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Barchiesi Guido
CURRICULUM VITAE

INFORMAZIONI PERSONALI (NON INSERIRE INDIRIZZO PRIVATO E TELEFONO FISSO O CELLULARE)

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CONTACT INFORMATION

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EXPERTISE AND MAIN RESEARCH AREAS

Brain stimulation, cortico-cortical connectivity, magnetoencephalography, magnetomyography, combined transcranial magnetic stimulation and electroencephalography, peripheral nerve stimulation, action observation, action understanding, embodied cognition, motor control, motor system plasticity, facial motor system, emotional processing.

PROFESSIONAL EXPERIENCE

Oct 2019 – Now Post-doc fellowship at the Neurophysiology unit of IRCCS Istituto Centro San Giovanni Di Dio Fatebenefratelli, Brescia, Italy

Mar 2016 – Aug 2019 Post-doc fellowship at CCNS, University of Salzburg, Austria

Feb 2015 – Feb 2016	Post-doc fellowship at CIMeC (Center for Mind and Brain Sciences), University of Trento, Rovereto, Italy
Jan 2013 – Jan 2015	Post-doc fellowship at CIMeC (Center for Mind and Brain Sciences), University of Trento, Rovereto, Italy

EDUCATION

Nov 2009 - Dec 2012	PhD studies in the field of Cognitive Neuroscience at CIMeC Doctoral School in Cognitive and Brain Sciences (3 years program). Thesis title: "Motor Resonance Meets Motor Performance: a neurocognitive study with transcranial magnetic stimulation" PhD thesis link. Tutor: Luigi Cattaneo, MD.
May 2009	Master in Psychology at the University of Trieste (curriculum neuropsychology), in collaboration with University of Parma, neuroscience department. Thesis title: "Area 46: grammatical or semantic selectivity? A pilot study" (110/110 cum Laude). Tutors: Prof. Patrizia Tabossi, Prof. Giovanni Buccino and Prof. Laura Ballerini.
Sep 2006	Bachelor in Psychology at the University of Trieste (curriculum psychobiology). Thesis title: "Phonemics errors in reading within Wernicke aphasia" (110/110 cum laude) Tutor: Prof. Carlo Semenza.
Feb - Jul 2006	Internship (500 hours) at the hospital "Azienda Ospedaliera Universitaria Ospedali Riuniti" (Trieste), Department of Rehabilitation Medicine. Tutor: Dr. Antonella Zadini.

GRANTS and SCHOLARSHIPS

Mar 2017- 2019	Brain mechanisms preventing automatic imitation: FWF Lise Meitner (161.220 €)
2009	PhD scholarship at CIMeC (3 years), Centro Interdipartimentale Mente e Cervello, University of Trento, Italy.

CAREER

The common thread that has characterized my scientific career is the study of the cortical motor system. Among the different topics that I have studied, the argument that fascinated me the most has always been the so-called "motor simulation", i.e., the automatic activation of the motor representations correspondent to the action observed. Since the starting of my PhD, the main focus of my research has been indeed oriented to different aspects of this challenging topic. My PhD supervisor was Prof. Luigi Cattaneo, probably one of the smartest and most brilliant researchers I have ever met, and from whom I learned almost everything I know

about the neurophysiology of the motor system. The uncountable confrontations with him about the automaticity of motor simulation and the role of the motor system in action understanding tremendously helped me in shaping my scientific and critical thinking.

- **Relationship between action observation and action understanding**

When I started my PhD, a natural question to study in the field of action observation was the role of the motor system in action understanding. Exploiting adaptation aftereffects coupled with a TMS state-dependent paradigm (Cattaneo et al. 2011), we were able to show that action perception was influenced in a predictable way by the motor representation that the participant previously adapted. We showed that the premotor ventral cortex was responsible for this effect. This experiment was then followed by a purely behavioral one in which we studied how different motor adaptations training impacted motor-to-visual aftereffects and thus observed actions categorization (Barchiesi et al. 2012).
My works on action observation include also a paper exploring the EEG microstates dynamics, along with the effects of occipital single pulse TMS, related to the observation of hand-object interactions (Avanzini et al. 2013). I also performed combined offline TMS - fMRI: in Arfeller et al. (2013) a "condition and map" approach was exploited by delivering a train of 1 Hz TMS stimulations in proximity of the superior temporal sulcus, after which, the participants was quickly brought inside the MRI magnet where they observed goal-directed and non-goal directed actions. This approach showed that the TMS conditioning effects on the BOLD signal were found also beyond the stimulated area and that they interacted with the goal-directedness of the action observed.

- **Relationship between the automaticity of motor simulation and motor control**

The topic that I am most interested in is the automaticity of motor simulation effects and how our brain deals with this automaticity in order to control automatic imitation tendencies. In Barchiesi & Cattaneo (2013) we aimed to reverse motor simulation effects by changing the visuo-motor relationship between the actions observed and the automatically activated correspondent motor representations, exploiting a "counter-imitative" visuo-motor training. We tested TMS-evoked wrist accelerations during passive action observation both before and after the counter-imitative training. The study showed that both before and after the counter-imitative training early motor simulation, was unchanged, while the training affected motor representations only at later timings by facilitating the motor representation opposite to the action observed. From these data a "dual-route model" was hypothesized to explain the interactions between the automatic motor simulation and the task-related activity within the motor system. This line of research has been followed by the study of the time-course of the cortical excitability in which participants had to perform the opposite action compared to the one they saw using the TMS pulse delivering as the Go cue (Ubaldi et al. 2015); the results were consistent with an early motor simulation followed by a later counter-simulation.

In Barchiesi & Cattaneo (2015) the dual-route model has been enriched by showing that the two hypothesized routes do not necessarily interact in a serial fashion, but most likely in parallel. The results of this work also imply that the representation of the action observed does not necessarily intrude into the "competition for motor output". Around this latest consideration I wrote a grant proposal that allowed me to win the prestigious austrian FWF Lise Meitner fund (2017 - 2019, "Brain mechanisms preventing automatic imitation"); thanks to this award I have been able to produce two magnetoencephalographic studies (still in preparation, see Posters and Presentations and Works in Preparation), showing that modulating the similarity between actions observed and the motor representations competing for motor output, changes also the way the brain reacts to the action observed (Action Pre-Selection Hypothesis), which is associated, in the case of little similarity, with a strong synchronization of alpha and beta power within the motor system.

- **Cortico-cortical connectivity**

My TMS experience extends also to cortico-cortical connectivity; in 2011 (Cattaneo & Barchiesi 2011) we studied the short-latency cortico-cortical connectivity between the left hemisphere and the ipsilateral primary motor cortex by means of a double coil paradigm. Differently from previous works on the topic, we adopted a strategy, which later has been named "dense mapping", as the conditioning stimuli were delivered at locations evenly distributed on the scalp, producing a "map of influence" on the motor evoked potential amplitudes. Thanks to the absence of a-priori localization of the stimulation spots we were able to notice that, among others, a region correspondent to the parietal operculum was consistently influencing the corticospinal excitability at short latencies; this discovery guided us in the studying the role of parietal operculum in haptic memory (Maule et al. 2013, and Cattaneo et al. 2015).

Within the framework related to cortico-cortical connections, we were also interested in the cortico-cortical influence of the dorsal premotor cortex onto the ipsilateral primary motor cortex. However placing the "conditioning" and "test" coils respectively on the dorsal premotor and primary motor cortex is extremely challenging. We devised two ways to overcome this problem: the first one being conditioning the dorsal premotor cortex and testing the effects onto the ipsilateral primary motor cortex tested on the mouth "hot spot", which is far more lateral than the hand hot spot (Parmigiani et al. 2015, 2018). The second way was to affect the amplitude of the (transcortical) long latency reflex elicited by peripheral electrical stimulation of the median nerve, thus eliminating the presence of the "test" coil on the primary motor cortex (in preparation, see Posters and Presentations); we showed that a TMS conditioning stimulus on the premotor ventral cortex indeed inhibits the amplitude of the reflex when delivered around 15 ms after electrical stimulation of the median nerve at the wrist.

- **Neurocognitive investigations of emotional processing and head MagnetoMyography**

Recently I started exploring the field of emotions and emotional facial expressions. In 2019 (De Pisapia et al. 2019) we published an offline TMS/fMRI paper testing the role of medial prefrontal cortex in affective referential reasoning.

While at CIMeC I also had the opportunity to study the preparation of facial motor responses in an MEG setting both in healthy participants and in patients suffering from Moebius Syndrome (unpublished data, in preparation). Since the production of such muscular responses generates artifactual activity on the MEG sensors, I reversed the classical perspective (brain → data, muscular activity → artifact) to exploit the MEG helmet as a big electromyographic recorder (head MagnetoMyography, hMMG, Barchiesi et al. 2020). This new method exploits source localization algorithms, in order to localize muscular activity on participants' heads, producing thousands of virtual magnetomyographic sensors at once.

The study of emotional facial expressions could greatly benefit from this new technique since no surface electromyographic electrodes is needed (surface EMG and hMMG can be complementary). For example, in the same paper we showed, without any a-priori assumption on muscular localization, that magnetomyographic activity localized in proximity of corrugator supercilii muscles correlated with the emotional valence of presented pictures, as demonstrated by traditional works relating corrugator supercilii activity and negative emotional processing.

- **Current activity: motor underpinnings of acting together, TMS-EEG methodological issues and P15 transcranial evoked potential as an interhemispheric connectivity index.**

In order to enrich my experience in electrophysiology, from 2019 I am working in the neurophysiology unit of the IRCCS Istituto San Giovanni di Dio Fatebenefratelli headed by Marta Bortoletto, acknowledged as one of the pioneering labs in the field of TMS-EEG.

Here I am conducting a TMS-MEP experiment studying the modulation of corticospinal activity related to acting together. The work has been sent to the scientific journal "Cortex" as a Registered Report, and recently accepted for Stage 2 data collection (in principle acceptance). Moreover, we are currently preparing a manuscript relating the duration of the TMS artifact on the EEG channels to the sampling frequency of data

acquisition (see Posters and Presentations); eventually we are running one TMS-EEG experiment, exploring the features of the P15 TEP potential in relation to ipsilateral silent periods; P15 TEP has recently been shown to represent a promising index of interhemispheric connectivity.

SKILLS

Cognitive Neuroscience and Neurophysiology
I always believed that, in order to not limit the range of the scientific questions I could answer, I should not be bound by the lack of technical skills. Even though in my early career I applied a vast range of TMS techniques, I felt the need to increase the "tool-kit" for my neurocognitive research. In 2016 I had the great opportunity to join Prof. Weisz's magnetoencephalography group in Salzburg (Austria). In the Salzburg Brian Dynamics Lab I worked with some of the most skilled MEG researchers in Europe, an experience that has broadened the boundaries of my potential, by being able to apply magneto/electroencephalographic analyses both in sensor and in source space. After 3 years and a FWF Lise Meitner grant, I moved back to Italy, in Dr. Bortoletto's group to expand my TMS skills to TMS-EEG and transcranial evoked potentials. Thanks to these experiences, I am now able to independently conduct and organize experiments involving each of these techniques, which I believe is one of my greatest strengths as a researcher.

Neuroscientific tools:

- **TMS**: Independent use of transcranial magnetic stimulation articulated in single pulse-MEP, single pulse-"sensor evoked variations", double coil stimulation, state-dependent TMS, on-line virtual lesion by means of high frequency stimulation trains, off-line low frequency repetitive TMS, the latter combined with functional magnetic resonance.
    - Equipment used: Magstim 200, Rapid (older and recent version), BiStim (Magstim), MagProX100, MagPro Compact (MagVenture), Nexstim stimulator (Nexstim).
      EMG recording: 1902 Amplifier Micro 1401, Power 1401 (Cambridge Electronic Design). g.HIamp (g.tec).
      Sensors (also combined with TMS): accelerometer DE-ACCM6G buffered 6G, accelerometer Adxl335 (Analog Devices), flex sensor SEN-10264 (SparkFun Electronics), force/pressure sensor SEN-09376 (SparkFun Electronics), force/pressure sensor RP-S40-RT.
      Neuronavigation: Zebris CMS20 + BrainVoyager sw, Polaris Vicra and Spectra + Softaxic sw.

- **PES**: **(**Peripheral Nerve Electrical Stimulation): independent use of peripheral nerve stimulation devices also in combination with single pulse TMS.
    - Equipment used: Digitimer DS7A (Digitimer).

- **MEG**: Independent use of magnetoencephalography in every step of the research activity from experimental design to data analysis steps, articulated in event related fields, time-frequency power analysis, source space localization techniques such as beamforming or minimum norm estimation.
    - Equipment used: Neuromag Triux (306 channels, Elekta), DataPixx video I/O hub, Polhemus Fastrak 3D head digitization system.

- **EEG/TMS-EEG**: Independent use of electroencephalography and the TMS-EEG combination, with specific focus on transcranial evoked potentials (TEPs).
    - Equipment used: g.HIamp (g.tec), Multitrode EEG electrodes (Brain Products).

- Independent experiment planning, analysis, and manuscript writing/publication steps.

Technical and Programming Skills

I am endowed with "low-level" technical skills as well; the ability of building small electrical circuits and interacting with acquisition boards, allowed me to assemble custom-made response devices. Even though this kind of knowledge might seem negligible at first, it allowed me to always build a response device perfectly fit for the experiment I wanted to conduct, as it can be witnessed in a great sample of my publications and presentations; I exploited flex sensors strips to measure finger-fingers aperture, accelerometers and variable resistors associated with TMS to produce TMS-evoked wrist acceleration, and pressure sensors. These skills combine perfectly with my proficiency in programming/scripting; starting from my PhD years I learned MATLAB/Octave scripting language and IDE, on which I mostly rely both as stimulus presentation (Psychtoolbox) and preprocessing/statistical data analysis tool (Fieldtrip Toolbox for electrophysiological data preprocessing/statistical analyses, and CoSMo MVPA for classification/decoding analyses). As for statistical data analysis I also exploit R scripting language and related libraries. Finally, given that I also make use of Arduino boards, I have also a very basic knowledge of C programming language. I am very familiar with more traditional stimulus presentation software such as E-Prime.

Technical skills:

- **Independent building of electrical circuits** (DC) serving the measurement of different types of sensors such as accelerometers, and variable resistors in general such as flex sensors strips, round potentiometers, or pressure sensors. Some of the above mentioned sensors have been combined with TMS to produce TMS-Sensor evoked variations.

- **Proficient MATLAB/Octave** scripting articulated in:
    - **standard MATLAB** library functions, custom-made functions, custom-made graphic-user interface functions.
    - **Psychophysics Toolbox** (PTB3) for stimuli presentation.
    - **Fieldtrip toolbox** for electromyographic and magneto/electroencephalographic preprocessing and statistical analyses
    - **CoSMo MVPA toolbox** for classification/decoding analyses.

- **R** language for statistical data analysis and figures plotting.

- **Arduino boards programming**, and Arduino-MATLAB communication libraries

- **E-Prime** for stimulus presentation.

- **Signal, Spike** (Cambridge Electronic Design), g.Recorder (g.tec) as data acquisition software.

Teaching

While at the University of Salzburg, but also once back to Italy, I had the opportunity to teach in bachelor and master programs. The topics I taught in my career range from the physiology of the motor system, to the neuroscience of action observation, to more methodologically oriented lectures such as non-invasive brain

stimulation, magnetoencephalography and principles of magnetic resonance. While many researchers complain about teaching duties, I find teaching a demanding but enlightening and productive experience: on the one hand students should get the best possible opportunity to learn what the topics that they are interested in, so lectures should be neat and clear. On the other hand, lecture preparation always forces the teacher's perspective to match the student's perspective, in order to make the content of the lecture as easy to learn as possible; this I believe is a skill that teaching actually trains, and it constitutes a fundamental part of scientific writing, i.e., taking the reader's perspective into account.

Soft Skills

Whoever knows me work-wise, could acknowledge that I am very open to others' persons' perspectives, on scientific hypotheses and theories, but at the same time I never back off from discussion, independently from the scientific status of the interlocutor. I believe that this is a fruitful attitude towards scientific research because it does not restrict oneself on his/her own scientific biases, forcing instead the exploration of alternative hypotheses.

Present and past collaborators can witness my constructive and positive attitude along with thoroughness and dedication in devising and building experiments. In general I like that people working with me are relaxed and serene, and I do my best in order to keep this atmosphere, while at the same time I really demand total accuracy and concentration when planning and running experiments.

SELECTION OF INTERNATIONAL AND NATIONAL COLLABORATORS

Prof. Giacomo Rizzolatti, (University of Parma)
Prof. Thomas Brochier, (University of Marseille)
Prof. Arthur Glenberg, (Arizona State University)
Prof. Nicola De Pisapia (University of Trento)
Prof. Luigi Cattaneo (University of Trento)
Dr. Sara Parmigiani (Università Statale di Milano)
Dr. Marta Bortoletto (Istituto San Giovanni di Dio, IRCCS fatebenefratelli, Brescia)
Prof. Corrado Sinigaglia (Università Statale di Milano)
Prof. Nathan Weisz (University of Salzburg)
Dr. Anne Hauswald (University of Salzburg)
Prof. Frank Wilhelm (University of Salzburg)
Prof. Alexander Kraskov (UCL, London, Lise Meitner grant collaborator)

CITATION METRICS (Mar 2021)

Publications 17 (+ 1 registered report, in principle acceptance)
First or last name: 7
H-index (Google Scholar): 11
Citations: 446 (Google Scholar)

PUBLICATIONS

1. **Barchiesi, G.**, Demarchi, G., Wilhelm, FH., Hauswald, A., Sanchez, G., & Weisz, N. (2020) Head magnetomyography (hMMG): A novel approach to monitor face and whole head muscular activity. *Psychophysiology*, 57:e13507. https://doi.org/10.1111/psyp.13507

2. De Pisapia, N., **Barchiesi, G.,** Jovicich, J., & Cattaneo, L. (2019) The role of medial prefrontal cortex in processing emotional self-referential information: a combined TMS/fMRI study. *Brain Imaging and Behavior* 13, 603–614. https://doi.org/10.1007/s11682-018-9867-3

3. Parmigiani, S., Zattera, B., **Barchiesi, G.,** & Cattaneo, L. (2018) Spatial and temporal characteristics of set-related inhibitory and excitatory inputs from the dorsal premotor cortex to the ipsilateral motor cortex assessed by dual-coil transcranial magnetic stimulation. *Brain Topography*, 31:795–810. https://doi.org/10.1007/s10548-018-0635-x

4. **Barchiesi, G**. & Cattaneo, L. (2015) Motor resonance meets motor performance. *Neuropsychologia* 69, 93-104. https://doi.org/10.1016/j.neuropsychologia.2015.01.030

5. Cattaneo, L. & **Barchiesi, G.** (2015) The auditory space in the motor system. *Neuroscience* 304, 81-89 https://doi.org/10.1016/j.neuroscience.2015.07.053

6. Parmigiani, S., **Barchiesi. G.,** & Cattaneo, L. (2015) The dorsal premotor cortex exerts a powerful and specific inhibitory effect on the ipsilateral corticofacial system: a dual-coil transcranial magnetic stimulation study, *Experimental Brain Research,* 233*,* 3253–3260. https://doi.org/10.1007/s00221-015-4393-7

7. Cattaneo, L., Maule, F., Tabarelli, D., Brochier, T., & **Barchiesi, G**. (2015). Online repetitive transcranial magnetic stimulation (TMS) to the parietal operculum disrupts haptic memory for grasping. *Human Brain Mapping.* 36, 4262-4271. https://doi.org/10.1002/hbm.22915

8. Ubaldi, S., **Barchiesi, G.**, & Cattaneo, L. (2015) Bottom-Up and Top-Down Visuomotor Responses to Action Observation. *Cerebral Cortex*, 25*(4)*: 1032–1041, https://doi.org/10.1093/cercor/bht295

9. Cattaneo, L., Maule, F., **Barchiesi, G., &** Rizzolatti, G. (2013) The motor system resonates to the distal goal of observed actions: testing the inverse pliers paradigm in an ecological setting. *Experimental Brain Research.* 231, 37–49. https://doi.org/10.1007/s00221-013-3664-4

10. Avanzini, P., Fabbri-Destro, M., Campi, C., Pascarella, A., **Barchiesi, G.,** Cattaneo, L., & Rizzolatti, G. (2013) Spatiotemporal dynamics in understanding hand-object interactions. *Proceedings of the National Academy of Sciences USA*, 110(40), 15878-85. https://doi.org/10.1073/pnas.1314420110

11. Maule, F., **Barchiesi, G.,** Brochier, T., & Cattaneo, L. (2013) Haptic Working Memory for Grasping: the Role of the Parietal Operculum. *Cerebral Cortex*, 25(2), 28–537. https://doi.org/10.1093/cercor/bht252

12. Arfeller, C., Schwartzbach, J., Ubaldi, S., Ferrari, P., **Barchiesi, G.**, & Cattaneo, L. (2013) Whole-Brain Haemodynamic After-Effects of 1-Hz Magnetic Stimulation of the Posterior Superior Temporal Cortex During Action Observation. *Brain Topography* 26, 278–291. https://doi.org/10.1007/s10548-012-0239-9

13. **Barchiesi, G.**, & Cattaneo, L. (2013) Early and Late Motor Responses to Action Observation. *Social Cognitive and Affective Neuroscience,* 8(6), 711–719. https://doi.org/10.1093/scan/nss049

14. Cattaneo, L., Fasanelli, M., Andreatta, O., Bonifati, D. M., **Barchiesi, G.**, & Caruana, F. (2012) Your Actions in My Cerebellum: Subclinical Deficits in Action Observation in Patients with Unilateral Chronic Cerebellar Stroke. *Cerebellum* 11, 264–271. https://doi.org/10.1007/s12311-011-0307-9

15. **Barchiesi, G**., Wache, S., & Cattaneo, L. (2012) The Frames of Reference of the Motor-Visual Aftereffect. *PLoS ONE 7(7)*: e40892. https://doi.org/10.1371/journal.pone.0040892

16. Cattaneo, L., & **Barchiesi, G**. (2011) Transcranial Magnetic Mapping of the Short-Latency Modulations of Corticospinal Activity from the Ipsilateral Hemisphere during Rest. *Front Neural Circuits, 5, 14*. https://doi.org/10.3389/fncir.2011.00014

17. Cattaneo, L., **Barchiesi, G.**, Tabarelli, D., Arfeller, C., Sato, M., & Glenberg, A. M. (2011) One's motor performance predictably modulates the understanding of others' actions through adaptation of premotor visuo-motor neurons. *Social Cognitive and Affective Neuroscience, 6(3),* 301-310. https://doi.org/10.1093/scan/nsq099

REGISTERED REPORTS (STAGE 1 IN PRINCIPLE 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.

WORKS IN PREPARATION

Barchiesi, G. Demarchi, G., Kraskov A., Bortoletto M., & Weisz N. How motor pre-selection influences brain activity related to the observation of others' actions (MEG study from FWF Lise Meitner grant)

Barchiesi, G., Zazio, A., Bortoletto M. Relationship between EEG sampling rate and TMS artifact duration reduction (TMS-EEG study)

Barchiesi, G., Parmigiani, S., Zattera, B & Cattaneo, L. Assessment of cortico-cortical connectivity between premotor and motor cortices by means of combined peripheral nerve electrical stimulation and transcranial magnetic stimulation. (TMS + percutaneous electrical stimulation of the median nerve).

Barchiesi, G., Demarchi, G., Kraskov A., Bortoletto M., & Weisz N. Alpha and Beta dynamics related to effector selection in the sensorimotor cortex (MEG study from FWF Lise Meitner grant).

Barchiesi G., Ferri A., Bianchi, B., Cattaneo, L. Magnetoencephalographic underpinnings of facial movement production in patients affected by Moebius syndrome before and after facial animation procedure.

Barchiesi G., Cattaneo, L., Be quick or be dead: a new paradigm for studying perceptual-motor transformations at early processing stages.

POSTERS AND PRESENTATIONS

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 2020.

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 2020. Link to Abstract and Poster

Barchiesi, G. Demarchi, G., & Weisz N. Strategic action pre-selection influences movement observation processing in the observer's motor system, SAMBA Salzburg 2018 Link to Abstract

Barchiesi, G. Demarchi, G., Wilhelm F, & Weisz N. Myomagnetography localizing facial muscular contraction through MEG, ESCAN meeting 2018

Barchiesi, G. Demarchi, G., & Weisz N. How motor pre-selection influences brain activity related to the observation of others' actions, ESCAN meeting 2018

Barchiesi, G. Demarchi, G., & Weisz N. Magnetomyography localizing facial muscular contraction through MEG, Tübingen Systems Neuroscience Symposium 2018

Barchiesi, G., Sorella, S., & Cattaneo L. P139 Assessment of cortico-cortical connectivity between premotor and motor cortices by means of combined peripheral nerve electrical stimulation and transcranial magnetic stimulation. *Clinical Neurophysiology*, 128(3), 2017, e83-e84. https://doi.org/10.1016/j.clinph.2016.10.261

Barchiesi, G. Demarchi, G., Wilhelm F, & Weisz N. Myomagnetography localizing facial muscular contraction through MEG, SAMBA Salzburg 2017

Malfatti, G., Monaco, S., **Barchiesi, G.**, Cattaneo, L., & Turella, L**.** (2016) Do dorsolateral and dorsomedial pathways interact? Investigating parieto-frontal connectivity during a prehension task: a TMS-fMRI study. Journal of Vision September 2016, Vol.16, 676. doi:10.1167/16.12.676

Barchiesi, G., Parmigiani, S., Zattera, B & Cattaneo, L. Assessment of cortico-cortical connectivity between premotor and motor cortices by means of combined peripheral nerve electrical stimulation and transcranial magnetic stimulation. International conference of brain stimulation, 2016, Gottingen.

Barchiesi, G., Cattaneo, L. (2014) Interactions between motor simulation and voluntary action pre-selection. A TMS study. *Neuropsychological Trends, 16/2014*.

Cattaneo L., **Barchiesi, G.,** Zuanazzi, A. (2014) Inter-hemispheric interactions between brain stimulation procedures in a highly lateralized brain function *Neuropsychological Trends, 16/2014*.

Ubaldi, S., Zuanazzi, A., **Barchiesi, G.,** Cattaneo, L. (2014) Rule-dependent and stimulus-dependent visuomotor mappings: combined repetitive TMS/fMRI studies of functional connectivity of the lateral prefrontal and parietal cortices *Neuropsychological Trends, 16/2014*

Barchiesi, G., Cattaneo, L. Motor Resonance meets Motor Performance, CogEvo Workshop, 2014, Rovereto, Italy.

Barchiesi, G., Ubaldi, S., Maule, F., Graziosi, V., Cattaneo, L. Motor Resonance meets Motor Performance, Magstim Neuroscience Conference, 2012, Oxford, UK.

Barchiesi, G., Ubaldi, S., Maule, F., Graziosi, V., Cattaneo, L. Motor Resonance meets Motor Performance, Tübingen Summer School, 2012, Tübingen, Germany.

Barchiesi, G., Ubaldi, S., Maule, F., Graziosi, V., Cattaneo, L. Motor Resonance meets Motor Performance, Concepts, Actions and Objects (CAOS), 2012, Rovereto, Italy.

Barchiesi, G., Cattaneo, L. (2011) Early and Late Motor Modulation To Action Observation. Archives Italiennes De Biologie, 143, 3.

Maule, F., **Barchiesi., G.** Cattaneo, L. (2011) Physiological and anatomical investigations on cortico-cortical connections between the parietal operculum and the motor cortex in humans Archives Italiennes De Biologie, 143, 3.

Cattaneo, L., **Barchiesi, G.** (2011) Investigating function and structure in the ventral premotor cortex. 14th European Congress on Clinical Neurophysiology and 4th International Conference on Transcranial Magnetic and Direct Current Stimulation, S195, Rome, Italy.

De Pisapia, N., **Barchiesi,G**., Jovicich, H., Cattaneo., L. A combined TMS and fMRI study on the role of medial prefrontal cortex during self-referential processing. Concepts, Actions and Objects (CAOS), 2011, Rovereto, Italy.

Barchiesi, G., Cattaneo, L. What you see is not what you do but only after a while. Concepts, Actions and Objects (CAOS), 2011, Rovereto, Italy.

Cattaneo, L., **Barchiesi, G.**, Tabarelli, D., Arfeller. C. Motor-Visual cross-modal aftereffects and their neurophysiological basis in action observation, TMS summer school, Oxford, UK, 2010 (Poster Prize winner)

Cattaneo, L., **Barchiesi, G**. Investigating function and structure in ventral premotor cortex. The systems neuroscience of primate hand function: models, mechanisms, rehabilitation and mirror systems, FENS Winter school, 2011, Obergurgl.

Barchiesi, G., Cattaneo, L. Mapping the acts on different effectors in the ventral premotor cortex. The systems neuroscience of primate hand function: models, mechanisms, rehabilitation and mirror systems, FENS Winter school, 2011, Obergurgl.

ORAL PRESENTATIONS

2012	"Motor Resonance Meets Motor Performance", D-Day, CIMeC
2011	"Early and Late Motor Modulation to Action Observation". SIPF, Società Italiana di Psicofisiologia.

INVITED ORAL PRESENTATIONS

3rd May 2018	"Motor Resonance meets Motor Performance, University of Vienna
14th Dec 2015	"Motor responses to action observation: a dual-route account", Università Statale di Milano.

WORKSHOPS and SUMMER SCHOOLS

11th-12th July 2017	Fieldtrip Workshop, Salzburg, Austria.
30th Sep 2013	Non-invasive Electrical Brain Stimulation (tDCS, tACS, tRNS): Basic and Applied Research", University of Brescia, Italy.
19th-23rd Mar 2012	Tübingen summer school "Methods to study the brain in action", Tübingen University
28th-29th June 2010	Magstim/University of Oxford TMS Summer School, Oxford University

EDITORIAL REVIEWING ACTIVITY

I have been an ad-hoc reviewer for the journals Plos One and BMC Neuroscience

TEACHING EXPERIENCE

2020	Experimental Philosophy Lab: Lectures on functional magnetic resonance and magnetoencephalography, Universitá Statale (Milan), Faculty of Philosophy.
2016 – 2020	Cognitive Neuroscience course: lectures on mirror neurons. Faculty of Psychology, University of Salzburg (Austria) (number of registered attendants ~360).
2016 – 2020	Methods in Cognitive Neuroscience course (VU fMRT, M/EEG & Co: Grundlagen und praktische Anwendung): Lectures on non invasive brain stimulation, theory and hands on. Faculty of Psychology, University of Salzburg (Austria). (number of registered attendants: 41)

Mar – May 2015	PAS program (Percorso Abilitante Speciale): Series of lectures on the "Anatomy and physiology of the motor system" (number of attendants: 5)
28th Jan – 2nd Feb 2013	International Doctorate for Experimental Approaches to Language and Brain (IDEALAB) Winter School 2013: Neuroimaging and computational approaches to the study of language. CeRIN, center for neurocognitive rehabilitation (number of attendants: between 10 and 20).
2011	First AID basic life support (BSLD) basic life support training comprising the use of the defibrillator.

STUDENTS SUPERVISED/CO-SUPERVISED

I informally supervised and co-supervised bachelor and master students for their thesis
From the University of Trento: Dr Carolina Bonmassar, Dr Arianna Zuanazzi, Dr Alessandra Brusarosco, Dr Chiara Colombo, Dr Paola Corradi, Dr Benedetta Zattera, Dr Laura Pallaoro, Dr Silvia Cont, Dr Adzo Emefa Tatrabor.
From the University of Salzburg: Dr Viola Herberger, Dr Christian Bako.

LANGUAGES

Italian, German (A1/A2), English

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