

## ◆ Professional History and Education

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

	Project: Calibrating and testing great apes with eye-tracking techniques Advisor: Prof. Christopher Krupenye
2015-2018	<b>Research Assistant</b> , <i>University of Milano-Bicocca</i> Behavioural Insight Bicocca (BIB) Lab Projects: Communicative and logical abilities in problem-solving Advisor: Prof. Laura Macchi

2013-2016	<b>Bachelor's Degree</b> , <i>University of Milano-Bicocca</i> Psychological Sciences and Techniques Final Grade: 110/110 cum laude Thesis Advisor: Prof. Laura Macchi
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## ◆ Publications

- Poli, F.**, Koolen, M., Velazquez-Vargas, C.A., Ramos-Sanchez, J., Meyer, M., Mars, R.B., Rommelse, N., Hunnius, S. (2024) Autistic traits foster effective curiosity-driven exploration. *PLoS Computational Biology*. 20(10): e1012453.  
<https://doi.org/10.1371/journal.pcbi.1012453>
- 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*. 00, 1–11.  
<https://doi.org/10.1111/cdev.14158>
- 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>
- 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>
- 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>
- Poli, F.**, Koolen, M., Velazquez, 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>
- 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>
- 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>
- 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.
- 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.
- 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.
- Poli, F.**, Serino, G., Mars, R.B., & Hunnius, S. (2020). Infants tailor their attention to maximize learning. *Science Advances*, 6(39).

13. 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).
14. 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.
15. 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.

## ◆ Preregistrations

1. van den Bosch, S., Meyer, M., Hunnius, S., & **Poli, F.** (2024, April 9). Is information gain rewarding for infants?. <https://doi.org/10.17605/osf.io/a9mvd>
2. Donkers, I., **Poli, F.**, Oosterman, J., Hunnius, S., Meyer, M., & Wiegand, I. (2024, February 1). Curiosity-driven exploration and learning in aging. <https://doi.org/10.17605/osf.io/g2hfr>
3. Krol, M., Ramos-Sanchez, J., Praat, A., Moiseenko, O., Fico, K., de Kloe, Y., ... **Poli, F.** (2024, January 19). Changes in cognitive effort across infancy and early childhood. <https://doi.org/10.17605/osf.io/vgqjt>

## ◆ Grants and Scholarships

789'791.00 €	<p><b>NWO SSH Open Competition L 2023</b></p> <p>Morality as a hyperparameter in social decision making: A new approach to studying an age-old problem</p> <p>To: R.B. Mars (Main applicant), I. Brazil, <b>F. Poli</b>, R. J. Blair</p>
5'892.00 €	<p><b>Erasmus+ Staff mobility for teaching and training 2022</b></p> <p>To: <b>F. Poli</b></p>
6'000.00 €	<p><b>INPS excellence scholarship 2015-2018</b></p> <p>To: <b>F. Poli</b></p>

## ◆ Conference Talks and Symposia

**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.

## ◆ Invited Talks and Workshops

Department of Psychology, University of Gottingen (Germany). **Invited workshop**, host: Prof. Nivedita Mani (2024).

Max Plank Institute for Evolutionary Anthropology (Germany). **Invited workshop**, host: Prof. Hanna Dr. Pierre-Etienne Martin, Dr. Laura Lewis, and Prof. Hanna Schleihauf (2024)

Department of Psychology, New York University Abu Dhabi (United Arab Emirates). **Invited talk**, host: Dr. Stefania Vacaru (2024).

Department of Psychology, University of Milano-Bicocca (Italy). **Invited seminar**, host: Prof. Laura Macchi (2023).

Learning Adaptive Behaviour Lab, University of Ghent (Belgium). **Invited talk**, host: Prof. Tom Verguts (2023).

BabyDevLab, University of East London (United Kingdom). **Invited talk**, host: Prof. Sam Wass (2022).

## ◆ Teaching

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

## ◆ 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

## ◆ Programming Skills

I developed the following models and tools:

- **Hierarchical Bayesian models** to measure individual differences in infants' cognitive functioning (<https://osf.io/zux9v/>) [Python].
- **Reinforcement learning models** to measure learning, exploration, and sampling decisions (<https://osf.io/h2prm/>) [JAGS/R].
- **Information-theoretic models** to measure various forms of uncertainty (<https://osf.io/a93qr/>) [Python].
- **Generative Network models** to simulate the development of the brain connectome across time [Matlab].
- **Gaze-contingent "Torchlight"** to allow infants to actively explore the screen controlling a torchlight with their eyes (<https://osf.io/5y4tw>) [Python].
- **DevStart** is an online guidebook to introduce students to cognitive science research methods and programming (<https://tinyurl.com/devstarhome>)

## ◆ Journal Peer Reviews

Nature Communications, Elife, Child Development, Developmental Science, Psychological Review, Topics In Cognitive Science.