

Curriculum Vitae

Claudia Ruzza

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Education:

2021-2025: International School for Advances Studies (SISSA) – Ph.D in Cognitive Neuroscience

Thesis: *Statistical Learning of Categories: the role of Individual Variability in the lifespan*

The primary focus of my thesis lies in the study of statistical learning, the ability to recognize and use patterns for learning, within the domain of language, particularly with an interest in individual variability and age-related effects.

The purpose of my research is to study the impact of age in SL skills to possibly better characterize the age trajectory in SL abilities related to the process of reading. More precisely, I focus on linguistic and non-linguistic stimuli categorization, studying this process from both a behavioural and neural perspective.

In the first study, I ran an experiment and a conceptual replication of it on young adults, investigating stimulus categorization. Using Fast Periodic Visual Stimulation (FPVS) with an oddball design, I categorized stimuli into frequent and infrequent groups and observed EEG neural responses. Analyses revealed frequency-based item grouping both with linguistic and non-linguistic stimuli. Though this neural categorization did not surface in behavior, substantial individual variability emerged. Correlation analyses between the behavioural and the FPVS-EEG signal yielded mixed results. These data confirm the existence of a frequency-tuned neural mechanism that might underlie category learning.

In the second study, I am delving into how statistical learning abilities develop over later stages of life. Building on my prior FPVS-EEG and behavioral test design, I incorporated standardized cognitive tests and a traditional statistical learning paradigm based on transitional probabilities. This study aims to explore potential age-related shifts in neural stimulus categorization and investigate relations between neural and behavioral performance in these tasks, as well as their connections to other cognitive abilities and statistical learning skills.

In the third study that I am aiming to conduct in Yale at LLAMB Lab, I would explore word and stimuli categorization in the earlier stages of life and how individual differences in statistical learning abilities relate to language abilities and categorization processes.

2018-2021: University of Siena – M.A. in Linguistics and Cognitive Studies with Honors

Thesis: *Syntactic complexity in Mild Cognitive Impairment due to Alzheimer's disease (MCI-AD): long-distance dependencies and working memory in comprehension of relative clauses*

Exploring language impairments in neurodegenerative disorders, my study investigated the role of short-term and working memory in sentence processing. Testing 25 Mild Cognitive Impairment due to Alzheimer's disease (MCI-AD) subjects, I assessed sentence comprehension of complex relative clauses. Results suggested working memory's significant influence on grammatical elaboration and comprehension, particularly in constructions with long subject-verb agreement dependencies, advocating for inclusion of complex syntactic structures in dementia screenings.

2014-2017: University of Padua – B.A. in Foreign Languages and Literatures with Honors

Thesis: *The acquisition of WH-questions: a study on the comprehension in Italian-speaking children*

In this study, language acquisition in Italian-speaking children aged 3-5 was explored, focusing on comprehension of wh-questions. Patterns observed in previous research were confirmed, indicating a developmental difference between subject and object wh-questions. Notably, comprehension of subject questions improved while that of object questions lagged, supporting existing hypotheses in language acquisition according to the enhanced structural complexity of object clauses.

Collaborations:

February 2019: Centro Dedalo – SOS Dislessia

I was selected to take part of an intensive course on diagnostic and treatment methods for learning and behavioral difficulties, focusing on areas such as language, learning, behavior, and communication. Particular emphasis was put on personalized assessment and enhancement of linguistic abilities, with a primary focus on dyslexic children.

2020-2021: Neurology and Neurometabolic Diseases Unit at Santa Maria delle Scotte Hospital

I actively participated in patient care by administering cognitive tests to individuals primarily diagnosed with Alzheimer's, Mild Cognitive Impairment (MCI), and Parkinson's disease during outpatient visits. Additionally, I meticulously collected patient data to support ongoing research in these fields.

2020-2021: San Gimignano high-security prison

I won a position as university tutor. I facilitated connections between inmates and professors, providing support for university exam preparation, alongside offering English lectures to aid their academic progression within the prison system.

2021-2022: University of Siena disabilities and specific learning difficulties (SLD) office

I won a position as university tutor. I provided tailored academic support to students with disabilities, ensuring their ability to engage effectively with lectures. Additionally, I assisted students with dyslexia and other specific learning difficulties (SLD), aiding in their study methods and exam preparation.

Scholarships and Awards:

2024: Women in STEM – SISSA (€1750)

2024: ERASMUS+ (€4900)

2021: “Eccellenze nello Studio” - Banca Annia - Credito Cooperativo di Venezia, Padova e Rovigo s.c. (€1000)

Conferences & Seminars:

September 2025: European Society for Cognitive Psychology 2025 – ESCOP, University of Sheffield (Sheffield, UK)

TALK: Statistical Learning (SL) of Categories: The effect of Age and Individual Variability in Neural Responses and Behaviour

November 2024: Psychonomic Society 65th Annual Meeting – New York City (NY, US)

TALK: *Statistical Learning (SL) of Frequency-based Categories: Discrepancy between Neural response and Behaviour*

November 2024: Multimodal Neuroimaging and Machine Learning to Understand Human Behavior: an NIRS Workshop – NIRx, Yale School of Medicine, WuTsai Institute (New Haven, CT, US)

June 2024: International Conference on Interdisciplinary Advances in Statistical Learning – Basque Centre on Cognition, Brain and Language BCBL (San Sebastian, Spain)

POSTER: *Mechanisms of Frequency-based Category Learning: Discrepancy between Neural response and Behaviour*

September 2023: XXIX Congresso AIP - Sezione Sperimentale – Associazione Italiana Psicologia AIP (Lucca, Italy)

TALK: *Statistical Learning of Categories: neural and behavioural evidences*

July 2023: TEX2023: Efficient coding and processing for perception and action – International School for Advanced Studies SISSA (Trieste, Italy)

October 2022: XVII Convegno Nazionale SINDem – Società Italiana di Neurologia (Florence, Italy)

POSTER: *The comprehension of syntactically complex structures in Mild Cognitive Impairment (MCI) with evidence of brain amyloid deposition*

July 2022: TEX2022: Bringing together Predictive Processes and Statistical Learning – International School for Advanced Studies SISSA (Trieste, Italy)

June 2022: International Conference on Interdisciplinary Advances in Statistical Learning – Basque Centre on Cognition, Brain and Language BCBL (San Sebastian, Spain)

January 2022: European Workshop on Cognitive Neuropsychology – University of Padua; University of Milan – Bicocca (Bressanone, Italy)

April 2021: International workshop on Language in Healthy and Pathological Aging – University of Sevilla, University of Salamanca (Salamanca, Spain)

March 2021: 10th Winter School Ethics and Neuroscience and AI – BCCN Berlin; ICCN and the Berlin School of Mind and Brain (Munich, Germany)

February 2021: 46° Incontro di Grammatica Generativa (IGG46) – Siena Interdepartmental Center for Cognitive Studies of Language CISCL; (Siena, Italy)

November 2020: Going Romance 34 – Université de Paris 8; CNRS; Structures Formelles du Langage; Université Paris Lumières (Paris, France)

September 2020: Brain, Language and Learning – Siena Interdepartmental Center for Cognitive Studies of Language CISCL (Siena, Italy)

June 2020: 7th Summer Neurolinguistics School - Child Language Development – Center for Language and Brain; National Research University Higher School of Economics (Russia)

April 2019: International Spring School on Psycholinguistics, Neurolinguistics and Clinical Linguistics – Filozofski fakultet u Novom Sadu (Serbia)

December 2018: Language in Mind and Brain – LMU Munich; ICCLS (Germany)

June 2018: Sociolinguistics Today - Methods for the Analysis of Ancient and Modern Languages – University for Foreigners of Siena (Italy)

Editorial Reviewing Activities:

Reviewer: I've reviewed 1 paper in collaboration with Davide crepaldi for *Cognition*.

Publications:

Ruzza, C., Tavors, A., Guidi, S., Mignarri, A., Rufa, A., & Moscati, V. (2025). Syntactic complexity in Mild Cognitive Impairment due to Alzheimer's disease (MCI-AD): long-distance dependencies and working memory in comprehension of relative clauses. *Lingue e linguaggio*, 24(2), 289-322.

Bogaerts, L., Crepaldi, D., Zhou, H., ... Ruzza, C., & Siegelman, N. (2026). Time for Consensus: Open Challenges and Recommendations for Research on Individual Differences in Statistical Learning. *Under revision*.