

PERSONAL INFORMATION

Lucia Mencarelli



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Sex Female | Date of birth 26/08/1992 | Nationality Italian

PERSONAL STATEMENT

Doctoral Candidate in Neuroscience

RESEARCH EXPERIENCE

September 2019 – Present

Visiting Student

Berenson-Allen Center for Non-Invasive Brain Stimulation, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, USA.

Under the supervision of Prof. Emiliano Santarnecchi

- Data Collection with electroencephalography (EEG) during multisensory stimulation on Alzheimer patients for the project 'Feasibility and Safety of Multisensory Stimulation in Alzheimer's Disease'.
- Application of noninvasive brain stimulation techniques (NiBS), such as Transcranial Magnetic Stimulation (TMS), Transcranial Direct Current Stimulation (tDCS), and Transcranial Alternating Current Stimulation (tACS) to investigate cortical activity under external perturbation, offline and during cognitive tasks on Alzheimer patients for the projects 'Feasibility and Safety of Multisensory Stimulation in Alzheimer's Disease' and 'Gamma induction for Amyloid clearance in Alzheimer disease'.
- TMS-EEG analysis for the 'Perturbation physiological biomarker for neuropsychiatric disease' project.
- Functional connectivity and EEG analysis for the "Strengthening Human Adaptive Reasoning and Problem Solving" (SHARP) project.

November 2017 – Present

PhD Student

Department of Medicine, Surgery and Neuroscience, Neurology and Clinical Neurophysiology Section, Brain Investigation & Neuromodulation Lab. (SiBIN Lab), University of Siena, Italy.

Under the supervision of Prof. Simone Rossi

- EEG data collection to evaluate the modulation of brain activities in different brain conditions (i.e. during resting state, non-invasive brain stimulation (tACS), cognitive tasks and multisensory stimulations) in healthy subjects.
- Functional and structural Magnetic Resonance Imaging (fMRI-MRI) data collection to study modulation of cortical networks during resting state and cognitive tasks in healthy subjects. Part of the project involves simultaneous neuroimaging and stimulation of individual through tACS while in the scanner.
- Data collection and analysis of Motor Evoked Potential by Transcranial Magnetic Stimulation (TMS) on healthy subjects.
- Treatment of patients with cocaine addiction using TBS protocol.
- fMRI and EEG pre-processing and analysis.
- Statistical Analysis.
- Behavioural data analysis.
- Discussion, creation and test of new experimental designs.
- Write literature reviews and scientific articles.

November 2016 –  
November 2017

**Internship**

Department of Medicine, Surgery and Neuroscience, Neurology and Clinical Neurophysiology Section, Brain Investigation & Neuromodulation Lab. (SiBIN Lab), University of Siena, Italy.

Under the supervision of prof. Simone Rossi

- Investigation of high cognitive functions as memory, attention, fluid intelligence, working memory by means of Non-Invasive Brain Stimulation (NIBS) as TMS (Transcranial Magnetic Stimulation) and tES (Transcranial Electrical Stimulation).
- Use of functional magnetic resonance (fMRI) to evaluate the modulation of brain networks during cognitive task or resting state in healthy subjects and in tumour patients.
- Treatment of patients with obsessive-compulsive disorder (OCD) using rTMS protocol.
- Conduction of quantitative meta-analysis.

**EDUCATION AND TRAINING**

November 2019

**Intensive Course in Transcranial Magnetic Stimulation (TMS).**

Berenson-Allen Center for Non-Invasive Brain Stimulation. Harvard Medical School. Boston, (MA).

May 2019

**VII Science Factory: TMS-EEG Summer School and Workshop.**

Aalto University. Dept. of Neuroscience and Biomedical Engineering (NBE). Espoo, Finland.

Oct 2018

**Course for statistical analysis (SPSS).**

Scuola di Psicoterapia comparata. Firenze, Italy.

2014-2016

**Master's degree in Neuroscience and Neuropsychological rehabilitation**

Alma mater studiorum, University of Bologna

Experimental thesis in Social Neuroscience under the supervision of prof. Alessio Avenanti.

Title: *'Finestre temporali critiche nell'integrazione delle informazioni emotive nel solco temporale superiore: uno studio di TMS-priming'*.

2011-2014

**Bachelor's degree in Behavioral sciences and social relationships**

Alma mater studiorum, University of Bologna

Experimental thesis in Evolutionistic Psychology under the supervision of prof. Marco Costa.

Title: *'La percezione del movimento biologico'*.

**E-LEARNING COURSES**

2019

MATLAB Data Processing and Visualization.

MATLAB Programming Techniques.

MATLAB Fundamentals.

Deep Learning in MATLAB.

Provided by: *MathWorks*

Jan-Apr 2019

EEGLAB Tutorial Outline

Provided by: *Swartz Center for Computational Neuroscience*

SCIENTIFIC PRODUCTION

Publication under review

**Mencarelli, L.**, Menardi, A., Neri, F., Monti, L., Ruffini, G., Salvador, R., ... & Santamecchi, E. Network-targeted multichannel tDCS modulates both intrinsic and network-to-network functional connectivity. (under review on Journal of Neuroscience Research, IF: 4.139).

Emanuele, M., **Mencarelli, L.**, Neri, F., Mancuso, M., Abbruzzese, L., Fadiga, L., Santamecchi, E., Rossi, S. Modulation of corticospinal excitability in patients with Disorder of Consciousness: an exploratory transcranial magnetic stimulation study. (under review on Journal of Clinical Medicine, IF: 5.688).

Santamecchi, E., Momi, D., **Mencarelli, L.**, Plessow, F., Saxena, S., Rossi, S., ...& Pascual-Leone, A. Overlapping and dissociable brain correlates of fluid intelligence and executive functions.

Publications

**Mencarelli, L.**, Biagi, M.C., Salvador, R., Romanella, S., Ruffini, G., Rossi S., Santamecchi. Network mapping of connectivity alterations in Disorder of Consciousness: Towards targeted neuromodulation. J. Clin. Med. 2020, 9, 828, IF: 5.688.

Neri, F., **Mencarelli, L.**, Menardi, A., Giovannelli, F., Rossi, S., Sprugnoli, ... & Santamecchi E. A Novel tDCS Sham Approach Based on Model Driven Controlled Shunting. 2020, Brain Stimulation, 13(2). IF: 6.919

Sprugnoli, G., Monti, L., Lippa, L., Neri, F., **Mencarelli, L.**, Ruffini, G., ... & Santamecchi, E. Reduction of intratumoral brain perfusion by noninvasive transcranial electrical stimulation. 2019, Science Advances, 5(8). IF: 12.804

**Mencarelli, L.**, Francesco, N., Davide, M., Arianna, M., Simone, R., Alessandro, R., & Emiliano, S. Stimuli, presentation modality, and load - specific brain activity patterns during n - back task. Human brain mapping, 2019, 40(13). IF: 4.927

Santamecchi, E., Sprugnoli, G., Tatti, E., **Mencarelli, L.**, Neri, F., Momi, D., ... & Rossi, A. Brain functional connectivity correlates of coping styles. Cognitive, Affective, & Behavioral Neuroscience, 2018, 18(3). IF: 2.661

Conference Presentation

**Mencarelli, L.**, Menardi, A., Neri, F., Monti, L., Ruffini, G., Salvador, R., ... & Santamecchi, E. A new multichannel solution for Network-targeted tDCS: effects on resting-state fMRI connectivity. Poster Presentation at 'VII Science Factory', Espoo, Finland, May 2019

**Mencarelli, L.**, Menardi, A., Neri, F., Monti, L., Ruffini, G., Salvador, R., ... & Santamecchi, E. Network-targeted vs bifocal tDCS: effects on resting-state fMRI functional connectivity. Oral presentation at the 'XXVI Congresso Nazionale SIPF', Torino, Italy, November 2018.

**Mencarelli, L.**, Neri, F., Momi, D., Menardi, A., Rossi, S., Rossi, A., & Santamecchi, E. (2019). Stimuli, Presentation modality and load-specific brain activity patterns during n-back task. Poster presentation at the 'XXVI Congresso Nazionale SIPF', Torino, Italy, November 2018.

Conference and Symposium

**2019 Computational Neuroscience Outcomes Center Symposium.** Boston, MA, October 2019.

**Neural Mechanisms of Memory and Cognition.** Cambridge, MA, October 2019.

**XXVI Congresso Nazionale SIPF.** Torino, Italy, November 2018.

**Consensus Conference TMS.** Siena, Italy, October 2018.

**XXV Congresso Nazionale SIPF.** Roma, Italy, November 2017.

PERSONAL SKILLS

Mother tongue(s) Italian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C1	C1	B2	B2	C1

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2 Proficient user  
[Common European Framework of Reference for Languages](#)

**Communication skills** Ability to work in a research group where collaboration between different figures and various hours of work is indispensable.  
 High level of empathy and social skills developed working with neurological and psychiatric patients.  
 Excellent relational skills with children acquired during my volunteer experience at summer camps.

**Organisational / managerial skills** Excellent organizational and prioritization skills acquiring during Internship at SiBIN-LAB.  
 Excellent ability in planning and implementing challenging projects.

**Job-related skills**

- Excellent mastery in the use of non-invasive brain stimulation instrument like transcranial electric stimulation (tDCS/tACS) and transcranial magnetic stimulation (TMS).
- Excellent mastery in the evaluation of the electrical activity in the brain using EEG.
- Good mastery in the use of fMRI.

**Digital competence**

Information processing	Communication	Content creation	Safety	Problem solving
Independent user	Proficient user	Proficient user	Independent user	Proficient user

[Digital competences - Self-assessment grid](#)

- Proficient with most of Microsoft Office Program (Word, Excel, Power Point, Outlook)
- Proficient with E-Prime, Ginger-ALE, MRI-CRON and MRI-convert
- Proficient with fMRI data analysis software (CONN, REST, DPARFS, SPM)
- Proficient with EEG data analysis software (EEGLAB)
- Good mastery in Statistic software (SPSS)
- Good knowledge in MATLAB
- Excellent ability to surf the Internet
- Good command of photo editing software gained as an amateur photographer

**Other skills**

- Acting: I have been performing a theatre course for five years by completing several theatrical performances

**Driving licence** B