

# CLAUDIO ZANDONELLA CALLEGHER

PhD Student - University of Padua

My research interests concern the formalization of theories and research hypotheses as statistical models within a Bayesian framework. I am also involved in the Open Science movement by promoting the importance of Design Analysis and developing workflows to enhance research reproducibility and transparency. I am enthusiastic about the opportunities and solutions offered by new technologies and programming software. In particular, I am an active R programmer and developer of R packages.



## EDUCATION

- 2021**  
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● **PhD in Psychological Sciences - Department of Developmental Psychology and Socialization**  
University of Padua  Padua, Italy  
• Towards the Formalization of Research Hypotheses in Psychology: Design Analysis and Model Comparison. Supervisors: Prof. Gianmarco Altoè and Prof. Livio Finos
- 2018**  
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● **M.S. in Clinical Developmental Psychology - 110 cum laude**  
University of Padua  Padua, Italy  
• Analyzing the role of father attachment in middle childhood: a Bayesian approach. Supervisor: Prof. Gianmarco Altoè
- 2016**  
|  
**2013**  
● **B.S. Psychological sciences and techniques - 110 cum laude**  
University of Padua  Padua, Italy  
• Proximity: evidence of possession in childhood. Supervisor: Prof. Teresa Farroni

## ACADEMIC EXPERIENCE

- current**  
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**2018**  
● **Member of Psicostat Research Group**  
Department of Psychology, University of Padua  Padua, Italy  
• We are an interdisciplinary research group promoting the connection between Psychology and Statistics in scientific research. <https://psicostat.dpss.psyp.unipd.it/>
- 2020**  
● **Research Internship**  
Department of Methodology and Statistics, Utrecht University  Utrecht, the Netherlands  
• Formalization of statistical models according to experts' prior knowledge in the Attachment Theory (3 months). Supervisor: Prof. Rens van de Schoot

## CONTACT INFO

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🐦 [ClaudioZandonella](https://twitter.com/ClaudioZandonella)  
🔗 [github.com/ClaudioZandonella](https://github.com/ClaudioZandonella)  
🔗 [claudiozandonella.netlify.com](https://claudiozandonella.netlify.com)  
🆔 [orcid.org/0000-0001-7721-6318](https://orcid.org/0000-0001-7721-6318)

## PERSONAL INFO

Dob: 24 April 1993  
Nationality: Italian  
Address: Via Celeste de Martin 19,  
Comelico Superiore (BL), 32040,  
Italy

## PROGRAMMING SKILLS

Statistics: R, Python, STAN  
Database: MySQL  
Website: HTML, CSS, HUGO  
Other: Git, Docker, Bash, LaTeX

## LANGUAGE SKILLS

Italian: native language  
English: proficient  
German: beginner

Made with the R package [pagedown](#).

- 2018 ● **Pre-Graduate Internship**  
Medè SNC 📍 Padua, Italy  
• Study of clinical cases concerning psychopathology in childhood and adolescence (4 months). Supervisor: Dot. Valentina Boscolo
- 2016 ● **Pre-Graduate Internship**  
Department of Psychology, University of Padua 📍 Padua, Italy  
• Study of possession indices in childhood through visual preference. Data collection and data analysis (5 months). Supervisor: Prof. Teresa Farroni



## WORKING AND TEACHING EXPERIENCE

- 2021 ● **Supplementary teaching**  
Department of Psychology, University of Padua 📍 Padua, Italy  
• Introduction 2 R (12 hours) in the course Data Analysis for the Behavioral Sciences (PSP6074600). Prof. Gianmarco Altoè.
- 2020 ● **Data Science Internship**  
Kode s.r.l. 📍 Pisa, Italy  
• Data Visualization and development of web application (Shiny) in Industry 4.0 (3 months). Supervisor: Dot. Davide Massidda
- 2019 ● **Supplementary teaching**  
Department of Psychology, University of Padua 📍 Padua, Italy  
• Laboratory fundamentals of R statistical software (10 hours) in the course Psychological Testing (PSP6075525). Prof. Antonio Calcagni.
- 2018 ● **Organizing committee**  
Department of Psychology, University of Padua 📍 Padua, Italy  
• International Winter School 2019, Beyond  $p < .05$ : Modern statistical approaches in psychological science



## EDUCATIONAL EXPERIENCE

- 2021 ● *useR!2021*. Web-conference
- *SIPS 2021*. Society for the Improvement of Psychological Science, web-conference
- *Advanced Topics in Scientific and Parallel Programming with Practical Application to the CAPRI HPC Infrastructure*. Course at the Department of Information Engineering, Padua (20 hours)
- *Data Mining*. Course held by Prof. B. Scarpa at the Master in Statistical Sciences, University of Padua (64 hours)
- *TASK-2021*. 4th AFU Virtual International Conference
- *Mediterranean Machine Learning summer school*. Web-conference
- 2020 ● *Introduction to Generalized Additive Models with R and mgcv*. Webinar
- *useR!2020*. Web-conference

I am passionate about Data Science. My experience in Industry 4.0 has allowed me to learn modern solutions for data analysis and visualization. I also enjoy sharing my experience by writing tutorials and teaching on different programming software.

I believe in the importance of continuous learning, experimenting with new techniques and solutions along with developing a strong theoretical background.

- *CAPRI-HPC: Theory and Practice in Sequential and Parallel Job Scheduling*. Course at the Department of Information Engineering, Padua (20 hours)
- *Best Practices for Writing Reproducible Code* . Workshop (Utrecht, the Netherlands)
- *Cognitive Science Arena* . Conference (Brixen, Italy)
- *Bayesian Non-parametrics for Complex Data*. Workshop (Padua, Italy)
- 2019 ● *I Psychometrics (M-PSI/03) National Conference* (Padua, Italy)
- *XXV AIP National Congress Experimental section*, Italian association of psychology (Milan, Italy)
- *Summer School on Statistical Methods for Linguistics and Psychology*. Advanced Bayesian methods using Stan (Potsdam, Germany)
- *StanCon2019*. Hierarchical modeling and model selection with Stan (Cambridge, UK)
- *IV SIPS International Conference*. Society for the Improvement of Psychological Science (Rotterdam, the Netherlands)
- *Theory and Methods of Inference*. PhD course held by Prof. A. Salvan at the doctoral programme in Statistics, University of Padua (64 hours)
- *SHeffield ELicitation Framework (SHELF) Training*. Elicitation of probability distributions from experts knowledge (Sheffield, UK)
- *Beyond  $p < .05$ : Modern statistical approaches in psychological science*. International Winter School (Padua, Italy)
- 2018 ● *Functional Analysis*. PhD course held by Prof. A. Cesaroni at the doctoral programme in Statistics, University of Padua (24 hours)
- *XXV AIP National Congress section of Developmental and Educational Psychology*, Italian association of psychology (Turin, Italy)

## PUBLICATIONS

- 2021 ● Agnoli, F., Melchiorre, F., **Zandonella Callegher, C.**, & Altoè, G. Stereotype Threat Effects on Italian Girls' Mathematics Performance: A Failure to Replicate. *Developmental Psychology*, 57(6), 940–950. <https://doi.org/10.1037/dev0001186>
- Bayramova, R., Valori, I., McKenna-Plumley, P. E., **Zandonella Callegher, C.**, & Farroni, T. (2021). The role of vision and proprioception in self-motion encoding: An immersive virtual reality study. *Attention, Perception, & Psychophysics*. <https://doi.org/10.3758/s13414-021-02344-8>
- Fadda, D., Pellegrini, M., Vivanet, G., & **Zandonella Callegher, C.** Effects of digital games on student motivation in mathematics: A meta-analysis in K-12. *Journal of Computer Assisted Learning*. <https://doi.org/10.1111/jcal.12618>
- Zanardo, V., Tedde, F., **Zandonella Callegher, C.**, Sandri, A., Giliberti, L., Manghina, V., & Strafaceee, G. (2021). Postpartum bonding: the impact of stressful life events during pregnancy. *The journal of maternal-fetal & neonatal medicine*. <https://doi.org/10.1080/14767058.2021.1937986>

I am a fervent believer in the critical role of replicability and transparency in research. In every project I collaborate on, I adopt best practices and solutions to ensure replicability and transparency of results.

- **Zandonella Callegher, C.**, Bertoldo, G., Toffalini, E., Vesely, A., Andreella, A., Pastore, M., & Altoè, G., (2021). PRDA: An R package for Prospective and Retrospective Design Analysis. *Journal of Open Source Software*, 6(58), 2810, <https://doi.org/10.21105/joss.02810>
- 2020 ● Altoè, G., Bertoldo, G., **Zandonella Callegher, C.**, Toffalini, E., Calcagni, A., Finos, L., & Pastore, M. (2020). Enhancing Statistical Inference in Psychological Research via Prospective and Retrospective Design Analysis. *Frontiers in Psychology*, 10. <https://doi.org/10.3389/fpsyg.2019.02893>
- Altoè, G., **Zandonella Callegher, C.**, Toffalini, E., & Pastore, M. (2020). Incorporating Expert Knowledge in Structural Equation Models: Applications in Psychological Research. *Book of Short Papers - SIS 2020*. 50th Meeting of the Italian Statistical Society, Pisa, Italy. <https://it.pearson.com/content/dam/region-core/italy/pearson-italy/pdf/Docenti/Universit%C3%A0/Pearson-SIS-2020-atti-convegno.pdf>
- Benavides-Varela, S., **Zandonella Callegher, C.**, Fagiolini, B., Leo, I., Altoè, G., & Lucangeli, D. (2020). Effectiveness of digital-based interventions for children with mathematical learning difficulties: A meta-analysis. *Computers & Education*, 157, 103953. <https://doi.org/10.1016/j.compedu.2020.103953>
- Valori, I., McKenna-Plumley, P. E., Bayramova, R., **Zandonella Callegher, C.**, Altoè, G., & Farroni, T. (2020). Proprioceptive accuracy in Immersive Virtual Reality: A developmental perspective. *PLOS ONE*, 15(1), e0222253. <https://doi.org/10.1371/journal.pone.0222253>
- **Zandonella Callegher, C.**, & Altoè, G. (2020). Data and supplemental material of the paper “Effectiveness of digital-based interventions for children with mathematical learning difficulties: A meta-analysis”. *Data in Brief*, 31, 105976. <https://doi.org/10.1016/j.dib.2020.105976>
- Under Review ● Bertoldo, G., **Zandonella Callegher, C.**, & Altoè, G. Designing Studies and Evaluating Research Results: Type M and Type S Errors for Pearson Correlation Coefficient. *Meta-Psychology*.
- **Zandonella Callegher, C.**, Marci, T., De Carli, P., & Altoè, G. Evaluating Informative Hypotheses with Equality and Inequality Constraints: A Tutorial Using the Bayes Factor via the Encompassing Prior Approach. *Psychological Methods*.



## SOFTWARE

- 2021 ● Kothe, E., **Zandonella Callegher, C.**, Gambarota, F., Linkersdörfer, J., & Ling, M. (2021). *trackdown: Collaborative Writing and Editing of R Markdown (or Sweave) Documents in Google Drive* (v1.0.0). Zenodo. <https://doi.org/10.5281/zenodo.5167320>  
R-package available on CRAN <https://cran.r-project.org/web/packages/trackdown>
- **Zandonella Callegher, C.**, & Gambarota, F. (2021) *Introduction 2 R*.  
Bookdown available online (Italian) <https://psicostat.github.io/Introduction2R/>
- 2020 ● Gambarota, F., & **Zandonella Callegher, C.** (2020). *Psicostat Personal Website Template* (v1.0). Zenodo. <https://doi.org/10.5281/zenodo.4464826>

I am an active developer of R packages and Shiny web applications to offer new tools to other researchers and students.

- **Zandonella Callegher, C.**, Pastore, M., Andreella, A., Vesely, A., Toffalini, E., Bertoldo, G., & Altoè, G. (2020). *PRDA: Prospective and retrospective design analysis* (v1.0.0). Zenodo. <https://doi.org/10.5281/zenodo.4044214>  
R-package available on CRAN <https://cran.r-project.org/web/packages/PRDA>
- 2019 ● **Zandonella Callegher, C.**, Toffalini, E., & Altoè, G. (2019). *Eliciting Effect Size—Shiny App*. <http://doi.org/10.5281/zenodo.2564852>



## SELECTED TALKS AND POSTERS

- 2021 ● Gambarota, F., **Zandonella Callegher, C.**, Janosch, L., Ling, M., & Kothe, E., (2021). *trackdown: collaborative writing and editing your R Markdown and Sweave documents in Google Drive*. useR!2021 (July, 2021; web-conference)
- **Zandonella Callegher, C.**, & Altoè, G., (2021). *Enhancing Statistical Inference via Prospective and Retrospective Design Analysis*. TASK-2021 (May, 2021; web-conference)
- 2020 ● **Zandonella Callegher, C.**, Marci, T., & Altoè, G. (2020). *Verba volant, mathematica manent: Formalizing psychological theories as models*. Cognitive Science Arena (7-8 February 2020; Brixen, Italy)
- **Zandonella Callegher, C.**, Vesely, A., Andreella, A., Bertoldo, G., Toffalini, E., Altoè, G., & Pastore, M. (2020). *PRDA package: Enhancing Statistical Inference via Prospective and Retrospective Design Analysis*. useR!2020 (July, 2020; Munich, Germany)
- 2019 ● Valori, I., McKenna-Plumley, P. E., Bayramova, R., **Zandonella Callegher, C.**, Altoè, G., & Farroni, T. (2019). *Visione e Propriocezione nella Realtà Virtuale Immersiva: Una Prospettiva Evolutiva* (transl. *Vision and Proprioception in Immersive Virtual Reality: An Evolutionary Perspective*). Brains meet Digital Enterprises (20 October 2019; Padua, Italy)
- Valori, I., McKenna-Plumley, P. E., Bayramova, R., **Zandonella Callegher, C.**, Altoè, G., & Farroni, T. (2019a). *Accuratezza Propriocettiva nella Realtà Virtuale Immersiva: Una Prospettiva Evolutiva* (transl. *Proprioceptive Accuracy in Immersive Virtual Reality: An Evolutionary Perspective*). Giornate di aggiornamento sull'uso degli strumenti in Psicologia Clinica dello Sviluppo (8-9 march 2019; Bologna, Italy)
- **Zandonella Callegher, C.** (2019). *Experts' Elicitation*. Psicostat seminar at the Department of Statistical Sciences, University of Bologna (7 May 2019; Bologna, Italy)
- **Zandonella Callegher, C.**, Marci, T., & Altoè, G. (2019). *The role of mother and father attachment in children's socioemotional-adjustment: A Bayesian model comparison approach*. XIX European Conference on Developmental Psychology (Athens, Greece, 29 August-1 September 2019)
- **Zandonella Callegher, C.**, Toffalini, E., & Altoè, G. (2019). *Elicitazione e utilizzo del parere degli esperti* (transl. *Elicitation and formalization of experts' knowledge*). XXV AIP National Congress Experimental section, Italian association of psychology (18-20 September 2019; Milan, Italy)

2018

- **Zandonella Callegher, C.**, Toffalini, E., & Altoè, G. (2019). *Eliciting and formalizing experts' knowledge about effect sizes*. Conference, Society for the Improvement of Psychological Science (7-9 July, 2019; Rotterdam, the Netherlands)
- **Zandonella Callegher, C.**, Toffalini, E., & Altoè, G. (2019). *Heights Elicitation*. International Winter School "Beyond  $p < .05$ : Modern statistical approaches in psychological science" (18-22 February 2019; Padova, Italy)
- **Zandonella Callegher, C.**, Toffalini, E., & Altoè, G. (2019). *Quantificare l'effetto di interesse (trad. Quantify plausible effect size)*. National Conference (4 October, 2019; Padua, Italy)
- **Zandonella Callegher, C.**, Marci, T., & Altoè, G. (2018). *Relazioni tra attaccamento paterno e problemi emotivo-comportamentali nella media infanzia: Un'analisi bayesiana (transl. Relation between father attachment and socio-emotional problems in the middle childhood: A Bayesian approach)*. XXV AIP National Congress section of Developmental and Educational Psychology, Italian association of psychology (17-19 September 2019; Turin, Italy).

*I hereby authorize the use of my personal data in accordance to the GDPR 679/16 - "European regulation on the protection of personal data".*

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