

DR. CAROLA SALVI PH.D.

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EDUCATION

Ph.D., Doctor of Philosophy, in Experimental Psychology, Linguistics and Cognitive Neuroscience

Department of Psychology, University of Milano-Bicocca, "*Look Outside the Box, to Think Outside the Box: Insight, Eye Movement, and Solution Accuracy*". Started Winter 2009; Convocation Winter 2013.

M.S., Master of Science, in Psychology of Organizations and Consumer Behavior

Department of Psychology, University of Milano-Bicocca, "*An experimental study on fixation and mechanization processes of problem-solving: groupthink effects*". Started Winter 2004; Convocation Winter 2007. With distinction and highest possible honors, **(110 of 110 possible, plus Laude)**.

B.S., Honors Bachelor of Science, in Psychology

Department of Psychology, University of Milano-Bicocca, "*Pragmatic analysis and processes of a solution in probabilistic reasoning and problem-solving*". Started Fall 2001; Convocation spring 2004.

PROFESSIONAL APPOINTMENTS

- 2019-present **University of Texas at Austin**, Research Associate, Department of Psychiatry, Dunsmoor laboratory of Professor Joseph Dunsmoor
- 2014-2019 **Northwestern University**, Postdoctoral Researcher, Department of Psychology, Creative brain laboratory of Professor Mark Beeman.

HONORS, FELLOWSHIPS, and GRANTS

- 2015-2019 **DOD US Air force** through the Nanotechnology Institute of Northwestern University. *Stimulating creative problem-solving via noninvasive brain stimulation*. Four years of funds.
- 2019 **Postdoctoral position** at Northwestern University, Psychology Department. Project: *Stimulating creative problem-solving via noninvasive brain stimulation [Phase III]*.
- 2019 **Society for Neuroscience of Creativity** travel award.
- 2017-2018 **Postdoctoral Fellowship: T32** NIH-funded Training Program in the Neuroscience of Human Cognition at Northwestern University. Project: *Effects of transcranial direct current stimulation in insight problem-solving [Phase II]*. One year of funds.
- 2017 **Society for Neuroscience of Creativity** travel award.
- Summer 2016 **University of Michigan** NIH-funded Selected Course in fMRI. Among the 25 postdocs selected across the U.S. Full course of two weeks at the University of Michigan, fully retributed.
- 2015-2016 **Postdoctoral Fellowship: T32** NIH-funded Training Program in the Neuroscience of Human Cognition at Northwestern University. Project: *Effects of Motivation and Reward on Creative Problem-Solving [Phase I]*. One year of funds.

- 2013- 2014 **Research Award: Progetto professionalita` "Ivano Becchi"**, sponsored by: "Banco del Monte di Lombardia" at Creative Brain lab of Dr. Mark Beeman, Northwestern University. One year of funds. Project: Validation of Italian rebus puzzles and compound remote associate problems. Role: PI.
- 2010- 2011 **Fully Sponsored Visit** to Creative Brain lab of Mark Beeman, Northwestern University. 13 months of funds. Project: Attention and creative problem-solving. Role: PI.
- 2009- 2013 **Full Merit-Based Fellowship:** Department of Psychology, the University of Milano-Bicocca for four years.
- 2008 **Research award "DOTE Ricercatori"**, Auxologico Hospital of Milan and University of Milano-Bicocca. Nine months of funds. Project: Attention in Neglect patients. Role: RA.
- 2008 **Professional psychologist qualification** for the Italian Psychological Association.
- 2004-07 **Full Merit-Based Fellowship:** Department of Psychology, University of Milano-Bicocca.
- 2001-04 **Full Merit-Based Scholarship:** Department of Psychology, University of Milano-Bicocca

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

- 2017-present Society for The Neuroscience of Creativity
- 2011-present Cognitive Neuroscience Society
- 2011-present American Psychological Association
- 2014-present Co-Founder of **ItaRC** Italian Researchers in Chicago
- 2014-present Co-Founder of **AIRIcerca** (Italian Researchers Association)

TEACHING

- 2018- Fall semester *Lecturer*
Introduction to Neuroscience, at Loyola University, Chicago.
- 2018- Spring semester *Lecturer*
Seminars on **Neuroscience of Problem-solving, Creativity, and Psychopathology** at the Psychiatry Department, Northwestern University, Chicago.
- 2017- Fall semester *Lecturer*
Introduction to Neuroscience, at Loyola University, Chicago.
- 2014- Present *Private Instructor*
English and Italian Languages, Art and Culture.
- 2011-2012 *Teaching Assistant*
Attention, Perception, and Psychophysics of vision, Eye tracking, Eye Movements, and Data Analysis, at the University of Milano-Bicocca.
- 2008-2013 *Lecturer*
Thinking and Reasoning in psychology (2 years), **Methodology of research and Statistics** (1 year), and **Psychology of Creativity** (1 year), **Methodology of Research in Cognitive Sciences** (1 year), at the Human Sciences Liceo P. Secco Suardo of Bergamo.
- 2010 *Invited Lecturer*
Workshop on **Psychology of Creativity** (Brera Academy of Arts).
- 2008 *Trainer, Lecturer*

Innovation, Behavioral Economics, Behavioral Finance, Psychology of thinking and reasoning at SSAV, UNICREDIT.

MANUSCRIPTS IN PREPARATION

- Salvi, C.**, Barr, N., Seli, P., Laukkonen, R., & Schooler, J. Discontinuous processes in system one. (*In preparation*).
- Salvi, C.**, Leiker, E., Baricca, B., Molinari, M. A., Nichelli, P., Grafman, J., & Dunsmoor, J., The effect of dopaminergic replacement therapy on creative thinking and insight problem-solving in Parkinson's Patients. (*In preparation*).
- Salvi, C.**, Barr, N., & Grafman, J., The role of cognitive flexibility and problem-solving abilities in fake news detection. (*Submitted*).
- Sprugnoli G., Rossi S., Liew S. L., Bricolo E., Costantini G., **Salvi C.**, Musaeus C. S., Pascual-Leone A., Rossi A., Santarnecchi E., Enhancement of Insight reasoning by tRNS of the right temporal lobe. (*Submitted*).

PUBLICATIONS IN PEER-REVIEWED JOURNALS

- Salvi, C.**, Iannello, P., Cancer, A., McClay, M., Rago, S., Dunsmoor, E. J. and Antonietti, A., (2020). Going Viral: Social and Cognitive Factors Influence Fake News Detection and Proliferation During COVID-19 Pandemic. *Frontiers in Communication*. doi: 10.3389/fcomm.2020.562588
- Laukkonen, R., Webb, M., Salvi, C., Tange, J., and Schooler, J. (2020). Eureka Heuristics: How feelings of insight signal the quality of a new idea. *PsyArXiv*. (2020). 10.31234/osf.io/ez3tn
- Cohen-Zimmerman, S., **Salvi, C.**, & Grafman, J. (2020). Patients-based approaches to understanding intelligence and problem-solving. *The Cambridge Handbook of Intelligence and Cognitive Neuroscience*.
- Salvi, C.**, & Bowden, E. The relation between state and trait risk-taking and problem-solving. (2020). *Psychological Research*. doi.org/10.1007/s00426-019-01152-y
- Salvi, C.**, Simoncini, C., Beeman, M. & Grafman, J., Pupil dilation signals Aha! Moments. *Neuroimage* (2020). <https://doi.org/10.1016/j.neuroimage.2020.116933>
- Salvi, C.**, McKinley, R., Bikson, M., Beeman M., and Grafman, J. Right temporal transcranial direct current stimulation improves insight problem-solving. *Nature, Scientific Reports* (2020).
- Santarnecchi, E., G. Sprugnoli, E. Bricolo, G. Costantini, S. L. Liew, C. S. Musaeus, **Salvi, C.**, Pascual-Leone, A. Rossi, and S. Rossi. (2019) "Gamma tACS over the temporal lobe increases the occurrence of Eureka! moments." *Nature, Scientific Reports* 9, no. 1: 5778-5778. 10.1038/s41598-019-42192-z
- Palmiero, M., Piccardi, L., Nori, R., Palermo, L., **Salvi, C.**, & Guariglia, C. (2019). Creativity: Education and rehabilitation. *Frontiers in Psychology*. DOI: 10.3389/fpsyg.2019.01500
- Danek, A., **Salvi, C.**, (2018). Moment of truth: Why Aha! Experiences are correct. *Journal of Creative Behavior*. 10.1002/jocb.380.
- Cohen-Zimmerman, S., **Salvi, C.**, Krueger, F., Gordon, B. and Grafman J. (2018). Intelligence Across the Seventh Decade in Patients with Brain Injuries Acquired in Young Adulthood. *Trends in Neuroscience and Education*. 13, 1-7.
- Cristofori, I., **Salvi, C.**, Beeman, M. & Grafman, J. (2018). The Effects of Expected Reward on Creative Problem Solving. *Cognitive, Affective, & Behavioral Neuroscience*. 1-7.

- Salvi, C.**, Costantini, G., Pace, A. & Palmiero, M. (2018). Validation of the Italian Remote Associate Test. *Journal of Creative Behavior*. 1-13. 10.1002/jocb.345
- Hogeveen, J., **Salvi, C.**, & Grafman, J. (2016). "Emotional intelligence": Lessons from Lesions. *Trends in Neurosciences*, 39(10), 694-705. <http://doi.org/10.1016/j.tins.2016.08.007>
- Palmiero, M., Piccardi, L., Nori, R., Palermo, L., **Salvi, C.**, Guariglia, C. (2016). Creativity and Mental Imagery. *Frontiers in Psychology*. doi: 10.3389/fpsyg.2016.01280.
- Salvi, C.**, Bowden, E. (2016). Looking Nowhere for Creativity: Where do we look when we look for new ideas? *Frontiers in Psychology*. DOI:10.3389/fpsyg.2016.00161
- Salvi, C.**, Bricolo, E., Bowden, E., Kounios, J. & Beeman, M. (2016). Insight solutions are correct more often than those achieved by analysis. *Thinking and Reasoning*. DOI: 10.1080/13546783.2016.1141798
- Salvi, C.**, Cristofori, I., Beeman, M. & Grafman, J. (2016). The politic of insight. *Quarterly Journal of Experimental Psychology*. DOI: 10.1080/17470218.2015.1136338
- Salvi, C.**, Bricolo, E., Franconeri, S., Kounios, J. & Beeman, M. (2015) Sudden Insight is associated with shutting down visual inputs. *Psychonomic Bulletin & Review*. DOI: 10.3758/s13423-015-0845-0
- Salvi, C.**, Costantini, G., Bricolo, E., Perugini, M., & Beeman, M. (2015). Validation of Italian rebus puzzles and compound remote associate problems. *Behavioral Research Methods*. 1-22. DOI: 10.3758/s13428-015-0597-9
- Salvi, C.**, (2015). "Aha! Ho indovinato" Cosa avviene nel nostro cervello quando abbiamo un lampo di genio. *AIRInforma Journal*. ("Aha! I got it" What happens in our brain when we have an insight).
- Bricolo, E., **Salvi, C.**, Martelli, M., Arduino, L. S. & Daini, R. (2015). The effects of crowding on eye movement patterns in reading. *Acta, Psychologica*, 160, 23-34. doi: 10.1016/j.actpsy. 2015.06.003
- Bricolo, E., **Salvi, C.**, Martelli, M., Arduino, L.S., & Daini, R. (2010). Crowding affects eye- movements patterns in word reading. *Perception* 39, supplement, 29. <http://hdl.handle.net/10281/21692>
- Legrenzi, P., & **Salvi, C.** (2008). Dual processes in reasoning and judgment. *SISTEMI INTELLIGENTI / a. XX, n. 1*, April 2008. Il Mulino: Bologna. doi: 10.1422/26719

BOOK CHAPTERS

- Cohen-Zimmerman, S., **Salvi, C.**, and Grafman J. (2020). Patient-Based Approaches to Understanding Intelligence and Problem-Solving. In *The Cambridge Handbook of Intelligence and Cognitive Neuroscience*.

INVITED TALKS

- Salvi, C.**, (2020). The Eureka Heuristics and The Neuroscience Behind Creative Problem-Solving. McCombs School of Business, University of Texas at Austin, Austin, Texas.
- Salvi, C.**, (2019). What Happens in Our Brain When We Have an Aha! Moment? Texas A&M University, College Station, Texas.
- Salvi, C.**, (2019). The Neuroscience Behind Creative Ideas. *Neuroscience Seminars*, Loyola University, Chicago, Illinois.
- Salvi, C.**, (2019). The science and Neuroscience of idea generation in problem- solving. Cattolica University, Milan, Italy.
- Salvi, C.**, (2018). The science and Neuroscience Behind Creative Ideas. *Polisky Center for Entrepreneurship and Innovation*. University of Chicago, Chicago, Illinois.

- Salvi, C.**, (2018). Brain processes underlying insight problem solving: Current status and future directions. *Cognitive Brain Mapping Group, CBMG; Northwestern University, Chicago, Illinois.*
- Salvi, C.**, (2018). The Neuroscience Behind Creative Ideas. Guest speaker for Italian Research Day at the "Istituto Italiano di Cultura"; *Consulate General of Italy in Chicago.*
- Salvi, C.**, (2016). Aha! moments, the link between subliminal reward, risk-taking and the dopamine system. NUIN Small talks. *Northwestern University, Chicago, Illinois.*
- Salvi, C.**, (2016). Should we try and enhance insight problem-solving? Why and how. *Loyola University, Chicago, Illinois.*
- Salvi, C.**, (2015). Nutrire la mente. Creativita`, Cinema e Stile di vita. WORLD EXPO - KIP Pavilion. Thomas, D., (Salvi, C., moderator) (2015). From School Gardens to Urban Farms: Redefining Chicago's Foodways. *WORLD EXPO - KIP Pavilion.*
- Salvi, C.**, (2014). Eureka! When the right solution arrives in a blink of an eye. *Rehabilitation Institute of Chicago, Jordan Grafman's Cognitive Neuroscience Lab.*
- Salvi, C.**, (2014). Eureka! When the right solution arrives in a blink of an eye. *University of Illinois at Chicago, Psychology dep. Cognitive Brown Bag Series.*
- Salvi, C.**, (2014). Aha! Look outside the box to think outside the box. *University of Chicago, Psychology dep. Human Performance Lab.*
- Salvi, C.**, (2009). L'influenza dei supporti tecnologici nel processo decisionale. Furniture Trend Update (FUTSU), Pordenone.

SCHOLARLY PRESENTATIONS, SYMPOSIA and TALKS

- Salvi, C.**, Insight and the Genesis of New Ideas. Symposium at *CogSci, Montreal*, (2019), organized by Vallee`-Tourangeau, F., & Ball, L.
- Salvi, C.**, Simoncini, C., Beeman M., and Grafman, J. (2019). Pupil-size and Microsaccades Predict Different Problem-Solving Styles. *Society for Neuroscience of Creativity*. San Francisco, California.
- Salvi, C.**, McKinley, R., Bikson, M., Beeman M., and Grafman, J. (2018). Insight is Facilitated by High Definition tDCS to the Right Temporal Lobe. *Creativity Conference. Southern Oregon University*. Ashland, Oregon.
- Salvi, C.**, Conrardy, R., McKinley, R., Bikson, M., Beeman M., and Grafman, J. (2018). Right temporal transcranial direct current stimulation improves insight problem-solving. *Cognitive Neuroscience Society, Annual Meeting*. Boston, Massachusetts.
- Salvi, C.**, Conrardy, R., McKinley, R., Bikson, M., Beeman M., and Grafman, J. (2018). Insight is Facilitated by High Definition tDCS to the Right Temporal Lobe. *Society for Neuroscience of Creativity*. Cambridge, Massachusetts.
- Salvi, C.**, Danek, A. (2017). Can we facilitate creativity? Insights on how to have more insights. *Symposium organized at Association for Psychological Science, Annual Convention (APS), Boston, Massachusetts.*
- Salvi, C.**, Bowden, E. And Beeman, M., (2016). The link between risk-taking and Aha! Moments. *Association for Psychological Science, Annual Convention (APS), Chicago, Illinois.*
- Sprugnoli, G., Liew, S.L., Bricolo, E., Costantini, G., **Salvi, C.**, Musaeus, c. S., Rossi, s., Rossi, A., Pasqual-Leone, A., & Santarnecchi, E. (2017) Going beyond the Eureka moment: enhancement of insightful solutions by means of tACS and tRNS. Conference Paper in *Brain Stimulation 10(2):402*.
- Salvi, C.**, Cristofori, I., Beeman, M., & Grafman, J. (2016) How Subliminal reward Enhances Aha! Moments. *Cognitive Neuroscience Society, 23th Annual Meeting. New York, NY.*
- Cristofori, I., Forneris, F., Cassetta, L., Grasselli, G., **Salvi, C.**, Gravina, T. (2015) The AIRInforma experiment: Peer-reviewed public dissemination of science in Italy. *Society for Neuroscience, Chicago, Illinois.*
- Beeman, M., Kounios, J. & **Salvi, C.** (2013). The "Aha!" Moment: The Cognitive Neuroscience of Insight. In *Learning & the Brain*.

- Salvi, C.,** Collier, K., A., Bricolo, E., Kounios, J. & Beeman, M. (2012). "Aha" is right: insight solutions are more likely to be correct than are analytic solutions. *Association for Psychological Science, 24th Annual Convention (APS)*, Chicago, Illinois. <https://boa.unimib.it/handle/10281/49774>
- Salvi, C.,** Franconeri, S., Bricolo, E., Kounios, J. & Beeman, M. (2012). Looking outside the box: blinks and eye movements associated with insight versus analytic problem-solving. *Cognitive Neuroscience Society, 19th Annual Meeting CNS*, Chicago, Illinois.
- Bricolo, E., **Salvi, C.,** Martelli, M., Arduino, L.S., Daini, R., (2010). Crowding affects eye-movements patterns in word reading. *33rd European Conference on Visual Perception (EVP)*, Lausanne, Switzerland. <https://boa.unimib.it/handle/10281/49772>
- Salvi, C.,** Daini R., Arduino L.S., Martelli M., Bricolo E. (2010). Relazione tra crowding e lettura: Uno studio con i movimenti oculari. *Congresso Nazionale della Sezione di Psicologia Sperimentale (AIP)*, Bologna. <https://boa.unimib.it/handle/10281/49773>
- Salvi, C.,** (2009). Competition and group effect in mechanization process. Subjective Probability, Utility and Decision Making (SPUDM 22). *Bi-annual conference run by the European Association of Decision Making*. Rovereto (TN).
- Salvi, C.** (2007). Effetti di fissazione e meccanizzazione nella soluzione di problemi: modulazioni dovute al pensiero di gruppo. *AIP Congresso Annuale Sezione Italiana di Psicologia. Sezione di Psicologia Sperimentale*. Como 2007.