Curriculum Vitae – Ambra Ferrari, PhD

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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 language in preverbal infancy (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)
Passing Grade: 50/50

07/09/2015 – 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 –01/09/2015 **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
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

01/05/2024 – present **Guest Lecturer**
Affiliation Department of Psychology and Cognitive Science, University of Trento
Activity Cognitive Neuroscience (Prof. Francesco Pavani)
Content: 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: interactive teaching (Journal Club format) on language development (semantics, pragmatics) in preverbal infancy

01/05/2024 – present **Co-supervisor of undergraduate and graduate students**
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: psychophysics; MRI; infant and adult EEG)

01/09/2020 – 30/04/2024 **Co-supervisor of undergraduate and graduate students**
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

01/10/2017 – 31/07/2018 **Co-supervisor of undergraduate students**
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)

01/10/2016 – 31/07/2017 **Teaching assistant**
Affiliation School of Psychology, University of Birmingham, United Kingdom
Activity Delivery of practical workshops on statistics for BSc students

01/10/2013 – 31/07/2014 **Teaching assistant**
Affiliation School of Cognitive Science, University of Trento, Rovereto, Italy
Activity Delivery of practical workshops on statistics for BSc students

Academic Service

08/2023 – present **Review Editor**
Frontiers in Psychiatry – Section Social Neuroscience

12/2021 – present **Ad-hoc reviewer**
Activity Peer-review in Q1 journals (Cereb Cortex; Imaging Neurosci; J Cog Neurosci; Developmental Cog Neurosci; Psych Science; Communications Psychology; Cognition; Neurosci Biobehav Rev; Ann NY Acad Sci; Eur J Neurosci; Psychon Bull Rev; Neuropsychologia; Plos One; Front Neurosci; Front Hum Neurosci; J Exp Psy: HPP; Q J Exp Psy; Mult Res; Lang Cogn Neurosci; Brain & Language)

2025 – present **External member of PhD admission committee**
SISSA Cognitive Neuroscience PhD program (Italy)

2022 – present **External examiner of PhD evaluation committee**
2025: SISSA (Italy); 2024: Sapienza University (Italy); 2022: CIMeC, University of Trento (Italy)

01/10/2021 – 30/09/2022 **Postdoctoral representative**

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

01/09/2021 – 31/07/2022   **Journal Club organizer and chair**

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

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. *PLoS Computational Biology*. ***shared first authorship**

Ferrari, A., Filippin, L., Buiatti, M., Parise, E. (2025). WTools: a MATLAB-based toolbox for time-frequency analysis of infant data. *PLoS One*, 20(5), e0323179.

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*.

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.

Invited talks

Ferrari, A. (2025). How the brain merges information across the senses. Invited Talk at the Italian Network for Computational and Theoretical Neuroscience, Padova, Italy

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 presented 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 (ECVP 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., Mazzi, G., Rabini, G., Mencaroni, M. L., Tommasini, M., Valzolgher, C., Pavani, F., Benetti, S. (2025). How the brain controls multisensory integration in social action processing. Poster presented at the Concepts, Actions and Objects (CAOs) Workshop, Rovereto, Italy. 07/05/2025 – 09/05/2025

Ferrari, A., Hagoort, P. (2024). Beat gestures and prosodic stress interactively influence language comprehension. Poster presented at the 28th 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

Raffaella Bernardi, CIMeC, University of Trento, Italy. Topic: Cognition in AI (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

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

Communication and Outreach

26/11/2025	**Guest speaker at "Chiacchiere in mescita" podcast** Invited interview on the cognitive neuroscience and psycholinguistics of non-verbal communication in preverbal infants
11/09/2024 Activity	**Article in UniTrento Magazine** Outreach article titled "Prima delle parole" to present and promote my research activities to the UniTrento community and beyond
29/11/2023	**Blog post in Het Talige Brein** 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
18-19/03/2023 Place Activity	**Volunteer at InScience Film Festival** Nijmegen, The Netherlands Accreditations and info desk management during annual science film festival
28/11/2022 Activity	**Guest speaker at Scientificast podcast** Invited interview on the cognitive neuroscience of multimodal integration and learning by Italian top-chart science podcast
23/09/2021 Activity	**Guest speaker at Youtube channel for science outreach** Invited live talk on the cognitive neuroscience of learning by Italian Youtube channel dedicated to science dissemination and outreach (IlariaFMath)
2017 – 2019 Place	**Pint of Science event manager** Birmingham, United Kingdom

Activity	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
2016 – 2019	**Open days volunteer**
Place	School of Psychology, University of Birmingham, United Kingdom
Activity	Laboratory demonstrations (piezo-tactile stimulation; eye tracking) during university open days for high school students and their families

Skills

Trainings	Donders Institute Advanced M/EEG Toolkit 2025: 5-day intensive course on advanced M/EEG data analysis (pre-processing, ERP, frequency analysis, source reconstruction, TRFs, statistical methods)
	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)

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