AGNESE ZAZIO

Curriculum Vitae

Personal Details

Nationality	Italian
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Current Position

2019-today Post-doc researcher. Neurophysiology Lab (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).

Teaching assistant. Fundamental Psychology Exam (dr. D. Villani and dr. C. Repetto), Psychological Sciences, Catholic University of the Sacred Heart (Brescia, Italy).

Teaching assistant. Physiology and Neurophysiology (dr. M. Bortoletto), Psychiatric Rehabilitation Techniques, University of 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.
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.
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 Salzubrg (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) (Italian Ministry of Health)
Principal Investigator, € 130,000 for 3 years. Project: "Tactile mirror system in borderline personality disorder: a multimodal approach to study brain connectivity and plasticity".

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: *6th 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

Italian	Native
English	Fluent
German	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, Matlab.
- Neuropsychological evaluation

Scientific production

Ongoing studies pre-registered on Open Science Framework

2021 Investigating the Tactile Mirror System in Borderline Personality Disorder: a TMS-EEG study
2020 Transcallosal conduction delay in the motor system

Registered Reports at Stage 1 "In-principal accepted"

Barchiesi G., **Zazio A.**, Barattieri di San Pietro C., Sinigaglia C., Bortoletto M. (2021). Sharing motor plans while acting jointly: a TMS study. *Cortex*, https://osf.io/hjvcm.

Peer-reviewed publications

1. **Zazio A.**, Miniussi C., Bortoletto M. (2021). Alpha-band cortico-cortical phase synchronization is associated with effective connectivity in the motor network. *Clinical Neurophysiology*, *131*, 2473-2480. https://doi.org/10.1016/j.clinph.2021.06.025
2. Bortoletto M., Bonzano L., **Zazio A.**, Ferrari C., Pedullà L., Gasparotti R., Miniussi C., Bove M. (2021). Asymmetric transcallosal conduction delay leads to finer bimanual coordination. *Brain Stimulation*, *14*, 379-388. https://doi.org/10.1016/j.brs.2021.02.002
3. **Zazio A.**, Ruhnau P., Weisz N., Wutz A. (2021). Pre-stimulus alpha-band power and phase fluctuations originate from different neural sources and exert distinct impact on stimulus-evoked responses. *European Journal of Neuroscience*. https://doi.org/10.1111/ejn.15138
4. Wutz A., **Zazio A.**, Weisz N. (2020). Oscillatory bursts in parietal cortex reflect dynamic attention between multiple objects and ensembles. *The Journal of Neuroscience*, *40(36)*, 6927-6937. https://doi.org/10.1523/JNEUROSCI.0231-20.2020
5. 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
6. **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
7. **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
8. **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

* these authors contributed equally to this work

Abstract in international congresses

Bortoletto M., **Zazio A.**, Bonzano L., Barchiesi G., Ferrari C., Pedullà L., Gasparotti R., Miniussi C., Bove M. (2021). Measuring the timing of functional connections through TMS-evoked potentials. *4th international Brain Stimulation Meeting*, Charleston (USA), December 6-9. Abstract publication: *Brain Stimulation, 14(6): 1712*.

Bortoletto M., Barchiesi G., Ferrari C., Fracassi C., Bove M., **Zazio A.** (2021) Pre-registration of a TMS-EEG study on transcallosal effective connectivity in the motor system. *CuttingEEG*, Aix-en-Provence, 4-7 October.

Zazio A., Barchiesi G., Bortoletto M. (2020). TMS-EEG coregistration: Does sampling rate reduce TMS artifact duration? *Transcranial Brain Stimulation in Cognitive Neuroscience in Cognitive Neuroscience Workshop*, online event, 3-4 December.

Bortoletto M., Bonzano L., **Zazio A.**, Pedullà L., Gasparotti R., Miniussi C., Bove M. (2020). TMS-evoked potentials as a measure of transcallosal conduction delay in the motor system. *6th 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. *6th 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° 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° Annual Meeting - Academy of Aphasia* Lucern (Switzerland), 20-22 October. Abstract publication: *Procedia – Social and Behavioral Sciences, 94,* 209-210.

Abstract in national congresses

Bonzano L., Bove M., Bortoletto M., Zazio A., Miniussi C., Mattioli F., Gasparotti R., Capra R. (2021). Interhemispheric information transfer in multiple sclerosis: a multimodal approach of TMS-EEG coregistration, MRI and bimanual coordination.

Bortoletto M., Zazio A., Bonzano L., Bove M. (2020). TMS-evoked Potentials during finger movements and at rest. *Annual Congress of Italian Society of Psychophysiology and Cognitive Neuroscience (SIPF),* online event, 20-21 27-28 November.

Zazio A., Barchiesi G., Bortoletto M. (2020). Sampling rate in TMS-EEG coregistration: Any benefits over 5000 Hz? *Annual Congress of Italian Society of Psychophysiology and Cognitive Neuroscience (SIPF),* online event, 20-21 27-28 November.

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.

Review activity for international scientific journals

Ad-hoc Reviewer: Brain Sciences; Brain Topography; Journal of Clinical Neuroscience; NeuroImage; Psychophysiology; Scientific Reports

Review Editor: Frontiers in Psychology (Consciousness Research)