Curriculum Vitae

Francesco Poli

☏ +31 0645803811
✉ francesco.poli@mrc-cbu.cam.ac.uk
15 Chaucer Rd
Cambridge CB2 7EF, UK

◆ Education and Professional History

2024-ongoing	**Postdoctoral Researcher**, *MRC Cognition and Brain Sciences Unit* University of Cambridge, Cambridge, UK Advisor: Prof. Duncan Astle
2023-2024	**Postdoctoral Researcher**, *Donders Institute* Radboud University, Nijmegen, the Netherlands Advisor: Prof. Sabine Hunnius
2018-2023	**Ph.D. Candidate**, *Donders Institute* Radboud University, Nijmegen, the Netherlands Thesis title: *Developing models for learning and exploration* Ph.D. Awarded *Cum Laude* on 22/02/2024 Advisors: Prof. Sabine Hunnius & Prof. Rogier B. Mars
2022	**Visiting Ph.D. Student**, *University of Oxford* Wellcome Centre for Integrative Neuroimaging Project: Modelling learning with time-varying hidden Markov models Advisor: Prof. Jill O'Reilly
2021	**Visiting Ph.D. Student**, *Max Planck Institute for Human Development* Berlin, Germany Project: Developing gaze-contingent eye-tracking paradigms for infant research Advisor: Prof. Azzurra Ruggeri
2016-2018	**Master's Degree**, *University of Padua* Cognitive Neuroscience and Clinical Neuropsychology Project: The development of implicit Theory of Mind (*University of St. Andrews*) Final Grade: 110/110 cum laude Thesis Advisors: Profs. C. Krupenye, M. Carpenter, J. Call, & F. Simion

2018 | **Visiting Student**, *Max Planck Institute for Evolutionary Anthropology*
Leipzig, Germany
Project: Calibrating and testing great apes with eye-tracking techniques
Advisor: Prof. Christopher Krupenye

2015-2018 | **Research Assistant**, *University of Milano-Bicocca*
Behavioural Insight Bicocca (BIB) Lab
Projects: Communicative and logical abilities in problem-solving
Advisor: Prof. Laura Macchi

2013-2016 | **Bachelor's Degree**, *University of Milano-Bicocca*
Psychological Sciences and Techniques
Final Grade: 110/110 cum laude
Thesis Advisor: Prof. Laura Macchi

◆ Supervision

Ph.D. students

2022-2024 | Jessica Ramos-Sanchez, investigating information-seeking with EEG
Eline De Boer, investigating free play in toddlers

Master's students

2023 | Jana Bersee, *University of Amsterdam*
Infants' learning in stable and volatile environments: A pupillometry study

2022 | Pravallika Naidu, *Max Planck Institute for Human Development*
Investigating active learning in infants using a gaze-contingent paradigm

2022 | Sofia Weidle Scatolin, *Radboud University*
The effects of early environmental factors on infants' cognitive functioning

2022 | Maran Koolen, *Radboud University*
Curiosity-driven learning in the autism spectrum disorder

2019 | Giulia Serino, *Radboud University*
The cognitive mechanisms underlying statistical learning in infants and adults

◆ Teaching

09/2024	Modelling Theories of Curiosity RTG Kick-Off Workshop, *University of Gottingen*
08/2024	Hands-On: Eye-Tracking with Python Bridging the Technological Gap Workshop, *Max Planck Institute*
01/2024	Python fundamentals for eye-tracking research BCCCD pre-conference workshop, *Central European University*
2020-2021	Perception and Development Frontal lectures and hands-on classes (BSc), *Radboud University*
2019-2020	Brain and Cognition Grading (BSc), *Radboud University*
2019-2020	Introduction to Brain and Behaviour Hands-on classes (BSc), *Radboud University*
2019-2020	Action and Development Frontal lectures and hands-on classes (BSc), *Radboud University*

◆ Grants and Scholarships

5892€	Erasmus+ Staff mobility for teaching and training 2022
2000€	INPS scholarship 2017-2018
2000€	INPS scholarship 2016-2017
2000€	INPS scholarship 2015-2016

◆ Publications

Publications by year:

1. **Poli, F.**, Meyer, M., Mars, R. B., & Hunnius, S. (2024). Exploration in 4-year-old children is guided by learning progress and novelty. *Child Development*. https://doi.org/10.1111/cdev.14158

2. **Poli, F.**, Li, Y. L., Naidu, P., Mars, R. B., Hunnius, S., & Ruggeri, A. (2024). Toddlers strategically adapt their information search. *nature communications*, *15*(1), 5780. https://doi.org/10.1038/s41467-024-48855-4

3. **Poli, F.**, Ghilardi, T., Bersee, J. H., Mars, R. B., & Hunnius, S. (2024). Infants Track Environmental Volatility to Optimize Their Learning. In *Proceedings of the Annual Meeting of the Cognitive Science Society* (Vol. 46). https://escholarship.org/uc/item/68r1k5gh

4. **Poli, F.**, O'Reilly, J. X., Mars, R. B., & Hunnius, S. (2024). Curiosity and the dynamics of optimal exploration. *Trends in Cognitive Sciences*. https://doi.org/10.1016/j.tics.2024.02.001

5. **Poli, F.**, Koolen, M., Vélazquez, C., Ramos-Sanchez, J., Meyer, M., Mars, R. B., Rommelse, N., Hunnius, S. (2023). Autistic traits foster effective curiosity-driven exploration. *PsyArXiv*. https://doi.org/10.31234/osf.io/jnfdw

6. Ghilardi, T., **Poli, F.**, Meyer, M., Colizoli, O., & Hunnius, S. (2023). Early roots of information-seeking: Infants predict and generalize the value of information. *Elife preprint.* https://doi.org/10.31234/osf.io/pevq9

7. **Poli, F.**, Ghilardi, T., Beijers, R., de Weerth, C., Hinne, M., Mars, R. B., & Hunnius, S. (2023). Individual differences in processing speed and curiosity explain infant habituation and dishabituation performance. *Developmental Science*, e13460. https://doi.org/10.31234/osf.io/thszj

8. **Poli, F.**, Ghilardi, T., Mars, R. B., Hinne, M., & Hunnius, S. (2023). Eight-Month-Old Infants Meta-Learn by Downweighting Irrelevant Evidence. *Open Mind*, 1-15.

9. Meyer, M., van Schaik, J. E., **Poli, F.**, & Hunnius, S. (2023). How infant-directed actions enhance infants' attention, learning, and exploration: Evidence from EEG and computational modeling. *Developmental Science*, 26(1), e13259.

10. **Poli, F.**, Meyer, M., Mars, R. B., & Hunnius, S. (2022). Contributions of expected learning progress and perceptual novelty to curiosity-driven exploration. *Cognition*, *225*, 105119.

11. **Poli, F.**, Serino, G., Mars, R.B., & Hunnius, S. (2020). Infants tailor their attention to maximize learning. *Science Advances*, 6(39).

12. Bagassi, M., Salerni, N., Castoldi, V., Sala, V., Caravona, L., **Poli, F.**, & Macchi, L. (2020). Improving Children's Logical and Mathematical Performance via a Pragmatic Approach. *Frontiers in Education,* 5(54).

13. Macchi, L., Caravona, L., **Poli, F.**, Bagassi, M., & Franchella, M. A. (2020). Speak your mind and I will make it right: the case of "selection task". *Journal of Cognitive Psychology*, 1-15.

14. Caravona, L., Macchi, L., **Poli, F.**, Vezzoli, M., Franchella, M. A., & Bagassi, M. (2019). How to Get Rid of the Belief Bias: Boosting Analytical Thinking via Pragmatics. *Europe's Journal of Psychology*, 15(3), 595.

◆ Talks

Poli, F., Ghilardi, T., Bersee, J., Mars, R.B., Hunnius, S. (2024) Infants track environmental volatility to optimize their learning. **Oral presentation** at *CogSci 2024*, Rotterdam, the Netherlands.

Poli, F. (2024) Infant attention as precision-weighting of prediction errors. **Oral presentation** at *ICIS 2024:* Glasgow, Scotland.

Poli, F. Ghilardi, T., Bersee, J., Mars, R.B., Hunnius, S. (2024) Learning in uncertain worlds: The dynamics of infant brain and behaviour in response to change. **Symposium** at *ICIS 2024:* Glasgow, Scotland.

Poli, F., Ghilardi, T., Mars, R.B., Hunnius, S. (2023) Pupil dilation as a window onto infants' learning processes. **Oral presentation** at the *52nd annual meeting of the Jean Piaget Society*: Madrid, Spain.

Poli, F., Ghilardi, T. (2023) Learning how to explore: The developmental mechanisms of information-seeking. **Symposium** at *Budapest CEU Conference on Cognitive Development 2023*: Budapest, Hungary.

Poli, F., Li, Y., Naidu, P., Mars, R.B., Hunnius, S., Ruggeri, A. (2022) Infants are active and adaptive ecological learners: Evidence from a novel gaze-contingent search task**. Oral presentation** at *ICIS 2022:* Ottawa, Canada.

Poli, F., Mars, R.B., Hunnius, S. (2020) Infants track learning progress and allocate their attention based on it: an eye-tracking study. **Oral presentation** at the *Budapest CEU Conference on Cognitive Development 2020*: Budapest, Hungary.

◆ Programming Skills

Developed the following models and tools:

- **Hierarchical Bayesian models** to measure individual differences in infants' cognitive functioning (https://osf.io/zux9v/).
- **Reinforcement learning models** to measure learning, exploration, and sampling decisions (https://osf.io/h2prm/).
- **Information-theoretic models** to measure various forms of uncertainty (https://osf.io/a93qr/)
  .
- **Gaze-contingent "Torchlight"** to allow infants to actively explore the screen controlling a torchlight with their eyes (https://osf.io/5y4tw).