# Sara Caviola

## Personal

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## Current Position

(From Nov. 1st, 2020): Assistant Professor, Department of Developmental and Social Psychology, University of Padova, Italy.

(From Nov. 1st, 2020): Visiting Research Fellow, School of Psychology, University of Leeds.

## Previous Positions

(10/2018-10/2020) Lecturer in Developmental Psychology, School of Psychology, University of Leeds.

(10/2018-10/2020) Deputy Director of Postgraduate Research Studies (Ph.D) with responsibility for Admissions - School of Psychology, University of Leeds, UK. Required attendance to School and Faculty meetings.

(09/2016-09/2018) Marie Skłodowska-Curie Fellowship, Centre for Neuroscience in Education, Department of Psychology, Cambridge University. Supervisor: Dr Denés Szücs.

(03/2015-03/2016) Postdoctoral Fellow, Department of Developmental and Social Psychology, University of Padova - Supervisor: Prof Daniela Lucangeli.

(02/2013-02/2015) Postdoctoral Fellow, Department of Developmental and Social Psychology, University of Padova - Supervisor: Prof Irene C. Mammarella.

(01/2012-12/2012) Postdoctoral Fellow, Department of Developmental and Social Psychology, University of Padova - Supervisor: Prof Daniela Lucangeli.

## Diploma

(2017) Italian Qualification for the status of Associate Professor Section: Developmental Psychology.

(03/2012) Ph.D. in Psychological Science. Department of Developmental and Social Psychology, University of Padova, Supervisor: Prof Lucangeli.

(01/2011) State registered Psychologist (number 7782) – equivalent to BPS accreditation.

(01/2008–12/2008) University of Padova, Specialization course on Psychopathology and Learning Disabilities (with mention).

(10/2007–10/2008) University of Padova, Post-lauream professional training at the Department of General Psychology and at the Learning Disabilities Service, University of Padova. Research activities and practiced psychological assessment of children with learning disabilities - Supervisor: Prof Cesare Cornoldi.

(09/2004–09/2007) University of Padova, M.Sc. Degree in Experimental Psychology and Cognitive Neuroscience (cum laude) - Supervisor: Prof Cornoldi.

(09/2000–07/2004) University of Padova, Bachelor Degree in Psychological, Cognitive and Psychobiological Science - Supervisor: Dr Alvaro Pra Baldi.

(1995-2000) Liceo Scientifico G. Galilei (Belluno, Italy), Scientific school-living examination (equivalent to junior and senior high school).

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**Research interests**

My research interests are sit at the intersection of cognitive development, education and neuroscience, by implementing complex designs on typical and atypical developing children.

I investigate the role of different emotional aspects (math anxiety in particular) and strategic behaviour in academic achievement and developmental disorders, from a multidimensional perspective. In particular, I examine both emotional and cognitive processes (i.e., working memory, inhibition, etc…) in math achievement and spatial abilities. In addition, I am now integrating these studies with the use of eye-tracking and electronic brain signals –ERPs, EEG.

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**Visiting scholar**

(08/2018-09/2018) Centre for Neuroscience in Education, Department of Psychology, Cambridge University. Supervisor: Prof. Denés Szücs.

(02/2011–07/2011) Carleton University, Ottawa (ON, Canada). Research activity at the Math Lab, Institute of Cognitive Science. Supervisor: Prof Jo-Anne LeFevre.

(03/2010–05/2010) ICN-UCL, London (UK). Research activity at the Institute of Cognitive Neuroscience (ICN-UCL), University College of London (UK). Supervisor: Prof Brian Butterworth.

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**Teaching activities**

From cycle 2018-2019: Teaching activities for the following master modules (School of Psychology, University of Leeds):

- PSYC5900M Advanced Research Issues in Psychology
- MM7621 Advanced Developmental Psychology
- PSYC1603 Developmental Psychology
- PSYC5902M Systematic Review
- PSYC5909M \ 5908M MSc Research Project \ MPsyc Advanced Psychology Research Project

2018-2019: Tutorial activities for the several undergraduate modules (Developmental Psychology, Cognitive Psychology, Social Psychology, Biological Psychology and Perception - School of Psychology, University of Leeds).

2018: Teaching activities for the for the undergraduate course of Psychological and Behavioural Sciences (PBS3 – 4 hours), University of Cambridge.

2015-2016: Course on "Assessment of learning difficulties" (2 credits = 14 hours). Second level: undergraduate - Department of Developmental Psychology, University of Padova.

2015-2016: Course on "Developmental Psychology" (3 credits = 21 hours). Second level: undergraduate - Department of Educational Science, University of Padova.

2013-Present: Teaching activities for the post-lauream specialization course on Didactics and teaching strategies for Learning Difficulties, University of Padova, Italy (tot. 15 hours).

2013-Present: Teaching activities for the post-lauream specialization course on Psychopathology of Learning Disabilities, University of Padova, Italy (tot. 20 hours).

2012-2014: Course on "Assessment and intervention on mathematical difficulties and math learning disabilities" (2 credits = 15 hours). Second level: undergraduate – School of Psychology, University of Padova, Italy.

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**Tutorial Experiences**

From 2021: ArQus Mentor - as a part of ArQus Online Mentoring Programme.

2019-2020 at School of Psychology, University of Leeds (UK): Supervisor of 2 master (MSc) students and 8 bachelor (UG) students for their final Major projects. Personal tutors of 25 UG + MSc students.

2018-2019 at School of Psychology, University of Leeds (UK): Supervisor of 5 master (MSc) students for their final Major projects. Personal tutors of 36 bachelor (UG) students.

From 2016 to 2018 at Cambridge University (UK) I have co-supervised 4 bachelor (UG) and 2 master (MSc) degree students helping them to their projects, data management and analyses and to structure their theses.

From 2008 to 2016 at University of Padova (Italy) I have co-supervised bachelor and master degree students (about 50) helping them to their projects, data management and analyses and to structure their theses:

- 30 MSc Degree final thesis e 18 Bachelor Degree final report.
- 8 final thesis for the Specialization course in Psychopathology of Learning Disabilities.

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**External/Internal examiner – Ph.D. Dissertations**

09/2019 Internal examiner - Doctor in Clinical Psychology [DClinPsych] – University of Leeds (UK): Emma Howarth (ClinPsyD Candidate; Supervisors: Judith Johnson and Daryl O'Connor) Bradford Institute for Health Research and School of Psychology, Universty of Leed, UK.

06/2017 External examiner - Doctor Europeus – University of Valencia (Spain): Jessica Mercader Ruiz (Ph.D. Candidate; Supervisor: María Jesús Presentacion Herrero), Department of Developmental, Educational and Social Psychology and Methodology, Universitat Jaume I (UJI), Castellón de la Plana, Spain.

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**Awards & Grants**

(2016) Marie Skłodowska-Curie Actions Horizon2020 – Individual fellowships (IF). 195,454.80€ [164,247.72£]

(09/2013) G. Di Stefano Award for "The best PhD dissertation" in Developmental Cognitive Psychology, from the Italian Psychological Association.

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**Membership**

- AIRIPA (Italian Association for Learning Disabilities Research and Intervention)
- CSBBCS Society (Canadian Society for Brain, Behaviour and Cognitive Science).
- SRCD Society (Society for Research in Child Development).
- EARLI Association (European Association for Research on Learning and Instruction).
- MCLS Society (The Mathematical Cognition and Learning Society).
- SRLD (The Society for Research on Learning Disorders) - founding member.

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**Other affiliations**

- (07/2018 - Present) Member of the Review Panel for the clinical recommendations on Specific Learning Disorders, promoted by the Italian Dyslexia Association, in collaboration with the National Health Institute.
- (10/2016 – 10/2019) Member of Darwin College, Cambridge University.

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**Major Collaborations**

I have established collaborations with researchers and Professors working in different universities: Prof. Denés Szücs [Cambridge University, Cambridge, UK]; Prof Colin Hamilton [Northumbria

University, Newcastle, UK], Prof Jo-Anne LeFevre [Carleton University, Ottawa, ON, Canada], Prof Brian Butterworth [Institute of Cognitive Neuroscience, University College of London, London, UK], Dr Ann Dowker [University of Oxford, UK], Dr Wei Wei [Department of Psychology, Zhejiang University].

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**Projects devised and managed**

Marie Skłodowska-Curie IF – Call H2020-MSCA-IF-2015

Project n°: 700031 - Acronym: MORE-or-LESS

Evaluation: 99.40/100 – Higher score among 49 founded grants in Cambridge (385 in UK).

Title: *Do Maths Outcomes Reflect Expertise Linked to Effective Strategy Selection? Event Related Brain Potentials and Eye Movement Studies in Children and Adults*.

Before starting my MSC grant, I was involved as collaborator in two projects founded project by Italian Ministry of Education and Research (MIUR). I have collaborated with projects related with post-doc grants in which I have planned and independently managed the scientific projects (one of them awarded to my PhD supervisor).

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**Ad-hoc reviewer**

I have been ad-hoc reviewer for many journals including Developmental Science, Journal of Experimental Child Psychology, Journal of Learning and Instruction, PLOS ONE, Frontiers in Psychology, Learning and Individual Differences, Journal of Learning Disabilities, Journal of Cognitive Psychology, Cognitive Neuropsychology, Trends in Neuroscience and Education, Cognition and Emotion.

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**Invited talks**

(5-7 July, 2021) Symposium invitation "Symbol grounding in mathematical development". Organized by Dr. Silke Göbel. The symposium will accompany Prof Camilla Gilmore's prize lecture. Experimental Psychology Society (EPS), Swansea, Wales (UK).

(18-21 November, 2020) Symposium invitation "School well-being in children with Specific Learning Disorders". Organized by V. Tobia. 6th International Congress of Clinical and Health Psychology in Children and Adolescents, Elche, Spain.

(11/12/2019) Invited speaker. Math anxiety: cognitive, emotional and psychophysiological aspects – Mathematics Education Centre seminar, Host: Camilla Gilmore and Matthew Inglis, Centre for Mathematical Cognition, Loughborough University.

(15/10/2019) Invited speaker. Behind the scenes of math learning: from domain-specific knowledge to cognitive and emotional underpinnings – Numerical Cognition Research Seminar, Host: Prof. Silke Göbel, Department of Psychology, University of York.

(26/09/2019) Pre-conference invitation "Mathematical ability: prerequisites, identification and intervention / Abilità matematica: prerequisiti, potenziamento e identificazione" – Organized by AIRIPA Emilia-Rimagna in collaboration with the University of Bologna. XXVIII AIRIPA National Conference (Ferrara, 27-28 September).

(09/07/2019) Invitation to participate to the Nuffield Foundation's Math Showcase (London). Organized by the Nuffield Fundation, chaired by Lynne McClure, Director of Cambridge Mathematics https://www.nuffieldfoundation.org/news/what-else-do-we-need-know-effectively-support-development-numeracy

(07/06/2019) Symposium invitation "Mathematical learning: cognitive, sensory, and contextual perspective". Organized by M.C. Passolunghi. The Society for Research on Learning Disorders [SRLD] 1st International Conference (Padova, 7-8 June).

(17/09/2018). Invitation at the round table: Early Career Researchers: quali opportunità a livello europeo e nazionale? E-CARE (Early CAreer REsearchers' network) - XXXI AIP National Conference (Turin, 17-19 September).

(11/04/2018) Time pressure and eye-movements: A new insight into the physiological measures of math anxiety – Natural Sciences and Psychology Research Seminar Series, Liverpool John Moores University.

(30/09/2017) Symposium invitation "How to develop and improve numerical and calculation skills: efficacy of specific training and learning contexts". Organized by Prof M.C. Passolunghi. XXVI AIRIPA National Conference (Conegliano, 29-30 September).

(26/04/2016) Marie Skłodowska-Curie actions – International Research, University of Padova.

(26/05/2016) Writing a grant proposal – School of Advanced Studies, University of Camerino

(19/05/2016) How do children choose the right strategies? The role of age differences and problems features in solving complex subtractions – Centre for Neuroscience in Education, Department of Psychology, Cambridge University

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**Organization of Symposia at International Conferences**

3rd MCLS online Conference, (2020-2021). Symposium held on 23rd June 2021. Title: Emotions and self-perceptions towards mathematics: new insights from large datasets

2nd MCLS Conference, June 16-18, 2019. Ottawa, Carleton University, ON, Canada. Title: Early numerical and non-numerical abilities and their relation with mathematical education.

1st MCLS Conference, April 8-9, 2018. Oxford, UK. Title: Math Anxiety: from psychophysiology to interventions, through genetic and learning - Organised together with Prof Ann Dowker.

29th ICPS Convention, March, 23-25, 2017. Vienna, Austria. Title: Cognitive processes underlying mathematics: Educational and clinical implications - Organised together with Prof Irene C. Mammarella.

**Organization of Symposia at National Conferences**

Symposium organized for the XXIX AIRPA National Web-Conference (September, 24-25, 2021). Title: La complessità dell'apprendimento matematico: dalle abilità di base agli aspetti cognitivi e contestuali [The complexity of mathematical learning: from basic skills to cognitive and contextual aspects].

Symposium organized for the XXVII AIRPA National Conference (Arezzo, September, 28-29, 2018). Title: Dall'elaborazione di quantità agli aspetti emotivi e cognitivi coinvolti nelle difficoltà in matematica [From quantity processing to cognitive and emotional aspects involved in mathematical difficulties].

Symposium organized for the XXXI AIP National Conference (Turin, September, 17-19, 2016). Title: Fattori cognitivi ed emotivi nell'apprendimento matematico: dai prerequisiti agli interventi [Cognitive and emotional factors in mathematical learning: from prerequisites to interventions].

Symposium organized for the XXIV AIRIPA National Conference (Pesaro, October, 9-10, 2015). Title: Analisi del disturbo: un confronto tra modelli ed approcci [Analysis of disorders: a comparison among models and approaches] – Organized with Prof Cesare Cornoldi.

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**PUBLICATION LIST**

**Publications submitted (n=2)**

[1] **Caviola, S.**, Colling, L. J., Carey, E. & Szücs, D. (*submitted*). Distance effect and math proficiency in primary school children: A Bayesian study. Developmental Psychology.

[2] Mammarella, I. C., Patron, E., **Caviola, S.,** Rossi, S., & Palomba, D. (*under review*). The effect of positive and negative feedbacks on math performance in children: Behavioral, autonomic, and self-report responses.

**Publications in International peer-reviewed journals (n=28)**

[28] Giofrè, D., Allen, K., Toffalini, E., Mammarella, I. C., & **Caviola, S.** (*Accepted*). Decoding gender differences: Intellectual profiles of children with specific learning disabilities. *Intelligence*.

[27] **Caviola, S.**, Toffalini, E., Giofrè, D, Marcader-Ruiz, J., Szücs, D, & Mammarella, I.C. (2021). Math performance and academic anxiety forms, from socio-demographic to cognitive aspects: A metanalytic approach on 903,448 participants. *Educational Psychology Review*. doi.org/10.1007/s10648-021-09618-5

[26] Rivella, C., Cesare, C., **Caviola, S.,** & Giofrè, D. (2021). Learning a new geometric concept: the role of Working Memory and of Domain-specific Abilities. *British Journal of Educational Psychology, 91*(4), 1537-1554. doi.org/10.1111/bjep.12434

[25] **Caviola, S**, Visentin, C, Borella, E., Mammarella, I. C., & Prodi, N. (2021). Out of the Noise: Effects of sound environment on maths performance in middle- school students. *Journal of Environmental Psychology*. doi:10.1016/j.jenvp.2021.101552

[24] Mammarella, I. C., Toffalini, E., **Caviola, S.**, Colling, L. J., & Szücs, D. (2021). No evidence for a core deficit in developmental dyscalculia or mathematical learning disabilities. *Journal of Child Psychology and Psychiatry*. *62*(6), 704-714. doi.org/10.1111/jcpp.13397

[23] Crisci, G, **Caviola, S.,** Cardillo, R., & Mammarella, I. C. (2021). Executive Functions in Neurodevelopmental Disorders: Comorbidity overlaps between Attention Deficit and Hyperactivity Disorder and Specific Learning Disorders. *Frontiers in Human Neuroscience*. doi: 10.3389/fnhum.2021.594234

[22] Donolato, E., Toffalini, E., Giofrè, D., **Caviola, S.** & Mammarella I. C. (2020). Going beyond mathematics anxiety in primary and middle school students: The role of ego-resiliency in mathematics. *Mind, Brain, and Education, 14*(3), 255-266. doi: 10.1111/mbe.12251

[21] **Caviola, S.**, Colling, L. J., Mammarella, I.C. & Szücs, D. (2020). Predictors of mathematics in primary school: magnitude comparison, verbal and spatial working memory measures. *Developmental Science*. https://doi.org/10.1111/desc.12957

[20] Morra, S., Bisagno, E., **Caviola, S.**, Delfante, C., & Mammarella, I. C. (2019). Working Memory Capacity and the Development of Quantitative Central Conceptual Structures. *Cognition and Instruction*, 483-511.

[19] **Caviola, S.**, Mammarella, I. C., Pastore, M. & LeFevre, J-A. (2018). Children's strategy choices on complex subtraction problems: individual differences and developmental changes. *Frontiers in Psychology: Development*. Research Topic. doi: 10.3389/fpsyg.2018.01209

[18] Mammarella, I. C., Donolato, E., **Caviola, S.**, & Giofrè, D. (2018). Anxiety profiles and protective factors: A latent profile analysis. *Personality & Individual Differences, 124*, 201-208.

[17] Mammarella, I. C., **Caviola, S.**, Giofrè, D. & Szücs, D. (2018). The underlying structure of visuospatial working memory in children with mathematical learning disability. *British Journal of Developmental Psychology*, doi: 10.1111/bjdp.12202

[16] Mammarella, I. C., **Caviola, S.**, Giofrè, D., & Borella, E. (2017). Separating math from anxiety: The role of inhibitory mechanisms. *Applied Neuropsychology: Child*, doi: 10.1080/21622965.2017.1341836

[15] **Caviola, S.**, Carey, E., Mammarella, I. C. & Szücs, D. (2017). Stress, time pressure, math anxiety and strategy selection in mathematical tasks. *Frontiers in Psychology: Cognition, 8*, 1488. doi: 10.3389/fpsyg.2017.01488

[14] **Caviola, S.**, Primi, C., Chiesi, F., & Mammarella, I. C. (2017). Psychometric properties of the Abbreviated Math Anxiety Scale (AMAS) in an Italian primary-school children sample. *Learning and Individual Differences, 55*, 174-182.

[13] Meneghetti, C., Cardillo, R., Mammarella, I. C., **Caviola, S.**, & Borella, E. (2017). The role of practice and strategy in mental rotation training: Transfer and maintenance effects. *Psychological Research, 81*, 415-431. doi: 10.1007/s00426-016-0749-2

[12] **Caviola, S.**, Gerotto, G., & Mammarella, I. C. (2016). Computer-based training for improving mental calculation in third- and fifth-graders. Acta Psychologica, 171, 118-127.

[11] Passolunghi, M. C., **Caviola, S.**, De Agostini, R., Perin, C., & Mammarella, I. C. (2016). Mathematics anxiety, working memory and mathematics performance in secondary-school children. *Frontiers in Psychology, 7*, 42. doi.org/10.3389/fpsyg.2016.00042

[10] Hill, F., Mammarella, I. C., Devine, A., **Caviola, S.**, Passolunghi, M. C., & Szűcs, D. (2016). Maths anxiety in primary and secondary school students: Gender differences, developmental changes and anxiety specificity. *Learning and Individual Differences, 48*, 45-53.

[9] Mammarella, I. C., Ghisi, M., Bomba, M., Bottesi, G., **Caviola, S.**, Broggi, F. & Nacinovich, R., (2016). Anxiety and depression in children with Nonverbal learning disabilities, reading disabilities, or typical development. *Journal of Learning Disabilities, 49*, 130-139.

[8] Mammarella, I. C., Hill, F., Devine, A., **Caviola, S.** & Szucs, D. (2015). Math anxiety and Developmental Dyscalculia: A study on working memory processes. *Journal of Clinical and Experimental Neuropsychology, 37*(8), 878-887.

[7] **Caviola, S.**, Mammarella, I. C., Lucangeli, D. & Cornoldi, C. (2014). Working memory and domain-specific precursors predicting the success in learning written subtraction problems. *Learning and Individual Differences, 36*, 92-100.

[6] Mammarella, I. C., Giofrè, D., **Caviola, S.**, Cornoldi, C. & Hamilton, C. (2014). Visuospatial working memory in children with autism: the effect of a semantic global organization. *Research in Developmental Disabilities, 35(*6), 1349–1356.

[5] Mammarella, I. C., **Caviola, S.**, Cornoldi, C. & Lucangeli, D. (2013). Mental additions and verbal-domain interference in children with Developmental Dyscalculia (DD). *Research in Developmental Disabilities, 34(9)*, 2845-2855.

[4] Mammarella, I. C., Bomba, M., **Caviola, S.**, Broggi, F., Neri, F., Lucangeli, D. & Nacinovich, R. (2013). Mathematical difficulties in Nonverbal Learning Disability or comorbid Dyscalculia and Dyslexia. *Developmental Neuropsychology, 38*(6), 418-432.

[3] **Caviola, S.**, Mammarella, I. C., Lucangeli, D. & Cornoldi, C. (2012). The involvement of working memory in children's exact and approximate mental additions. *Journal of Experimental Child Psychology, 112(*2), 141-60.

[2] Fabbri, S., **Caviola, S.**, Tang, J., Zorzi, M. & Butterworth, B. (2012). Understanding fractions: the role of numerosity in processing non-symbolic proportions. *Quarterly Journal of Experimental Psychology, 65*(12), 2435-2446.

[1] **Caviola, S.**, Mammarella, I. C., Cornoldi, C. & Lucangeli, D. (2009). A metacognitive visuospatial working memory training for children. *The International Electronic Journal of Elementary Education, 2*(1), 122-136.

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**Other publications**

***Publications in Italian peer reviewed journals* (n=5)**

[5] Cardillo, R., **Caviola, S.**, Meneghetti, C. & Mammarella, I. C. (2014). Un training sulle abilità di rotazione mentale in bambini della scuola primaria. *Giornale italiano di psicologia, 4*, 801-814.

[4] Baccaglini-Frank, A., Bettini, P., Brazzolotto, M., **Caviola, S.**, Perona, M. & Poli, F. (2014). Le prove ABCA 14-16. *Difficoltà in Matematica, 10*, 151-166.

[3] **Caviola, S.**, Toso, C. & Mammarella, I. C. (2011). Risultati di un training sulla memoria di lavoro visiva. Studio di un caso con disturbo non verbale. *Psicologia Clinica dello Sviluppo, 3*, 679-700.

[2] Lucangeli, D., & **Caviola, S.** (2011). La Discalculia Evolutiva o Disturbo Specifico del Calcolo: Definizione, caratteristiche e diagnosi. *Medico & Bambino, 4*, 229-235.

[1] Mammarella, I. C., **Caviola, S.**, & Lucangeli, D. (2008). Memoria di lavoro visuospaziale ed abilità di calcolo: Quale relazione? *Difficoltà in Matematica, 4*, 149-161.

***Monographs* (n=2)**

[2] Mammarella, I. C., **Caviola, S.**, & Dowker, A. Eds. (2019). Mathematics anxiety: What is known and what is still missing. London: Routledge, Taylor & Francis Group. ISBN 9780367190392

[1] Mammarella, I. C., Cardillo, R., & **Caviola, S.** Eds. (2019). La Memoria di Lavoro nei Disturbi del Neurosviluppo [Working Memory in Neurodevelopmental Disorders]. Milano: Franco Angelo Editore. *In stampa*.

***International Chapters* (n=2)**

[2] Mammarella, I. C., Giofrè, D., & **Caviola, S.** (2017). Learning geometry: The development of geometrical concepts and the role of cognitive processes. In Geary, D., Berch, D., Ochsendorf & Mann Koeple, K. (Eds.). Mathematical Cognition, and Learning: Acquisition of Complex Arithmetic Skills and Higher-Order Mathematics Concept, Vol. 3. Elsevier, Academic Press. ISBN:978 0 12 805086 6

[1] **Caviola, S.** & Lucangeli, D. (2015). Lights and shadows of mental arithmetic: Analysis of cognitive processes in typical and atypical development. In S. Chinn (Eds.), The Routledge International Handbook of Dyscalculia and Mathematical Learning Difficulties (pp. 304-324). New York: Routledge. ISBN: 978 0 41 582285 5

***Italian Chapters* (n=4)**

[4] **Caviola, S**., Lucangeli, D., & Cornoldi, C., (2019). Le difficoltà e i disturbi del calcolo. In C. Cornoldi (Eds.), I disturbi dell'apprendimento (pp. 133-162). Bologna: Il Mulino. ISBN: 978 88 15 0000 0

[3] Lucangeli, D., **Caviola, S.**, & Broggio, A. (2010). La valutazione dei disturbi dell'apprendimento. In U. Moscardino & S. Bonichini (Eds.), La valutazione psicologica del bambino. Metodi e strumenti per l'età prescolare e scolare (pp. 105-128). Roma: Carocci. ISBN: 978 88 430 5285 1

[2] Lucangeli, D. & **Caviola, S.** (2010). Lo sviluppo dell'intelligenza numerica. In D. Lucangeli & I.C. Mammarella (Eds.), Psicologia della cognizione numerica (pp. 26-53). Milano: Franco Angeli. ISBN: 978 88 568 2462 9

[1] **Caviola, S.** & Mammarella, I. C. (2010). Il trattamento delle difficoltà di calcolo a base visuospaziale e della geometria. In D. Lucangeli & I. C. Mammarella (Eds.). Psicologia della cognizione numerica (pp. 265-293). Milano: Franco Angeli. ISBN: 978 88 568 2462 9

***Assessment and Intervention programs* (n=5)**

[5] Cornoldi, C., Mammarella, I. C. & **Caviola, S.** (2019) La nuova AC-MT 3: Test di Valutazione delle Abilità di Calcolo per la scuola primaria e secondaria di primo grado. Trento: Erickson. *In stampa*.

[4] **Caviola, S.**, Gerotto, G., Lucangeli, D., & Mammarella, I. C. (2016). AC-FL. Prove di fluenza delle abilità di calcolo per il secondo ciclo della scuola primaria. Trento: Erickson. ISBN: 978 88 590 1184 2

[3] Baccaglini-Frank, A., Perona, M., Bettini, P., **Caviola, S.**, & Lucangeli, D. (2013). Test ABCA 14-16. Prove di abilità di calcolo avanzato per la scuola secondaria di secondo grado. (Libro e Software). Trento. Erickson. ISBN: 978 88 5900 405 9

[2] Toso, C., **Caviola, S.**, & Mammarella, I.C. (2011). Che memoria … spaziale! (Libro e Software). Trento. Erickson. ISBN: 978 88 6137 902 2

[1] Mammarella, I. C., Toso, C., & **Caviola, S.** (2010). Memoria di lavoro visuo-spaziale (Libro e Software). Trento. Erickson. ISBN: 978 88 6137 669 4

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**Oral and poster presentations (selected list)**

*International Conferences*

**Caviola, S.** (2019). From math learning to math difficulties: a large cross sectional study in primary school children. 2nd Mathematical Cognition and Learning Society (MCLS) Conference. Carleton University, Ottawa, Canada, June 16-18, 2019. Oral presentation. Symposium organized by **S. Caviola**: Early numerical and non-numerical abilities and their relation with mathematical education

**Caviola, S.** (2019). Defining clinical profiles of mathematics difficulties. The Society for Research on Learning Disorders (SRLD) 1st International Conference. Padova, Italy, June, 7-8. Oral presentation. Symposium organized by **M.C. Passolunghi**: Mathematical learning: cognitive, sensory, and contextual perspective.

**Caviola, S.**, & Szucs. D., (2018). Time pressure and eye-movements: A new physiological measures of math anxiety. 1st Mathematical Cognition and Learning Society (MCLS) Conference. Oxford, UK, April 8-9. Oral presentation. Symposium organized by **S. Caviola** and Dr Ann Dowker: Math Anxiety: from psychophysiology to interventions, through genetic and learning.

**Caviola, S.**, Cornoldi, C. & Mammarella I. C. (2017). Above and beyond strategies in complex arithmetic: How do children figure them out? ICPS Second Biennal Meeting (International Convention of Psychological Science). Vienna, Austria, March 23 -25. Oral presentation. Symposium organized by I. C. Mammarella and **S. Caviola**: Educational and clinical implications underlying mathematical cognition.

**Caviola, S.**, Mammarella I. C., & Pastore, M. (2015). Reaction times and strategy selection in mental calculation: A different statistical approach. SRCD Biennal Meeting (Society for Research in Child Development). Philadelphia, Pennsylvania (USA), March 19 –21. Poster presentation.

Mammarella, I. C., Devine, A., **Caviola, S.,** & Szucs, D. (2015). Visuospatial and verbal working memory impairments in children with developmental dyscalculia or mathematics anxiety. SRCD Biennal Meeting (Society for Research in Child Development). Philadelphia, Pennsylvania (USA), March 19 –21. Poster presentation.

**Caviola, S.**, Mammarella I. C., & Cornoldi, C. (2014). Computer training on mental calculation: a study with 3rd and 5th graders. BASICS (Banff Annual Seminar in Cognitive Science) Conference. Banff, Calgary, AB (CA), May 2-3. Poster presentation.

**Caviola, S.**, Mammarella I. C., Lucangeli, D. & Cornoldi, C. (2013). Complex mental addition and working memory in children with learning disabilities. 37th Annual IARLD (International Academy for Research in Learning Disabilities) Conference. Boston, MA, June 27-29. Poster presentation.

**Caviola, S.** & Lucangeli, D. (2012). Numerosity comparisons and exact arithmetic in children with nonverbal learning disability or comorbid dyscalculia and dyslexia. 36th Annual IARLD (International Academy for Research in Learning Disabilities) Conference. Padova, Italy, June 7-9. Oral presentation.

**Caviola, S.**, Mammarella I. C. & Lucangeli D. (2012). Why is mental calculation so complicated? In: Numeracy acquisition and dyscalculia: Insights from Educational Neuroscience. Meeting for presentation of Excellence CARIPARO Projects, Padova, May 22. Oral presentation.

**Caviola S.**, Mammarella I. C., Lucangeli, D. & Cornoldi C. (2011). Verbal and visuo-spatial memory processes in mental calculation. 5th International Conference on Memory – ICOM-5, York, July 31 – August 5. Poster presentation.

**Caviola S.**, Mammarella I. C, Cornoldi C., & Lucangeli, D. (2011). Mental addition with and without carrying in children: How is working memory involved? Canadian Society for Brian, Behaviour and Cognitive Science – CSBBCS, University of Manitoba, Winnipeg, Manitoba, June 24 – 26. Poster presentation.

**Caviola S.**, Mammarella I. C, Cornoldi C., & Lucangeli, D. (2010). Working Memory processes involved in mental calculation: additions with and without carrying. Festschrift in Honour of Brian Butterworth: "Numbers in the Brain"; London, UK, November 26 – 27. Poster presentation.

**Caviola S.**, Mammarella I. C, Cornoldi C., & Lucangeli, D. (2010). Working memory load and mental operations: evidence for different implications in children. In V European Working Memory Symposium – EWOMS, Civita Castellana, Italy, August 31 – September 4. Poster presentation.

**Caviola S.**, Mammarella I. C, Cornoldi C., & Lucangeli, D. (2010). A visuo-spatial working memory training for children. In: 34th Annual IARLD Conference. Miami, Florida, USA, January 14 – 16. Poster presentation.

*National Conferences*

**Caviola, S.**, (2019). Migliorare le prestazioni in matematica: Dalle competenze specifiche ai fattori emotivi/ambientali. Pre-Conference XXVIII AIRIPA, 26-28 September, Ferrara (Italy). Oral presentation.

**Caviola, S.**, Rossi, S. & Mammarella, I. C. (2019). Il ruolo del feedback durante una prova di calcolo in bambini di quinta della scuola primaria. XXVIII AIRIPA, 26-28 September, Ferrara (Italy). Oral presentation.

**Caviola, S.**, & Mammarella, I. C. (2018). Memoria di lavoro visuospaziale in bambini con difficoltà e disturbo specifico del calcolo. XXVII AIRPA, 28-29 September. Arezzo (Italy). Oral presentation.

**Caviola, S.**, & Gerotto, G. (2017). Training computerizzati di calcolo a mente in bambini della scuola primaria. XXXI AIP, 17-19 September. Turin (Italy). Oral presentation.

**Caviola, S.**, Gerotto, G., Mammarella, I. C. (2017). Training computerizzati di calcolo a mente. XXVI AIRIPA, Conegliano, September 29-30. Oral presentation. Symposium organized by M. C. Passolunghi: Come sviluppare e migliorare le competenze del numero e del calcolo: efficacia di training specifici e dei contesti di apprendimento.

**Caviola, S.**, Mammarella, I. C., Pastore, M. & LeFevre, J.-A. (2016). Le strategie nella sottrazione in bambini della scuola primaria: differenze di età e caratteristiche del problema. XXV AIRIPA, Torino, October 7 -8. Oral presentation.

**Caviola, S.**, Mammarella, I. C. & Cornoldi C. (2015). Modelli statistici e apprendimento delle sottrazioni. XXIV AIRIPA, Pesaro, October 9-10. Oral presentation – Symposium organized by S. Caviola & C. Cornoldi: Analisi del disturbo: un confronto tra modelli ed approcci.

**Caviola, S.** & Lucangeli, D. (2014). La valutazione della competenza del calcolo: un nuovo strumento. XXIII AIRIPA, Lucca, October 23-25. Oral presentation – Symposium organized by D. Lucangeli: L'assessment delle abilità di calcolo.

**Caviola, S.**, Mammarella, I. C. & Lucangeli, D. (2013). Le abilità di calcolo nella scuola primaria: la standardizzazione di un nuovo strumento. XXII AIRIPA, Pordenone, October 24-26. Oral presentation.

Mammarella, I. C., **Caviola, S.**, & Lucangeli, D. (2013). Confronto di numerosità e abilità di calcolo in bambini con Disturbo non-verbale e discalculia. Simposium organized by M. C. Passolunghi, XXII AIRIPA, Pordenone, October 24-26

**Caviola S.**, Gabrielli L., Mammarella I. C, Lucangeli, D. & Cornoldi C. (2012). Le difficoltà nel calcolo in bambini con diversi profili clinici: quali processi in comune? XXI Convegno Nazionale AIRIPA, Bari, October 12 – 13. Oral presentation.

**Caviola S.**, Mammarella I. C, Lucangeli, D. & Cornoldi C. (2012). Contributo della Memoria di Lavoro nei disturbi del calcolo. Giornata di studio sull'Apprendimento e i suoi Disturbi in Età Evolutiva, AIRIPA, Dipartimento di Psicologia Generale. Padova, May 25. Oral presentation.

**Caviola S.**, Mammarella I. C, Lucangeli, D. & Cornoldi C. (2012). Dalla memoria visuo-spaziale alle sottrazioni con il prestito: un'analisi dei predittori. XXIX Congresso CNIS Nazionale. Vicenza, March 30-31. Oral presentation.

**Caviola S.**, Mammarella I. C, Lucangeli, D. & Cornoldi C. (2011). Il ruolo della memoria di lavoro nel calcolo a mente: uno studio su bambini con disturbo specifico del calcolo. XX Convegno Nazionale AIRIPA, Prato, October 21 – 22. Oral presentation.

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## Technical skills

- OS and office software: Windows (All version), MacOS, Microsoft Office, Open Office, iWork.
- Statistical packages: SPSS, LISREL, R.
- Experiment Software: E-Prime, Experiment Builder (Eye link 1000), MatLab and EEGlab (beginner).
- Others: Adobe – Photoshop, AutoCAD.
- Cognitive tests for adults and children (i.e., tests of intelligence, memory and learning assessment standardized batteries of tests).

## Training courses (related to specific institutional responsibilities)

- Effective Postgraduate Research Supervision [Doctoral College, Organisational Development and Professional Learning, OD&PL, University of Leeds]
- The Role of the Internal Examiner [Graduate Board's Examinations Group, Organisational Development and Professional Learning, OD&PL, University of Leeds]

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## Media coverage and Public Engagement

(From September 2018) Cambridge Math – consultancy activities.

(From April 2018) Wellcome Trust Neuroscience and Education team: the Learning Zone https://learning.imascientist.org.uk

(March, 17th 2018) Cambridge Science Festival.
https://www.sciencefestival.cam.ac.uk/events/rhythm-and-language-towards-math-cognition

(From January 2018) Member of the Italian committee of the Consensus Conference for the revision of the guidelines for Specific Learning Disorders.

(July 2016) "Ansia da matematica? Niente paura, se siete donne" – Il Bo (The Journal of the Univerity of Padova) http://www.unipd.it/ilbo/ansia-matematica-niente-paura-siete-donne.

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Padova, Italy,
January 10th, 2022

**Sara Caviola**

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