

# Niccolò Cao | Curriculum Vitae

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## Education

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### PhD in Statistical Sciences (SECS-S/01)

Department of Statistical Sciences "Paolo Fortunati", University of Bologna

2023–present

Project: "Modern statistical learning for complex data in health-related sciences"

Advisor: prof. Silvia Cagnone

### M.Sc. in Psychology (LM-51)

FISPPA, University of Padova

2020–2022

Final grade: 110/110 cum Laude

Thesis: "Mixture CFA model for heterogeneous samples: A simulation study"

Advisor: prof. Antonio Calcagni

### B.Sc. in Psychology (L-24)

DPSS, University of Padova

2017–2020

Final grade: 110/110 cum Laude

Thesis: "Latent Dirichlet Allocation based methods for applied text-mining in psychology"

Advisor: prof. Antonio Calcagni

## Teaching Experiences

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### Tutorship for "Time Series Analysis" (SECS-S/01, CFU: 6, 10 hours)

First Cycle Degree in Statistical Sciences, Department of Statistical Sciences, University of Bologna

2025

### Tutorship for "Statistical Methods For Economic Analysis" (SECS-S/01, CFU: 6, 29 hours)

Second Cycle Degree in Applied Economics and Markets, Department of Economics, University of Bologna

2024

### Tutorship for "Statistical methods and data analysis in developmental psychology" (M-PSI/03, 20 hours)

Developmental and Educational Psychology (LM-51), DPSS, University of Padova

2023

## Research Experiences

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### Undergraduate Internship

DPSS, University of Padova

2021–2022

- Development of a statistical model to analyze decision uncertainty in rating data with R software applications
- Duration: 6 months
- Supervisor: prof. Antonio Calcagni

## Publications

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### Peer-reviewed journal articles:

- Cao, N., Finos, L., Lombardi, L., & Calcagni, A. (2024). **A novel CFA+EFA model to detect aberrant respondents.** *Journal of Royal Statistical Society Series C: Applied Statistics*, 1-25. <https://doi.org/10.1093/jrssc/qlae036>.
- Cao, N., & Calcagni, A. (2022). **Jointly modeling rating responses and times with fuzzy numbers: An application to psychometric data.** *Mathematics*, 10(7), 1025, 1-11. <https://doi.org/10.3390/math10071025>.
- Calcagni, A., Cao, N., Rubaltelli, E., & Lombardi, L. (2022). **A psychometric modeling approach to fuzzy rating data.** *Fuzzy Sets and Systems*, 447, 76-99. <https://doi.org/10.1016/j.fss.2022.01.008>.

## Conference proceedings:

- Cao, N., Calcagni, A., & Finos, L. (2022). **Twitting about COVID-19: An application of Structural Topic Models to a sample of Italian tweets**. Lombardo, R., Camminatiello, I., Simonacci, V. (eds) *10th International Conference IES 2022 Innovation and Society 5.0: Statistical and Economic Methodologies for Quality Assessment*. PKE, 549-554. ISBN: 9788894593365.

## Communications in Scientific conferences and meetings

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- Cao, N., Finos, L., Lombardi, L., & Calcagni, A. **A new factor mixture model to detect aberrant respondents**. *2024 International Meeting of the Psychometric Society (IMPS 2024)*, Symposium: *Latent variable models for complex data structures*, Prague, Czech Republic, July 16-19 2024.
- Cao, N., Calcagni, A. & Finos, L. **Mixing CFA and EFA to handle data heterogeneity**. *51st Meeting of the European Mathematical Psychology Group (EMPG)*, Rovereto, Italy, September 5-7 2022.
- Cao, N., Calcagni, A., & Finos, L. **Twitting about COVID-19: An application of Structural Topic Models to a sample of Italian tweets**. *10th International Conference IES 2022 Innovation and Society 5.0: Statistical and Economic Methodologies for Quality Assessment*, Capua, Italy, January 27-28, 2022
- Cao, N., & Calcagni, A. **Fuzzy Regression Analysis of fIRT-Tree-based data**. *4th AFU International Conference TASK4-21*, Online conference (Dubai), May 19-20 2021.

## Additional courses

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<i>Julia High Performance (CINECA)</i>	2023
<i>Python for Scientific Computing (CINECA)</i>	2023
<i>Introduction to Fortran for Scientific Computing (CINECA)</i>	2022

## Languages

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**Italian:** Mother tongue

**English:** *Reading:* Excellent; *Writing:* Excellent; *Speaking:* Excellent; *Listening:* Excellent

## Programming skills

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**Advanced:** R, Julia, L<sup>A</sup>T<sub>E</sub>X

**Intermediate:** Fortran, Mathematica

**Basic:** MATLAB, Python, bash

## Memberships of Scientific Societies

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<i>Psychometric Society: member of the Graduate Student Committee</i>	since 2024
<i>Italian Statistical Society</i>	since 2024

## Event organization

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<i>Psychometric Society: Research competition</i>	2024
<i>Psychometric Society: Datathon</i>	2025

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Bologna, June 26, 2025