

LUCIA MARIA SACHELI, PhD(last CV update: **Sept 2024**)

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RESEARCH INTERESTS

I am an experimental psychologist, and I did my PhD in Cognitive, Social, and Affective Neuroscience.

My research revolves around the psychophysiology of social and motor interactions, the impact of social and personality variables on these mechanisms, and their development along the lifespan, from early childhood to aging. I investigate these topics in behavioural studies with or without the measurement of neurophysiology (with non-invasive brain stimulation techniques or functional MRI) and/or movement kinematics (with motion capture techniques), and by studying motor interactions in neurological (e.g., apraxia and Parkinson's disease patients) and psychiatric (e.g., schizophrenic patients) populations and in atypical development (autism spectrum disorder).

I also explored experience-dependent plasticity by investigating the impact of expertise (e.g., in musicians) or limb misuse (e.g., in orthopaedic patients) on motor planning and on the ability to predict others' actions, and the great potential of rehabilitation protocols based on motor imagery and imitation for the recovery of motor impairments.

CURRENT POSITIONS

Tenure-track Assistant Professor at the Department of Psychology, University of Milano-Bicocca, Milano, Italy.

PAST POSITIONS AND EDUCATION

2020-2023. Adjunct Professor of Neuropsychology at the Dept. of Psychology, Cattolica University, Milan, Italy.

2015-2022. Postdoctoral Research Fellow at the Milan Center for Neuroscience (NeuroMi), University of Milano-Bicocca, and IRCCS Istituto Ortopedico Galeazzi, Milan, Italy. Project: "Finding the Dyadic Motor Plan: the neurocognitive bases of complementary actions" (Supervisor: Prof E. Paulesu).

2014. Postdoctoral Research Fellow at IRCCS Fondazione Santa Lucia, Rome, and Sapienza University of Rome, in the Social and Cognitive Neuroscience Laboratory (Supervisor: Prof S. M. Aglioti).

Dec 2013. Ph.D. in Cognitive Social and Affective Neuroscience, at Sapienza University of Rome, Italy.

Dissertation: "*You are in my plans: neuro-cognitive and social components of dyadic motor interactions revealed by the kinematics of a joint-grasping task*". (Supervisor: Prof S. M. Aglioti).

June - Dec 2013. Visiting Researcher at the Donders Institute for Brain, Cognition and Behaviour, Radboud University Nijmegen (The Netherlands), in the Action and Neurocognition group (Prof H. Bekkering, Prof. S. Hunnius). Self-funded thanks to a NENS Exchange Grant, Federation of European Neuroscience Societies (FENS).

Sept - Oct 2011. Visiting Researcher at University of Tübingen, Germany, Department of Cognitive Neurology, Section for Computational Sensomotrics (Prof M. Giese). Funded by European Project FP7 (FET-Open grant N: 249858).

Nov 2009. M.Sc. in Clinical Psychology and Neuropsychology, at University of Milano-Bicocca, Milan, Italy. Mark: 110/110 cum laude.

July 2007. B.A. in Psychology at University of Milano-Bicocca. Mark: 110/110 cum laude.

Sept 2005 - Apr 2006. Erasmus student at the University of Aberdeen, Aberdeen, UK.

June 2004. Baccalaureate diploma at Liceo Classico Collegio San Carlo, Milan, Italy. Mark: 100/100 cum laude.

AWARDS AND GRANTS (selection)

2020 and 2017. *Young Talent Award*, supported by the Accademia dei Lincei.

2016. Award for the best article on psychophysiology published in 2015, supported by the Italian Society for Psychophysiology (Premio Junior, Società Italiana di Psicofisiologia, SIPF). <http://www.sipf.it/Premi>.

2014. Award for the best PhD Thesis in 2013, supported by the Italian Association of Psychology (AIP), Experimental Psychology Session.

2013. NENS Exchange Grant, funded by the Federation of European Neuroscience Societies (FENS) to support the visit to the Donders Institute for Brain, Cognition and Behaviour, Radboud University Nijmegen, The Netherlands. <http://www.fens.org/Training/NENS/NENS-Alumni/Lucia-Sacheli/>

2013. ESCON2 Short Visit Grant, funded by the European Social Cognition Network, European Science Foundation (Ref. Num. 5945).

2012. Principal investigator of the nationally funded project "*Synchronizing to achieve a common goal*". Progetto per Avvio alla Ricerca 2012, Sapienza University of Rome (Prot. Num. C26N12SRA7).

PUBLICATIONS

I published 38 peer-reviewed articles (1st author in 20 papers, last author in 5 papers) and two book chapters.

Bibliometric indexes (Scopus/Google Scholar): H-index: 17/20; Citations: 881/ 1213.

Research Techniques: the papers include studies performed with fMRI, body motion capture and non-invasive brain stimulation. **Populations:** I worked with healthy individuals, neurological patients, autistic participants, and older individuals with healthy and pathological aging.

PAPERS IN PEER-REVIEWED SCIENTIFIC JOURNALS

1. **Sacheli LM**, Diana L, Ravani A, Beretta S, Bolognini N, Paulesu E (2023). Neuromodulation of the Left Inferior Frontal Cortex Affects Social Monitoring during Motor Interactions. *J Cogn Neurosci* 35(11), 1788-1805.
2. Rocca M, **Sacheli LM**, Romeo L, Cavallo A (2023). Visuo-motor interference is modulated by task interactivity: A kinematic study. *Psychon Bull Rev*. doi: 10.3758/s13423-023-02297-z.
3. Porciello G, **Sacheli LM** (2023). Editorial: Rising stars in integrative neuroscience 2021. *Front Integr Neurosci*, 17, 1229660.
4. Musco MA, Zazzera E, Paulesu E, **Sacheli LM** (2023). Error observation as a window on performance monitoring in social contexts? A systematic review. *Neurosci Biobehav Rev*, 147, 105077.
5. Uccelli S, **Sacheli LM**, Paulesu E (2023). Emergent and planned interpersonal synchronization are both sensitive to 'tempo aftereffect contagion' *Neuropsychologia*, 181, 108492.
6. **Sacheli LM**, Roberti E, Turati C (2023). Encoding interactive scripts at 10 months of age. *J Exp Child Psychol*, 227, 105588.
7. **Sacheli LM**, Verga C, Zapparoli L, Seghezzi S, Tomasetig G, Banfi G, Paulesu E (2023). When action prediction grows old: An fMRI study. *Hum Brain Mapp*, 44(2), 373-387.
8. **Sacheli LM**, Tomasetig G, Musco M, Pizzi S, Bottini G, Pizzamiglio L, Paulesu E (2022). The unexplored link between aesthetic perception and creativity: A theory-driven meta-analysis of fMRI studies in the visual domain. *Neurosci Biobehav Rev*, 140, 104768. doi: 10.1016/j.neubiorev.2022.104768
9. **Sacheli LM**, Musco M, Zazzera E, Banfi G, Paulesu E (2022). How shared goals shape action monitoring. *Cereb Cortex*. 32(21), 4934-4951.
10. Zapparoli L, Paulesu E, Mariano M, Ravani A, **Sacheli LM** (2022). The sense of agency in joint actions: A theory-driven meta-analysis. *Cortex* 148, 99-120. doi: 10.1016/j.cortex.2022.01.002.
11. **Sacheli LM**, Arcangeli E, Carioti D, Butterfill S, Berlinger M (2022). Taking apart what brings us together: The role of action prediction, perspective-taking, and theory of mind in joint action. *Q J Exp Psychol (Hove)* 75(7), 1228-1243.
12. **Sacheli LM**, Musco M, Zazzera E, Paulesu E (2021). Mechanisms for mutual support in motor interactions. *Sci Rep* 11(1), 3060.
13. Curioni A, Knoblich GK, Sebanz N, **Sacheli LM** (2020). The engaging nature of interactive gestures. *Plos one*, 15(4), e0232128.
14. Zapparoli L & Seghezzi S, **Sacheli LM**, Verga C, Banfi G, Paulesu E (2020). Eyes wide shut: how visual cues affect brain patterns of simulated gait. *Hum Brain Mapp*, 41(15), 4248-4263.
15. Zapparoli L, **Sacheli LM**, Seghezzi S, Preti M, Stucovitz E, Negrini F, Pelosi C, Ursino N, Banfi G, Paulesu E (2020). Motor imagery training speeds up gait recovery and decreases the risk of falls in patients submitted to total knee arthroplasty, *Sci Rep*, 10(1), 8917.
16. **Sacheli LM**, Zapparoli L, Bonandrini R, Preti M, Pelosi C, Sconfienza LM, Banfi G, Paulesu E (2020). How aging affects the premotor control of lower limb movements in simulated gait. *Hum Brain Mapp*, 41(7), 1889-1903.
17. **Sacheli LM**, Verga C, Arcangeli E, Banfi G, Tettamanti M, Paulesu E (2019). How task interactivity shapes action observation. *Cereb Cortex* 29 (12), 5302-5314.
18. Curioni A, **Sacheli LM** (2019). The role of social learning and socio-cognitive skills in sensorimotor communication: Comment on "The body talks: Sensorimotor communication and its brain and kinematic signatures" by Pezzulo et al. *Phys Life Rev* 28, 24-27.
19. Gandolfo M, Era V, Tieri G, **Sacheli LM**, Candidi M (2019). Interactor's body shape does not affect visuo-motor interference effects during motor coordination. *Acta Psychol* 196, 42-50.
20. **Sacheli LM**, Meyer M, Hartstra E, Bekkering H, Hunnius S (2019). How preschoolers and adults represent their joint action partner's behavior. *Psychol Res* 83(5), 863-877.
21. **Sacheli LM**, Zapparoli L, Preti M, De Santis C, Pelosi C, Ursino N, Zerbi A, Stucovitz E, Banfi G, Paulesu E (2018). A functional limitation to the lower limbs affects the neural bases of motor imagery of gait. *Neuroimage Clin*. 20, 177-187.

22. Era V, Candidi M, Gandolfo M, **Sacheli LM**, Aglioti SM (2018). Inhibition of left anterior Intraparietal Sulcus shows that mutual adjustment marks dyadic joint-actions in humans. *Soc Cogn Affect Neurosci* 13(5), 492-500.
23. **Sacheli LM**, Arcangeli E, Paulesu E (2018). Evidence for a dyadic motor plan in joint action. *Sci Rep* 8, 5027.
24. **Sacheli LM**, Tieri G, Aglioti SM, Candidi M (2018). Transitory Inhibition of the Left Anterior Intraparietal Sulcus Impairs Joint Actions: A Continuous Theta-Burst Stimulation Study. *J Cogn Neurosci* 30(5), 737-751.
25. Candidi M, **Sacheli LM**, Era V, Canzano L, Tieri G, Aglioti SM (2017). Come together: human–avatar on-line interactions boost joint-action performance in apraxic patients. *Soc Cogn Affect Neurosci* 12(11), 1793-1802.
26. **Sacheli LM**, Zapparoli L, De Santis C, Preti M, Pelosi C, Ursino N, Zerbi A, Banfi G, Paulesu E (2017). Mental steps: Differential activation of internal pacemakers in motor imagery and in mental imitation of gait. *Hum Brain Mapp* 30(10), 5195-5216. doi: 10.1002/hbm.23725.
27. Curioni A, Minio-Pauluella I., **Sacheli LM**, Candidi M, Aglioti SM (2017). Autistic traits affect interpersonal motor coordination by modulating strategic use of role-based behaviour. *Mol Autism* 8 (1), 23.
28. Van Schiack J*, **Sacheli LM***, Bekkering H, Toni I, Aglioti SM (2017). Measuring Mimicry: General Corticospinal Facilitation During Observation of Naturalistic Behaviour. *Eur J Neurosci* 46(2), 1828-1836 (*shared first authorship)
29. **Sacheli LM**, Candidi M, Era V, Aglioti SM (2015). Causative role of left aIPS in coding shared goals during human–avatar complementary joint actions. *Nature Communications* 6, 7544.
30. Candidi M, Curioni A, Donnarumma F, **Sacheli LM**, Pezzulo G (2015). Interactional Leader-Follower sensorimotor communication strategies during repetitive joint actions. *J R Soc Interface* 12(110), 1-12.
31. **Sacheli LM**, Aglioti SM and Candidi M (2015). Social cues to joint actions: the role of shared goals. *Front Psychol* 6, 1034.
32. Candidi M, **Sacheli LM**, Aglioti SM (2015). From Muscles Synergies and Individual Goals to Interpersonal Synergies and Shared Goals: mirror neurons and interpersonal action hierarchies: comment on Grasping synergies: A motor-control approach to the mirror neuron mechanism by A. D'Ausilio et al. *Phys Life Rev* 12, 126-8.
33. **Sacheli LM**, Christensen A, Giese MA, Taubert N, Pavone EF, Aglioti SM, Candidi M (2015). Prejudiced interactions: implicit racial bias reduces predictive simulation during joint action with an outgroup avatar. *Sci Rep* 5, 8507.
34. Candidi M, **Sacheli LM**, Mega I, Aglioti SM (2014). Somatotopic mapping of piano fingering errors in sensorimotor experts: TMS studies in pianists and visually trained musically naïves. *Cer Cortex* 24(2), 435-43
35. **Sacheli LM**, Tidoni E, Pavone EF, Aglioti SM, Candidi M (2013). Kinematics fingerprints of leader and follower role-taking during cooperative joint actions. *Exp Brain Res* 226(4), 473-86.
36. **Sacheli LM**, Candidi M, Pavone EF, Tidoni E, Aglioti SM (2012). And yet they act together: interpersonal perception modulates visuo-motor interference and mutual adjustments during a joint-grasping task. *PLoS One* 7(11), e50223.
37. Berlinger M, **Sacheli L**, et al. (2010). Neurofunctional and neuromorphological evidence of the lack of compensation in pathological aging. *Behav Neurol* 23(4), 185-7.
38. Berlinger M, Bottini G, Danelli L, Ferri F, Traficante D, **Sacheli L**, Colombo N, Sberna M, Sterzi R, Scialfa G, Paulesu E (2010). With time on our side. Task-dependent compensatory processes in graceful aging". *Exp Brain Res* 205(3), 307-24.

DISSEMINATION: ORGANIZATION OF SIMPOSIA AT CONGRESSES

Organizer and Chair of the Symposium *How the way we move shapes social perception and interaction*, 7th international meeting of the European Society for Cognitive and Affective Neuroscience (ESCAN), Ghent, Belgium, 22-25/05/2020.

Co-organizer and Chair of the Symposium *Mutual adaptation in collaborative tasks: an integrative approach to understand human-human interactions*, 6th international meeting of the European Society for Cognitive and Affective Neuroscience (ESCAN), Vienna, Austria, 19–22/07/2022.

Organizer and Chair of the Symposium *The neural bases of cooperation: from social learning to playing together*, XXVIII Congress of the Italian Society for Psychophysiology and Cognitive Neuroscience (SIPF), on-line, 20/11/20.

Organizer and Chair of the Symposium *Movements and (inter)action: are others' kinematics the key for their social world?*, XXV Congress of the Italian Association for Psychology (AIP), Milan (Italy), 18-20/09/2019.

Organizer of the Symposium *Beyond action perception: the motor system is not blind to me, you and our relationship*, XXV Congress of the Italian Society for Psychophysiology and Cognitive Neuroscience (SIPF), Rome (Italy), 16-18/11/2017.

DISSEMINATION: INVITED TALKS

Since 2011, I have presented my study at more than 30 national or international congresses.

In addition, I was invited to present my work in the following occasions:

Sacheli LM & Zapparoli L. *Cues to joint agency from a motor approach*. Invited talk at the European Workshop on Cognitive Neuropsychology, within the Symposium *Responsibility in a “we-mode”: from motor interactions to shared decisions*, Bressanone (BZ), Italy, 24/01/2023.

Sacheli LM. *The role of dyadic motor plans and sensorimotor communication in interpersonal coordination during human-human and (possibly) human-robot interactions*, at LAAS CNRS (A. Clodic), Toulouse, France, 17/06/2022.

Sacheli LM. *The story of dyadic motor plans: cognitive mechanisms and neurophysiology*, at the Social Mind and Body group (SOMBY, PI: G. Knoblich e N. Sebanz), Central European University (CEU), 25/05/2022 (online).

Sacheli LM. *Neurofunctional evidence for the predictive nature of human interactions*, at the symposium *The neural underpinnings of joint action* organized within the 5th international conference of the European Society for Cognitive and Affective Neuroscience (ESCAN), Budapest, Hungary, 23/06/2021.

Sacheli LM. *Motor representations in motor interactions and their role in signaling strategies*, at the workshop *The Communication Challenges in Joint Action for Human-Robot Interaction* organized within the International Conference in Social Robotics (ICSR) 2019, Madrid, Spain, 26/11/2019.

Sacheli LM. *How task interactivity shapes action observation*, at the symposium *The Neuroscience of Social Interaction, from intention coding to inter-individual motor coordination*. Italian Society for Neuroscience (SINS), Perugia, Italy, 27/09/2019.

Sacheli LM. *Neurocognitive bases of motor interactions: why 'shared goals' matter*, at the IRCCS E. Medea di Bosisio Parini, Milan, Italy, 4/10/2017.

Sacheli LM. *Causative role of left aIPS in coding shared goals during human–avatar complementary joint actions*, at the Annual Meeting of the Italian Society for Psychophysiology (SIPF), Milan, Italy, 27-28/10/2016.

Sacheli LM. *Social grasps along development: a joint-action study on preschooler and adults*, at the FENS Regional Meeting 2015, Thessaloniki, Greece, 7-10/10/2015.

Sacheli LM. *Shared goals during complementary motor interactions*. Invited talk at the *Italian Institute of Technology* organized by Prof Cristina Becchio, Genova, Italy, 21/11/2014.

Sacheli LM. *You are in my (motor) plans: the role of shared goals revealed by the kinematics of a joint-grasping task*, at the XX Congress of Experimental Psychology, Italian Association of Psychology, Pavia (Italy), 17/09/2014.

TEACHING

Present: M.Sc. Course: “Neuropsychological Rehabilitation” (56 hours), M.Sc. Degree in Clinical Psychology and Neuropsychology at the University of Milano-Bicocca, Italy, 2023-2024; M.Sc. Laboratory: “Assessment and enhancement of sensorimotor functions” (24 hours), M.Sc. Degree in Clinical Psychology and Neuropsychology at the University of Milano-Bicocca, Italy, 2019-2020, 2020-2021, 2022-2023, and 2023-2024.

Past: B.A. Course: “Neuropsychology and Anatomofunctional Basis Cognitive Processes” (50 hours), B.A. in Psychology (English language course) at the Università Cattolica del Sacro Cuore, Milan, Italy, 2021-2022 and 2022-2023; M.Sc. Course: “Disorders of Body Representations and Motor Planning” (42 hours), M.Sc. in Motor Sciences for Prevention at the University of Urbino Carlo Bo, Italy, 2019-2020 and 2020-2021; M.Sc. Laboratory: “The Neuropsychological Examination in Adult Patients” (32 hours), M.Sc. Degree in Clinical Psychology and Neuropsychology at the University of Milano-Bicocca, Italy, 2020-2021, 2021-2022, and 2022-2023.

OFFICIAL MENTORSHIP

At present, I am co-supervising two Ph.D. students at the Department of Psychology, University of Milano-Bicocca (M.A. Musco and G. Tomasetig.)

Since 2019, I’ve supervised 12 pre- and post-lauream internships and co-supervised 20 Master thesis (MSc in Clinical Psychology and Neuropsychology) at the University of Milano-Bicocca, Italy.

Since 2022, I’ve supervised 6 Master thesis (MSc in Clinical Psychology and Neuropsychology) at the University of Milano-Bicocca as official mentor.

EDITORIAL ACTIVITY

I served as *ad-hoc reviewer* for the following journals: Brain and Cognition, Brain Research, Brain Science, Cognition, Cognitive Science, Cerebral Cortex, Cortex, Eur Journal Neurosci, Gerontology, Hum Mov Sci, Infant and Child Development, International Journal of Child Dev, J Neurophysiol, Neuroimage, Neuropsychologia, Neurosci Biobehav Rev, Plos One, Sci Rep. I am also *Reviewer Editor* for Frontiers in Integrative Neuroscience, Frontiers in Psychology, and Frontiers in Human Neuroscience. Finally, I worked as external reviewer in the evaluation process of grants of the Czech Science Foundation and European Research Council (ERC).

