Nicolò Cesana-Arlotti, PhD

July 2023

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ACADEMIC APPOINTMENTS

Assistant Professor of Psychology **7/1/2023 – present**
Yale University, New Haven, Ct., USA

Postdoctoral Fellow **01/03/2018 – 12/31/2022**
Department of Psychological and Brain Science,
Johns Hopkins University, Baltimore, Md., USA
Advisors: Justin Halberda, Chaz Firestone

Postdoctoral Fellow **10/19/2015 – 12/31/2017**
Department of Cognitive Science,
Central European University, Budapest, Hungary
Advisors: Ágnes M. Kovács & Ernő Téglás

Visiting Stay **09/03/2013 – 03/01/2014**
Department of Psychology,
Harvard University, Boston, Ma., USA
Supervisor: Susan Carey

EDUCATION

PhD with *magna cum laude*, **01/15/2016**
The Origin of Logical Concepts
Center for Brain and Cognition
Universitat Pompeu Fabra, Barcelona, Spain
Advisor: Luca L. Bonatti

MA in Philosophy with *magna cum laude* **10/11/2009**
Universitá Statale di Milano, Milan, Italy
Advisor: Sandro Zucchi

BA in Philosophy with *magna cum laude* **03/04/2008**
Universitá Statale di Milano, Milan, Italy
Advisor: Paolo Spinicci

PUBLICATIONS

Cesana-Arlotti, N., (in press). The re-emergence of the language of thought hypothesis: consequences for the development of the logic of thought [commentary]. *Behavioral and Brain Sciences*.

Cesana-Arlotti, N., Varga, B., and Téglás, E., (2022). The pupillometry of the possible: an investigation of infants' representation of mutually exclusive alternatives. *Philosophical Transactions of the Royal Society of London B* 377, 20210343.

Cesana-Arlotti, N., Kovács, Á.M. & Téglás, E. (2020). Infants recruit logic to learn about the social world. *Nature Communications* 11, 5999.

Cesana-Arlotti, N., Knowlton, T., Lidz, J., and Halberda, J. (2020) Who's chasing who? Adults' and infants' engagement of quantificational concepts ("Each" and "All") when representing visual chasing events. *Journal of Vision* 20 (11), 1549-1549

Cesana-Arlotti, N., Martín, A., Téglás, E., Vorobyova, L., Cetnarski, R., and Bonatti, L.L. (2018). Precursors of logical reasoning in preverbal human infants. *Science* 359, 1263–1266.

Cesana-Arlotti, N. The Origin of Logical Concepts. *PhD Thesis*, Pompeu Fambra University (2015).

Cesana-Arlotti, N., Téglás, E., and Bonatti, L.L., (2012). The Probable and the Possible at 12 Months: Intuitive Reasoning about the Uncertain Future. In J. B. Benson (Serial Ed.) & F. Xu & T. Kushnir (Vol. Eds.), *Rational Constructivism in Cognitive Development* (pp. 1–25). Elsevier Inc.: Academic Press.

Manuscripts under review/ revision

Bohus, A. K., Cesana-Arlotti, N., Martın-Salguero, A., and Bonatti, L. L., (under review). The scope and role of deduction in infant cognition.

Cesana-Arlotti, N., and Halberda, J., (under review). A continuity in logical development: domain-general disjunctive inference by 2.5-year-old toddlers.

Halberda, J., Cesana-Arlotti, N., Jauregui S., and Nichols, S. (under revision). What is not but could be if": Developmental change in children's understanding of possible and impossible events in a "plinko" physical probability device.

TALKS IN CONFERENCES

Cesana-Arlotti, N., Knowlton, T., Lidz, J., and Halberda, J. (2022) Universal quantification without language? Ten-month-old infants represent the exhaustivity of a relation in visually presented events. *48th Annual Meeting of The Society for Philosophy and Psychology*, Milan, Italy, June 19 – 22 2022.

Cesana-Arlotti, N., Knowlton, T., Lidz, J., and Halberda, J. (declined) On the origins of universal quantification: 10-month-old infants represent the exhaustivity of multi-agent intentional actions *Virtual XXIII Biennial International Conference on Infant Studies*, Ottawa, Canada, July 7 – 10 2022

Cesana-Arlotti, N., Varga, B., and Téglás, E. (declined) Infants' representation of alternative possibilities: evidence from pupillometry *Virtual XXIII Biennial International Conference on Infant Studies*, Ottawa, Canada, July 7 – 10 2022

Cesana-Arlotti, N., Knowlton, T., Lidz, J., and Halberda, J. (2020) An investigation of the origins of logical quantification: infants' (and adults') representations of exhaustivity in collective or individual complex actions. *Virtual XXII Biennial International Conference on Infant Studies*, July 6 – 9 2020

Cesana-Arlotti, N., Kovacs, A. M. and Téglás, E. (2020) Preverbal logical reasoning aids infants' social inferences. *2020 Budapest CEU Conference on Cognitive Development*, Budapest, Hungary, January 9 –11 2020.

Cesana-Arlotti, N., Kovacs, A. M. and Téglás, E. (2018) Precursors of logical reasoning in goal-directed action understanding: does reasoning by exclusion support infants' processing of other agents' preferences? *XXI Biennial International Conference on Infant Studies*, Philadelphia, Pennsylvania, USA, June 30 – July 3, 2018.

Cesana-Arlotti, N., Téglás, E., & Bonatti, L.L. (2014) Prelinguistic negation: evidence from infants disjunctive reasoning. *XIX Biennial International Conference on Infant Studies*, Berlin, Germany, July 3 – 5 2014.

Cesana-Arlotti, N., Téglás, E., & Bonatti, L.L. (2014) Logic at 12 months: disjunctive reasoning. *Budapest CEU Conference on Cognitive Development*, Budapest, Hungary, January 9 - 11 2014.

POSTERS IN CONFERENCES

Cesana-Arlotti, N., Jauregui, S., Mazalik, P., Nichols, S., and Halberda, J. (2023) Modal concepts at the preschool: children reason about impossible cupcakes and necessary peppers. *2023 Budapest CEU Conference on Cognitive Development*, Budapest, Hungary, January 5 – 7 2023.

Cesana-Arlotti, N., Icard, T., Knowlton, T., Lidz, J., Pietroski, P., Halberda, J. (2023) The slower they swim, the faster they fly! Can preverbal infants learn antitonic functions? *2023 Budapest CEU Conference on Cognitive Development*, Budapest, Hungary, January 5 – 7 2023.

Cesana-Arlotti, N., Knowlton, T., Lidz, J., and Halberda, J. (2022) Universal quantification without language? Ten-month-old infants represent the universality of visually presented properties. *ELM*, Philadelphia, Pennsylvania, USA, May 18 – 20 2021.

Cesana-Arlotti, N., Knowlton, T., Lidz, J., and Halberda, J. (2021) An investigation of the origins of logical quantification: infants' (and adults') representations of exhaustivity in collective or individual complex actions. *The 6th Lancaster Conference on Infant and Early Child Development.* 25 August 25 – 27 2021

Cesana-Arlotti, N., Knowlton, T., Lidz, J., and Halberda, J. (2021) An investigation of the origins of logical quantification: infants' (and adults') representations of exhaustivity in collective or individual complex actions. *47th Annual Meeting of The Society for Philosophy and Psychology Virtual Meeting.* June 28 – July 2 2021

Cesana-Arlotti, N., Knowlton, T., Lidz, J., and Halberda, J. (2021) Representing the exhaustivity of collective and individual actions: an investigation of universal quantification in adults and infants. *Ducog* 2021. May 18 – 21 2021

Cesana-Arlotti, N., Knowlton, T., Lidz, J., and Halberda, J. (2020) An investigation of the origin of logical quantification: infant's and adult's representations of collective and distributive actions in complex visual scenes. *Cognitive Science Society Virtual Meeting*, July 29 – August 1 2020

Cesana-Arlotti, N., Knowlton, T., Lidz, J., and Halberda, J. (2020) Who's chasing who? Adults' and infants' engagement of quantificational concepts ("Each" and "All") when representing visual chasing events. *Virtual Vision Science Society Meeting*, June 19 – 24 2020

Cesana-Arlotti, N., Knowlton, T., Lidz, J., Pietroski, P., and Halberda, J. (2019) Concepts of universal quantification ("each" and "all") may support infant and adult understanding of collective and distributive actions. *Cognitive Development Society* (CDS) 2019 Biennial Meeting, Louisville, Kentucky, USA, October 17 – 19 2019

Jauregui S., Cesana-Arlotti, N., Nichols, S. and Halberda, J. (2019) Children successfully reason about impossible and necessary events, but fail to reason between probabilistic outcomes. *Cognitive Development Society* (CDS) 2019 Biennial Meeting, Louisville, Kentucky, USA, October 17 – 19 2019

Cesana-Arlotti, N., Kovacs, A. M. and Téglás, E. (2019). Preverbal logical reasoning guides infants' understanding of goals and actions. *45th Annual Meeting of The Society for Philosophy and Psychology*, San Diego, California, USA, June 10 – 13 2019.

Cesana-Arlotti, N., Kovacs, A. M. and Téglás, E. (2018). Preverbal logic at work: precursors of logical reasoning support infants' understanding of others' preferences. *McDonnell network plenary meeting on conceptual primitives of quantification*. Universitat Pompeu Fabra, Barcelona, Spain, July 11 – 12 2018.

Cesana-Arlotti, N., Kovacs, A. M. and Téglás, E. (2018). Preverbal logic at work: does logical reasoning support infants' processing of others' preferences? *2018 Budapest CEU Conference on Cognitive Development*, Budapest, Hungary, January 4 – 6 2018.

Cesana-Arlotti, N., & Téglás, E (2018). Can infants represent alternative possibilities? A pupillometric investigation of infants' representation of the possible. *2018 Budapest CEU Conference on Cognitive Development*, Budapest, Hungary, January 4 – 6 2018.

Cesana-Arlotti, N., & Téglás, E (2017). Steps toward a pupillometry of the possible. *CAOS workshop*, Rovereto, Italy, May 4-7 2017.

Martín A., Cesana-Arlotti, N., Téglás E., Vorobyova L. and Bonatti, L.L. (2017). Behavioral correlates of logical inferences. *2017 Budapest CEU Conference on Cognitive Development*, Budapest, Hungary, January 5-7 2017.

Martín A., Cesana-Arlotti, N., & Bonatti, L. L. (2016). Behavioural correlates of logical inferences. *CogEvo*, Rovereto, Italy, July 6-9 2016.

Cesana-Arlotti, N., Cetnarski R., and Bonatti L. L. (2016). Eye-tracking measures of logical processing in infants and adults. *XX Biennial International Conference on Infant Studies*, New Orleans, Louisiana, USA May 26 – 28 2016.

Cesana-Arlotti, N., Téglás, E., & Bonatti, L. L. (2014). Infants' logical reasoning revealed by looking time and eye-tracking measures. *XIX Biennial International Conference on Infant Studies* Berlin, Germany, July 3-5 2014.

Cesana-Arlotti, N., Téglás, E., & Bonatti, L. L. (2013). Primitives of logical reasoning: Disjunction. 2013 *Budapest CEU Conference on Cognitive Development*, Budapest, Hungary, January 10-12 2013

INVITED TALKS

Central European University. *Cognitive Development Center Colloquium*. Vienna, Austria, May 31 2023

Sheffield University. *Department of Philosophy*. Sheffield, UK, May 23 2023

University of Copenhagen. *Department of Psychology*. Copenhagen, Denmark, May 4 2023

Universitat Pompeu Fabra. *Center for Brain and Cognition Seminar*. Barcelona, Spain, April 28 2023

Brown University. *McDonnell Focused Workshop on Entailment, Monotonicity, and Ordering*. Providence, Rhode Island, USA, Dec 5 - 7 2022

Yale University. *Special Developmental Seminar*. New Haven, Connecticut, USA, March 3 2022

Navy Center for Applied Research in Artificial Intelligence. *US Naval Research Laboratory*. Washington DC, USA, February 17 2022

University of Milano-Bicocca. *Department of Psychology*. Milan, Italy, October 25 2021

University of Maryland. *DevSci Workshop: Endless Possibilities*. College Park, Maryland, USA, September 27 2019

Harvard University. *McDonnell network plenary workshop on propositional thought*. Martha's Vineyard, Massachusetts, USA, June 14-16 2019

Harvard University. *Laboratory for Developmental Studies*. Cambridge, Massachusetts, USA, June 11 2019

Institut des Sciences Cognitives - Marc Jennerod - CNRS Université. *Department of Psychology*. Lyon, France, November 15 2017

Central European University. *McDonnell network focused workshop on the early understanding of verbal negation.* Budapest, Hungary, January 9-10 2017

Università Statale di Milano. *Workshop on Mind & Language*. Milan, Italy. March 2013

FELLOWSHIPS AND SCHOLARSHIPS

Subject: Seed funding for new collaborative research Monotonicity and Antitonicity in Infants and Children
Co-PIs: Justin Halberda, Thomas Icard, Jeffrey Lidz, Paul Pietroski
Duration: January 2019 – December 2021
Funding Agency: James S. McDonnell Foundation Collaborative Activity Award (Subaward from Harvard University, Susan Carey PI)
Funding volume: $20,000.00

Subject: Postdoctoral project grant: Monotonicity and Antitonicity in Infants and Children
Sponsors: Lisa Feigenson and Jeffrey Lidz
Duration: January 2019 – December 2021
Funding Agency: James S. McDonnell Foundation Collaborative Activity Award (Subaward from Harvard University, Susan Carey PI)
Funding volume: $137,765.00

Subject: Postdoctoral project grant: The Origin of Quantificational Thought in Preverbal Human Infants
Sponsors: Justin Halberda and Paul Pietroski
Duration: January 2018 – December 2019
Funding Agency: James S. McDonnell Foundation Collaborative Activity Award (Subaward from Harvard University, Susan Carey PI)
Funding volume: $130,235.00

Subject: Research stay abroad grant (BE-DGR), 2012 BE1 00250
Duration: September 2013 – March 2014
Funding Agency: Agència de Gestió d'Ajuts, Universitaris i de Recerca, Generalitat de Catalunya.
Funding volume: 7,167.00 euros

Subject: PhD project The Origin of Logical Concepts – Grant for the recruitment of new research staff
Duration: October 2011 – May 2014
Funding Agency: Agència de Gestió d'Ajuts Universitaris i de Recerca, Generalitat de Catalunya.
Funding volume: 45,600.00 euros

MEMBERSHIPS

Cognitive Development Society, International Congress of Infant Studies Society, McDonnell Foundation Network, Society for Philosophy and Psychology, Society for Research in Child Development, Vision Science Society.

TEACHING

Foundations of Logical Thought in Cognitive Development, Yale University (faculty member). Fall 2023

Foundations of Logical Thinking, Johns Hopkins University (primary instructor). Spring 2022

Infant Number Cognition, Cognitive Development, University of Milano-Bicocca (guest lecture), Instructor: Hermann S. Bulf. Spring 2021

Origin of Logical Reasoning, Infant Cognition, Central European University (guest lecture), Instructor: György Gergely Fall 2016

Developmental Psychology: Origins of Knowledge, Harvard University (teaching assistant), Instructor: Susan Carey Fall 2013

MENTORING AND ADVISING

Johns Hopkins University, Advising and supervision of undergraduate research assistants, 2018-2021:

Aditya Yedetore, Ananda Thomas, Athan Cheng, Crystal Cheng, Dana Chan, Grace Lee, Isabel Rios-Pulgar, Jaima Devries, Molly Atiencia, Nicole Steiner, Nikita Shtarkman, Olivia Perdigon, Sofía Jauregui.

Universitat Pompeu Fabra, Master theses' assistant advisor, 2014-2015:
Kinga Bohus, *Disjunctive Syllogism in Infants: a Multimodal Study*.
Liza Voroybova, *Disjunctive Reasoning in 12-Month-Old Infants*.

PROFESSIONAL SERVICE

Ad Hoc Reviewer
Journals: Philosophical Transactions of the Royal Society B, Psychological Science, Psychological Review, Developmental Science, Journal of Experimental Child Psychology.

SELECTED MEDIA ARTICLES THAT REFERRED TO MY WORK
Can a 1-year-old reason like a scientist? Yes, new research concludes. – Washington Post
Babies think logically at one year old – The Times
Babies Think Logically Before They Can Talk – Scientific American
Babies Develop Logic and Reason Before Language, New Data Shows | Fatherly
Los bebés son capaces de razonar incluso antes de saber hablar – La Vanguardia
Un estudio revela que los bebés son capaces de razonar mucho antes de empezar a hablar – La Sexta TV
Bambini, a un anno non parlano ma ragionano benissimo – La Repubblica
Scienza, dentro agli occhi dei bambini c'è il segreto del cervello umano - Il Foglio
Le bébé fait preuve d'un esprit déjà logique – Le Monde
Notícias ao Minuto - Bebés são capazes de usar pensamento lógico antes de aprenderem a falar
Вести.Ru: Младенцам не нужно умение разговаривать, чтобы рассуждать