor of undergraduate and graduate students</b>
Affiliation	Max Plank Institute for Psycholinguistics & Donders Institute for Brain, Cognition and Behaviour, Radboud University, Nijmegen, The Netherlands
Activity	Weekly co-supervision of 2 PhD students for experimental design, data acquisition, data analysis and manuscript preparation (techniques: online testing; psychophysics; MRI); organization and supervision of training activities for 3 lab rotation MSc students
<b>01/10/2017 – 31/07/2018</b>	<b>Co-supervisor of undergraduate students</b>
Affiliation	School of Psychology, University of Birmingham, United Kingdom
Activity	Co-supervision of 1 BSc student for research internship and dissertation (techniques: psychophysics; electrodermal activity and pupillometry recordings)
<b>01/10/2016 – 31/07/2017</b>	<b>Teaching assistant</b>
Affiliation	School of Psychology, University of Birmingham, United Kingdom
Activity	Delivery of practical workshops on statistics for BSc students
<b>01/10/2013 – 31/07/2014</b>	<b>Teaching assistant</b>
Affiliation	School of Cognitive Science, University of Trento, Rovereto, Italy
Activity	Delivery of practical workshops on statistics for BSc students

## Academic Service

<b>08/2023 – present</b>	<b>Review Editor</b>
	Frontiers in Psychiatry – Section Social Neuroscience
<b>12/2021 – present</b>	<b>Ad-hoc reviewer</b>
Activity	Peer-review in Q1 journals (Cereb Cortex; Imaging Neurosci; J Cog Neurosci; Psych Science; Ann NY Acad Sci; Eur J Neurosci; Neuropsychologia; Plos One; Front Neurosci; Front Hum Neurosci; J Exp Psy: HPP; Q J Exp Psy; Mult Res; Lang Cogn Neurosci; J Applied Psycholing; CR: PI)
<b>2025 – present</b>	<b>External member of PhD admission committee</b>
	SISSA Cognitive Neuroscience PhD program (Italy)
	<b>External examiner of PhD evaluation committee</b>
2024	Sapienza University (Italy)
2022	CIMeC, University of Trento (Italy)
<b>01/10/2021 – 30/09/2022</b>	<b>Postdoctoral representative</b>
Affiliation	Donders Centre for Cognitive Neuroimaging, Donders Institute for Brain, Cognition and Behaviour, Radboud University, Nijmegen, The Netherlands

Activity	Onboarding of new postdocs; organization of Brown Bag Meetings; co-organization of Donders Career Day 2021; organization of postdocs social activities; organization of postdoc information centre on the institute intranet
<b>01/09/2021 – 31/07/2022</b>	<b>Journal Club organizer and chair</b>
Affiliation	Predictive Brain Lab, Donders Institute for Brain, Cognition and Behaviour, Radboud University, Nijmegen, The Netherlands
Activity	Organization of annual calendar and chairing of biweekly meetings

## Publications and Manuscripts

### Peer-reviewed articles and preprints

**Ferrari, A.**, Filippin, L., Buiatti, M., Parise, E. (2025, accepted in *PLoS One*). WTools: a MATLAB toolbox for time-frequency analysis of infant data.

**Ferrari, A.**, de Lange, F. P., Akrami, A. (invited, under review). Where learning paths meet: Convergence and divergence of statistical and reinforcement learning. *Current Opinions in Neurobiology*.

Momentè, F., Suglia, A., Giulianelli, M., **Ferrari, A.**, Koller, A., Lemon, O., Schlangen, D., Fernández, R., Bernardi, R. (2025). Triangulating LLM progress through benchmarks, games, and cognitive tests. *arXiv*.

Mazzi, G.\*, **Ferrari, A.\***, Mencaroni, M. L., Valzolgher, C., Tommasini, M., Pavani, F., Benetti, S. (2025). Prior expectations guide multisensory integration during face-to-face communication. *bioRxiv*. **\*shared first authorship**

**Ferrari, A.**, Hagoort, P. (2025). Beat gestures and prosodic prominence interactively influence language comprehension. *Cognition*, 256, 106049.

Nazli, I., **Ferrari, A.**, Huber-Huber, C., & de Lange, F. P. (2024). Forward and backward blocking in statistical learning. *PLoS One*, 19(8), e0306797.

Benetti, S.\*, **Ferrari, A.\***, Pavani, F. (2023). Multimodal processing in face-to-face interactions: a bridging link between psycholinguistics and sensory neuroscience. *Frontiers in Human Neuroscience*. 17:1108354. **\*shared first authorship**

**Ferrari, A.**, Richter, D., & de Lange, F. (2022). Updating contextual sensory expectations for adaptive behaviour. *The Journal of Neuroscience*, 42(47), 8855-8869.

**Ferrari, A.**, & Noppeney, U. (2021). Attention controls multisensory perception via two distinct mechanisms at different levels of the cortical hierarchy. *PLoS biology*, 19(11), e3001465.

Benetti, S., Zonca, J., **Ferrari, A.**, Rezk, M., Rabini, G., & Collignon, O. (2021). Visual motion processing recruits regions selective for auditory motion in early deaf individuals. *NeuroImage*, 230, 117816.

Hickman, L. J., Keating, C. T., **Ferrari, A.**, & Cook, J. L. (2021). Skin conductance as an index of alexithymic traits in the general population. *Psychological Reports*, 00332941211005118.

Beierholm, U., Rohe, T., **Ferrari, A.**, Stegle, O., & Noppeney, U. (2020). Using the past to estimate sensory uncertainty. *eLife*, 9, e54172.

Noppeney, U., Jones, S. A., Rohe, T., **Ferrari, A.** (2018). See what you hear - How the human brain forms representations across the senses. *Neuroforum*, A169-A181.

Lee, S. A., **Ferrari, A.**, Vallortigara, G., & Sovrano, V. A. (2015). Boundary primacy in spatial mapping: Evidence from zebrafish (*Danio rerio*). *Behavioural processes*, 119, 116-122.

### Manuscripts in preparation

**Ferrari, A.\***, Mazzi, G.\*, Rabini, G., Mencaroni, M. L., Pavani, F., Benetti, S. Neural mechanisms of multisensory integration during face-to-face communication.

Degano, G.\*, **Ferrari, A.\***, Noppeney, U. Audiotactile encoding of music in the human brain.

**Ferrari, A.**, Meijer, D., Noppeney, U. Attention selection and switching in multisensory causal inference.

Chen Y., **Ferrari A.**, Hagoort, P., Bocanegra, B., Poletiek, F. Statistical learning of a hierarchical centre-embedded structure: influence of Zipf distribution and semantic biases.

## Invited talks

**Ferrari, A.** (2025). The Bayesian mind: perceiving the world is an inference problem. Invited by Prof. Marco Formentin, Padova Neuroscience Center, Italy

**Ferrari, A.** (2024). Multimodality as a design feature of human cognition. Invited by Cognitive Neuroscience Department, SISSA, Italy

**Ferrari, A.** (2024). Bayesian Causal Inference in multimodal communication. Invited by Prof. Gabriella Vigliocco, UCL, UK

**Ferrari, A.** (2022). Bayesian Causal Inference in the mind and brain. Invited by Prof. Francesco Pavani, CIMeC, University of Trento, Italy

## Conference Symposium Organization

Chairing of Nanosymposium “Cross-modal processing in humans” at SfN Neuroscience 2024, Chicago, IL, USA. 05/10/2024 – 09/10/2024.

Co-organization and chairing of the symposium "Multisensory processing in face-to-face communication" at the 21st International Multisensory Research Forum, Brussels, Belgium. 27/06/2023 – 30/06/2023

Organization and chairing of the symposium "How do we learn and predict structure in the world?" at the 18th NVP Winter Conference on Brain and Cognition, Egmond aan Zee, The Netherlands. 28/04/2022 – 30/04/2022

## Conference Oral Presentations

**Ferrari, A.** (2025). Binding voices and faces: How the brain uses prior expectations to integrate multisensory signals in communication. Talk accepted at the 23rd International Multisensory Research Forum, Durham, UK. 15/07/2025 – 18/07/2025

**Ferrari, A.** (2024). Audiotactile encoding of music in the human brain. Nanosymposium talk at SfN Neuroscience 2024, Chicago, IL (USA). 05/10/2024 – 09/10/2024

**Ferrari A.** et al. (2024). Statistical learning of a hierarchical centre-embedded structure: influence of Zipf distribution and semantic biases. Talk presented at the Interdisciplinary Advances in Statistical Learning Conference, San Sebastián, Basque Country, Spain. 05/06/2024 – 07/06/2024

**Ferrari, A.** (2023). Interactive effects of prosody and beat gestures on spoken language comprehension. Talk presented at the 19th NVP Winter Conference on Brain and Cognition, Egmond aan Zee, The Netherlands. 14/12/2023 – 16/12/2023

**Ferrari, A.** (2023). Towards a neurocognitive model of multisensory processing in face-to-face communication. Talk presented at the 21st International Multisensory Research Forum, Brussels, Belgium. 27/06/2023 – 30/06/2023

**Ferrari, A.** (2022). Updating contextual visual expectations. Talk presented at the European Conference on Visual Perception (ECPV 2022), Nijmegen, The Netherlands. 28/08/2022 – 01/09/2022

**Ferrari, A.** et al. (2022). The neural signatures of incidental and intentional statistical learning. Talk presented at the 18th NVP Winter Conference on Brain and Cognition, Egmond aan Zee, The Netherlands. 28/04/2022 – 30/04/2022

**Ferrari, A.** (2019). Neural mechanisms of attention in multisensory decision-making. Talk presented at the Oscillations Workshop, Centre for Human Brain Health, Birmingham, UK. 10/05/2019

**Ferrari, A.** (2018). The interplay between attention and multisensory integration. Talk presented at the Attention & Oscillations Workshop, Centre for Human Brain Health, Birmingham, UK. 16/11/2018

## Conference Poster Presentations

**Ferrari, A.**, Hagoort, P. (2024). Beat gestures and prosodic stress interactively influence language comprehension. Poster presented at the 28<sup>th</sup> Workshop on the Semantics and Pragmatics of Dialogue, Rovereto, Italy. 11/09/2024 – 12/09/2024

**Ferrari, A.**, Mazzi, G., Mencaroni, M. L., Valzolgher, C., Pavani, F., Benetti, S. (2024). Bayesian Causal Inference governs multisensory integration during face-to-face communication. Poster presented at the Highlights in the Language Sciences Conference, Nijmegen, The Netherlands. 08/07/2024 – 11/07/2024

Mazzi, G., Mencaroni, M. L., Rabini, G., Tommasini, M., Valzolgher, C., Pavani, F., **Ferrari, A.**, Benetti, S. (2024). Face-to-face social interaction in the human brain: assessing the role of a lateral processing pathway. Poster presented at the Concepts, Actions and Objects (CAOs) Workshop, Rovereto, Italy. 09/05/2024 – 11/05/2024

**Ferrari, A.**, Mazzi, G., Mencaroni, M. L., Valzolgher, C., Pavani, F., Benetti, S. (2024). Prior expectations guide multisensory integration during face-to-face communication. Poster presented at the Concepts, Actions and Objects (CAOs) Workshop, Rovereto, Italy. 09/05/2024 – 11/05/2024

Chen Y., **Ferrari A.**, Hagoort, P., Bocanegra, B., Poletiek, F. (2023). Learning hierarchical centre-embedded structures: influence of distributional properties of the input. Poster presented at the 19th NVP Winter Conference on Brain and Cognition, Egmond aan Zee, The Netherlands. 14/12/2023 – 16/12/2023

**Ferrari, A.** (2023). How does audiovisual prosody influence spoken language comprehension? Poster presented at the 15th Annual Meeting of the Society for the Neurobiology of Language, Marseille, France. 24/10/2023 – 26/10/2023

Mazzi, G., **Ferrari, A.**, Valzolgher, C., Tommasini, M., Pavani, F., Benetti, S. (2023). Domain-general Bayesian causal inference in multisensory processing of face-to-face interactions. Poster presented at the Concepts, Actions and Objects (CAOs) Workshop, Rovereto, Italy. 04/05/2023 – 06/05/2023

Nazli, I., **Ferrari, A.**, Huber-Huber, C., & De Lange, F. P. (2022). Is statistical learning error-driven? Poster presented at the 4th International Conference on Interdisciplinary Advances in Statistical Learning, San Sebastian, Spain. 01/06/2022 – 03/09/2022

Nazli, I., **Ferrari, A.**, Huber-Huber, C., & De Lange, F. P. (2022). Is statistical learning error-driven?. Poster presented at the 18th NVP Winter Conference on Brain and Cognition, Egmond aan Zee, The Netherlands. 28/04/2022 – 30/04/2022

**Ferrari, A.**, & Noppeney, U. (2019). Attention influences how the brain integrates audiovisual signals into spatial representations. Poster presented at the 25th Annual Meeting of the Organization for Human Brain Mapping (OHBM 2019), Rome, Italy. 09/06/2019 – 13/06/2019

Benetti, S., Zonca, J., Rabini, G., **Ferrari, A.**, Foa, V., Rezk, M., & Collignon, O. (2017). Functional selectivity for visual radial motion processing in the temporal auditory cortex of early deaf individuals. Poster presented at the Ten Years of Mind/Brain Sciences at the University of Trento, Rovereto, Italy. 19/10/2017 – 21/10/2017

**Ferrari, A.**, & Noppeney, U. (2017). Endogenous modality-specific attention influences sensory reliability during multisensory integration. Poster presented at the Ten Years of Mind/Brain Sciences at the University of Trento, Rovereto, Italy. 19/10/2017 – 21/10/2017

**Ferrari, A.**, & Noppeney, U. (2017). The role of endogenous modality-specific attention in multisensory integration. Poster presented at the International Multisensory Research Forum (IMRF 2017), Nashville, TN, USA. 19/05/2017 – 22/05/2017

**Ferrari, A.**, & Noppeney, U. (2017). The role of endogenous modality-specific attention in multisensory integration. Poster presented at the Festival of Neuroscience, British Neuroscience Association (BNA), Birmingham, UK. 10/04/2017 – 13/04/2017

## Major Collaborations

**Uta Noppeney**, Donders Institute for Brain, Cognition and Behaviour, Radboud University, The Netherlands.  
Topic: Multisensory integration

**Francesco Pavani**, **Stefania Benetti**, **Eugenio Parise**, CIMEC, University of Trento, Italy; **Gabriella Vigliocco**, University College London, UK; **Judith Holler**, Max Plank Institute for Psycholinguistics, The Netherlands; **James P. Trujillo**, University of Amsterdam, The Netherlands. Topic: Language and communication

**Raffaella Bernardi**, CIMEC, University of Trento, Italy. Topic: Cognitive evaluation of Large Language Models

**Floris P. de Lange**, Donders Institute for Brain, Cognition and Behaviour, Radboud University, The Netherlands; **Athena Akrami**, University College London, UK. Topic: Statistical learning and predictive processing

## Grants & Awards

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| <b>2024</b> | <b>SfN Training and Professional Development Award (\$2500)</b><br>Scholarship awarded based on outstanding academic profile to attend SfN Neuroscience conference in Chicago, USA |
| <b>2023</b> | <b>Marie Skłodowska-Curie European Postdoctoral Fellowship (€189.000)</b><br>Multimodal meanings for conceptual communication before and beyond spoken language (MultiMeans)       |
| <b>2019</b> | <b>Guarantors of Brain Travel Grant (£500)</b><br>Financial support to attend OHBM conference in Rome, Italy   |
| <b>2016</b> | <b>Merit prize (€2,700)</b><br>Scholarship awarded for outstanding achievement during MSc course   |
| <b>2014</b> | <b>Merit prize (€2,700)</b><br>Scholarship awarded for outstanding achievement during BSc course   |

## Communication and Dissemination

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|---|---|
| <b>11/09/2024</b><br>Activity             | <b>Article in UniTrento Magazine</b><br>Outreach article titled “Prima delle parole” to present and promote my research activities to the UniTrento community and beyond  |
| <b>29/11/2023</b>                         | <b>Blog post in Het Talige Brein</b><br>Outreach article titled “How can we communicate with babies?” to share my passion for the study of multimodal communication from the first years of life  |
| <b>18-19/03/2023</b><br>Place<br>Activity | <b>Volunteer at InScience Film Festival</b><br>Nijmegen, The Netherlands<br>Accreditations and info desk management during annual science film festival   |
| <b>28/11/2022</b><br>Activity             | <b>Guest speaker at Scientificast podcast</b><br>Invited interview on the cognitive neuroscience of multimodal integration and learning by Italian top-chart science podcast  |
| <b>23/09/2021</b><br>Activity             | <b>Guest speaker at Youtube channel for science outreach</b><br>Invited live talk on the cognitive neuroscience of learning by Italian Youtube channel dedicated to science dissemination and outreach (IlariaFMath)  |
| <b>2017 – 2019</b><br>Place<br>Activity   | <b>Pint of Science event manager</b><br>Birmingham, United Kingdom<br>Organization of 3 editions of an annual science festival (create and manage team of 5 volunteers; book venue and 6 speakers; organize and deliver science demos (e.g. perceptual illusions); host event |
| <b>2016 – 2019</b><br>Place<br>Activity   | <b>Open days volunteer</b><br>School of Psychology, University of Birmingham, United Kingdom<br>Laboratory demonstrations (piezo-tactile stimulation; eye tracking) during university open days for high school students and their families                                   |

## Skills

**Trainings** Donders Centre for Cognitive Neuroimaging (Nijmegen, NL): 3T Siemens MRI scanner operator qualification (2021: ~80h scanning)

Centre for Human Brain Health (Birmingham, UK): 3T Philips MRI scanner operator qualification (2017-2019: ~150h scanning)

Technical Knowledge	Program	Area	Knowledge
	MATLAB	Programming language	Advanced
	Python	Programming language	Advanced
	Jupyter Notebook	Python coding Interface	Advanced
	SPM	MATLAB MRI data analysis	Advanced
	FSL	Python MRI data analysis	Good
	The Decoding Toolbox	MATLAB MRI data analysis	Advanced
	FreeSurfer	Python MRI data analysis	Good
	WTools	MATLAB EEG data analysis	Advanced
	SPSS	Data analysis	Good
	Bambi	Python Bayesian modelling	Advanced
	Eyelink	Eye-tracking data acquisition	Advanced
	BIOPAC Student Lab	Physiological data acquisition	Basic
	PsPM	Psycho-physiological data analysis	Basic
	Psychtoolbox	MATLAB experiment builder	Advanced
	NBS Presentation	Experiment builder	Advanced
	Gorilla	Online experiment builder	Advanced
	Academic Prolific	Online experiment recruitment	Advanced
	PsychoPy	Python experiment builder	Basic
	Inkscape	Vector graphics editor	Good

**Creative and networking skills** **04/2021 – 06/2022:** Creator and host of joint group meetings for the Predictive Brain lab (PI: Floris P. de Lange). Tasks: design structure of event; establish connection with other labs; organize panel of speakers across labs; host meetings. Established network of PIs: Lucia Melloni, Lars Muckli, Jan Theeuwes, Athena Akrami, Stefan van der Stigchel.

**07/10/2019:** Creator and host of academic skills workshop “What Next? Career tips for PhD students” at the School of Psychology, University of Birmingham, UK. Tasks: design structure of event; organize panel of speakers; organize refreshments through university funds; host meetings.

**Languages** **Italian** (native speaker); **English** (advanced user, IELTS C1 level)

I authorize the processing of the personal data present in this curriculum vitae in compliance with the Legislative Decree 30 June 2003, n. 196 and the GDPR (EU Regulation 2016/679).

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