

## AGNESE ZAZIO

### Curriculum Vitae

#### Personal Details

*Nationality* Italian  
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#### Current Position

- 2019-today* Post-doc researcher. Neurophysiology Lab ([www.cognitiveneuroscience.it](http://www.cognitiveneuroscience.it)), IRCCS San Giovanni di Dio Fatebenefratelli Clinical Research Center (Brescia, Italy).  
*Research interests*: neural oscillations, plasticity and connectivity by means of non-invasive recordings (M/EEG) and brain stimulation techniques (TMS, tES), also combined (TMS-EEG).
- 2019-today* Teaching assistant. Fundamental Psychology Exam (dr. D. Villani and dr. C. Repetto), Catholic University of the Sacred Heart (Brescia, Italy).

#### Education

- 2015 – 2018* PhD in Psychology, Linguistics and Cognitive Neuroscience - Mind, Brain and Behavior. University of Milano-Bicocca in collaboration with Neurophysiology Lab, IRCCS San Giovanni di Dio Fatebenefratelli Clinical Research Center (Brescia, Italy). Degree with honors.  
*Thesis*: *Impact of ongoing alpha oscillations on visual perception and neurophysiological response: an integration with a psychophysical approach*  
*Supervisor*: prof. C. Miniussi; co-advisor: dr. M. Bortoletto
- 2014* Psychology professional qualification. University of Padova (Italy).
- 2011-2013* Master in Psychology-Neuroscience. Degree: 110/110 with honors. University of Trento (Italy), Psychology and Cognitive Science Department.  
*Experimental thesis*: *Consequences of reduced representational distinctiveness and of temporal instability on reading accuracy in patients with dysgraphia due to orthographic short-term memory damage: A new case and a literature review*  
*Supervisor*: prof. G. Miceli
- 2008-2011* Bachelor in Cognitive Psychology and Psychobiology. Degree: 110/110 with honors. University of Padova (Italy), Faculty of Psychology.  
*Experimental thesis*: *Encoding of numerical and quantitative information in a discrimination task: a comparison between homogeneous and heterogeneous stimuli in domestic chicks (Gallus gallus)*  
*Supervisors*: prof. L. Regolin and dr. R. Rugani

## Previous research activity

- 2018 Visiting PhD Student. Salzburg Brain Dynamics Lab, Center for Cognitive Neuroscience, University of Salzburg (Austria). Supervisor: prof. N. Weisz
- 2015-2018 PhD Student. University of Milano-Bicocca in collaboration with Neurophysiology Lab, IRCCS San Giovanni di Dio Fatebenefratelli Clinical Research Center (Brescia, Italy).
- 2014 – 2015 Research Assistant. Neurophysiology Lab, IRCCS San Giovanni di Dio Fatebenefratelli Clinical Research Center (Brescia, Italy).
- 2014 Graduate student. Neurophysiology Lab, IRCCS San Giovanni di Dio Fatebenefratelli Clinical Research Center (Brescia, Italy).

## Funding support

- 2020 Starting Grant (SG-2019-12370473) – PI (Italian Ministry of Health)  
Tactile mirror system in borderline personality disorder: a multimodal approach to study brain connectivity and plasticity” – € 130,000 for 3 years
- 2019 PhD Scholarship 2015-2018 (University of Milano-Bicocca, Italy)

## Honors and Awards

- 2019 Best doctoral thesis award (Italian Psychology Association - Experimental section)
- 2019 Cum Laude distinction for PhD Degree (University of Milano-Bicocca, Italy)
- 2015 Merit Prize, 2014 edition (University of Trento, Italy)
- 2011 Summer school scholarship (European Campus of Excellence in Neuroscience)

## Internships

- 2014 Post-lauream (6 months). Neurophysiology Lab, IRCCS San Giovanni di Dio Fatebenefratelli Clinical Research Center (Brescia, Italy).  
Application of non-invasive brain stimulation techniques (tES; TMS); acquisition and analysis of electrophysiological signals. Supervisor: prof. C. Miniussi
- 2012 – 2014 Post-lauream (6 months). Center for Neurocognitive Rehabilitation (CeRiN), Center for Mind/Brain Sciences (CIMEC), University of Trento (Italy).  
Clinical neuropsychological assessment in adult patients with cognitive impairment due to brain damage. Supervisor: dr. G. Cazzolli
- 2012 – 2013 Pre-lauream. Center for Neurocognitive Rehabilitation (CeRiN), Center for Mind/Brain Sciences (CIMEC), University of Trento (Italy).  
Clinical neuropsychological assessment in adult patients with cognitive impairment due to brain damage. Supervisor: prof. G. Miceli
- 2010 – 2011 Pre-lauream. Lab. of Comparative Animal Psychology, University of Padova (Italy).  
Conducting experiments investigating cardinality in domestic chicks (*Gallus gallus*). Supervisors: prof. L. Regolin and dr. R. Rugani

## Attended courses, schools and workshops

- 08-12.04.2019 Course: Donders MEG/EEG Toolkit: advanced data analysis and source modelling of EEG and MEG data. Donders Institute for Brain, Cognition and Behaviour, Nijmegen (The Netherlands).
- 18-23.05.2018 Summer school and workshop: 6<sup>th</sup> Science Factory TMS-EEG. Aalto University School of Science, Espoo (Finland).
- 18-19.01.2018 Workshop: Perturbing and Enhancing Perception and Action with Oscillatory Neural Stimulation (PEPA ON stimulation). Cambridge University (UK).
- 11.09.2017 Workshop: Workshop on Rhythms in the Brain (WoRB). Glasgow University (UK).
- 14-18.08.2017 Summer school: Math and Matlab for Neuroscientists. Radboud University, Nijmegen (The Netherlands).
- 27.06-02.07.2016 Summer school in methodology: Meta-analysis and results reproducibility: Theoretical aspects and applications in R. University Residential Center of Bertinoro (Italy), Italian Psychology Association (AIP).
- A.Y. 2015-2016 PhD courses (most relevant): English - advanced (60 hrs), Statistics (26 hrs), E-prime (24 hrs), R (24 hrs), Instrumental techniques (8 hrs), Open Access, Grant Writing, Scientific paper drafting and reviewing.
- 04-25.09.2011 Summer school: The Fate of the Memory Trace – Learning, Remembering and Forgetting from Molecules to Behavior. European Campus of Excellence in Neuroscience, Ruhr University Bochum (Germany).

## Languages

<i>Italian</i>	Native
<i>English</i>	Fluent
<i>German</i>	Beginner

## Expertise

- Application of non-invasive brain stimulation techniques (TMS, tES).
- EEG and TMS-EEG acquisition and analysis (ERPs, TEPs, time-frequency); software: BrainVision, Matlab (Fieldtrip, EEGLAB).
- Neuronavigation; software: Softaxic.
- Programming experimental paradigms; software: Presentation, E-prime.
- Statistical analysis; software: Statistica, R, SPSS.
- Neuropsychological evaluation

## Scientific production

### Abstract in international congresses

Bortoletto M., Bonzano L., **Zazio A.**, Pedullà L., Gasparotti R., Miniussi C., Bove M. TMS-evoked potentials as a measure of transcallosal conduction delay in the motor system. *6<sup>th</sup> Annual Brain stimulation and Imaging Meeting (BrainSTIM 2020)*, online event 19-20 May.

Maddaluno O., Guidali G., **Zazio A.**, Miniussi C., Bolognini N. (2020). A tool to induce cross-modal Hebbian-like plasticity within the primary somatosensory cortex. *Cognitive Science Arena (CSA)*, Brixen, 7-8 February.

Guidali G., Maddaluno O., **Zazio A.**, Miniussi C., Bolognini N. (2020). Exploring cross-modal properties of the somatosensory cortex with a novel Paired Associative Stimulation Protocol. *European Congress on Cognitive Neuropsychology (ECWN)*, Brixen, 26-31 January.

**Zazio A.**, Schreiber M., Miniussi C., Bortoletto M. (2019). Modelling the effects of ongoing alpha activity on visual perception: the Oscillation-based Probability of Response. *Rovereto Attention Workshop (RAW)*, Rovereto, 24-26 October.

Wutz A., **Zazio A.**, Weisz N. (2019). Alpha bursts in inferior parietal cortex underlie object individuation in dynamic scenes. *Annual Meeting of the Vision Sciences Society*, St. Pete Beach (USA), 17-22 May. Abstract publication: *Journal of Vision*. 2019; 19(10):113c. doi: 10.1167/19.10.113c

Guidali G., **Zazio A.**, Maddaluno O., Miniussi C., Bolognini N. (2018). Modulating the response of the primary somatosensory cortex with a novel Paired Associative Stimulation protocol. *Annual congress of Milan Center for Neuroscience (NeuroMI)*, Milan, 21-23 November.

Guidali G., **Zazio A.**, Maddaluno O., Miniussi C., Bolognini N. (2018). Primary somatosensory cortex and Hebbian associative learning: a novel cross-modal Paired Associative Stimulation (PAS) protocol. *Hand, Brain and Technology: The Somatosensory System*, Ascona (Switzerland), 26-31 August.

**Zazio A.**, Bortoletto M., Miniussi C. (2018). Ongoing alpha oscillations, visual perception and neural mechanisms: a formal model. *Salzburg Mind and Brain Annual Meeting (SAMBA)*, Salzburg (Austria), 12-13 July.

**Zazio A.**, Veniero D., Bortoletto M., Miniussi C., Ruzzoli M. (2018). Perceptual and physiological consequences of dark adaptation: a TMS-EEG study. *6<sup>th</sup> Science Factory TMS-EEG*, Espoo (Finland), 18-23 May.

**Zazio A.**, Bortoletto M., Miniussi C. (2018). Ongoing oscillations: how do they affect perception? *Perturbing and Enhancing Perception and Action using Oscillatory Neural Stimulation – PEPA ON Stimulation*, Cambridge (UK), 18-19 January.

**Zazio A.**, Ruzzoli M., Veniero D., Bortoletto M., Miniussi C. (2017). Perceptual and physiological consequences of dark adaptation: a TMS-EEG study. *Cognitive Science Arena*, Brixen (Italy), 17-8 February.

**Zazio A.**, Bortoletto M., Fertonani A., Pirulli C., Miniussi C. (2016). tES effects on a visual orientation discrimination task: noise induction in a non-linear system. *6<sup>o</sup> International Congress on Transcranial Brain Stimulation*, Göttingen (Germany), 7-10 September. Abstract publication: *Clinical Neurophysiology*, 128(3), 111-112.

**Zazio A.**, Capasso R., Miceli G. (2013). Consequences of reduced representational distinctiveness and of temporal instability on reading accuracy in patients with dysgraphia due to orthographic short-term memory damage: A new case and a literature review. *51<sup>o</sup> Annual Meeting - Academy of Aphasia Lucern* (Switzerland), 20-22 October. Abstract publication: *Procedia – Social and Behavioral Sciences*, 94, 209-210.

### Abstract in national congresses

Bortoletto M., Bonzano L., **Zazio A.**, Pedullà, L., Miniussi, C., Bove, M. (2019). The speed race of transcallosal inhibition for bimanual coordination. *Annual Congress of Italian Society of Psychophysiology (SIPF)*, Ferrara, 14-16 November.

Maddaluno O., Guidali G., **Zazio A.**, Miniussi C., Bolognini N. (2018). Tactile acuity as an index of plasticity induced by a novel cross-modal PAS protocol. *Annual Congress of Italian Society of Psychophysiology (SIPF)*, Torino, 15-17 November.

**Zazio A.**, Ruzzoli M., Veniero D., Miniussi, C., Bortoletto M. (2016). Perceptual and physiological consequences of dark adaptation: a TMS-EEG study. *Annual Congress of Italian Society of Psychophysiology (SIPF)*, Milan, 27-29 October. Abstract publication: *Neuropsychological Trends*, 20, 190-191.

### Invited oral presentations

**Zazio A.** (2019). Impact of ongoing alpha oscillations on visual perception and neurophysiological response: an integration with a psychophysical approach. Best doctoral thesis award at *Annual Congress of Italian Psychological Society (AIP) - experimental section*, Milan, 18-20 September.

### Oral presentations

**Zazio A.**, Maddaluno O., Guidali G., Bolognini N., Miniussi C. (2018). Investigating cross-modal properties of the primary somatosensory cortex by means of a novel cross-modal Paired Associative Stimulation protocol. *Annual Congress of Italian Society of Psychophysiology (SIPF)*, Torino, 15-17 November.

**Zazio A.**, Bortoletto M., Miniussi, C. (2018). Ongoing alpha oscillations, visual perception and neural mechanisms: a formal model. *Young Scientist Symposium*, Salzburg (Austria), 11 July.

**Zazio A.**, Maddaluno O., Guidali G., Miniussi C., Bolognini N. (2018). Cross-modal properties of the primary somatosensory cortex: a by-product of Hebbian association learning. *Cognitive Science Arena*, Brixen, 23-24 February.

**Zazio A.**, Bortoletto M., Miniussi, C. (2017). Ongoing oscillations and performance: investigating the underlying neurophysiological mechanisms. *Bicocca Research Day*, Milan, 18 September.

### Peer-reviewed publications

1. Wutz A., **Zazio A.**, Weisz N. (2020). Oscillatory bursts in parietal cortex reflect dynamic attention between multiple objects and ensembles. *The Journal of Neuroscience* 6927-6937. <https://doi.org/10.1523/JNEUROSCI.0231-20.2020>
2. Maddaluno O.\*, Guidali G.\*, **Zazio A.**, Miniussi C., Bolognini N. (2020). Touch anticipation mediates cross-modal Hebbian plasticity in the primary somatosensory cortex. *Cortex*, 126, 173-181. <https://doi.org/10.1016/j.cortex.2020.01.008>
3. **Zazio A.**, Schreiber M., Miniussi C., Bortoletto M. (2020). Modelling the effects of ongoing alpha activity on visual perception: the oscillation-based probability of response. *Neuroscience and Biobehavioral Reviews*, 112, 242-253. <https://doi.org/10.1016/j.neubiorev.2020.01.037>
4. **Zazio A.\***, Guidali G.\*, Maddaluno O., Miniussi C., Bolognini N. (2019). Hebbian associative plasticity in the visuo-tactile domain: a cross-modal paired associative stimulation protocol. *NeuroImage*, 201, 116025. <https://doi.org/10.1016/j.neuroimage.2019.116025>

5. **Zazio A.**, Bortoletto M., Ruzzoli M., Miniussi C., Veniero D. (2019). Perceptual and physiological consequences of dark adaptation: a TMS-EEG study. *Brain Topography*, 32, 773-782. <https://doi.org/10.1007/s10548-019-00715-x>

Bortoletto M., Bonzano L., **Zazio A.**, Ferrari C., Pedullà L., Gasparotti R., Miniussi C., Bove M. (*under review*). Asymmetric transcallosal conduction delay leads to finer bimanual coordination. Preprint available at <https://www.biorxiv.org/content/10.1101/2020.01.24.918102v2>

**Zazio A.**, Ruhnau P., Weisz N., Wutz A. (*under review*). Pre-stimulus alpha-band power and phase fluctuations originate from different neural sources and exert distinct impact on stimulus-evoked responses.

**Zazio A.**, Miniussi C., Bortoletto M. (*submitted*). Alpha-band cortico-cortical phase synchronization predicts effective connectivity in the motor network.

\* these authors contributed equally to this work

**Ad-hoc reviewer for international scientific journals**

Scientific Reports; Brain Topography; Psychophysiology; NeuroImage