

Alfredo Spagna, Ph. D.

Department of Psychology,
Columbia University in the City of New York

Research and Teaching Statement

Compared to other modalities, the investigation of visual attentional functions has attracted a greater interest in the past years, possibly due to the existence of a so called “modality dominance”, a bias towards the processing of visual stimuli to counteract the low alerting effect of visual stimulation. A great extent of discoveries resulted from such focus on the visual modality, but whether similar neural and behavioral mechanisms characterize also the other sensory modalities (i.e., supramodal) is less clear. My recent research focuses on the psychological and neural mechanisms of supramodal attention on cognition, and on the interaction between attention, consciousness, and visual mental imagery. My teaching activities stem from this theoretical and methodological background and aim to provide a broad view of current knowledge on the field of behavioral and cognitive neuroscience, and how it informs how we behave in every-day situations.

Current Academic Appointments

Lecturer in Discipline	Columbia University Department of Psychology	2018 - present
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Education and Training

Post-Doctoral Research Associate	Joint: Icahn School of Medicine at Mount Sinai & Queens College, CUNY, NYC, USA Advisors: Dr. Jin Fan	2014 -2017
Visiting Scholar	Queens College, CUNY, NYC, USA Advisors: Dr. Jin Fan	2013 -2014
Ph. D. (Psychology)	Sapienza, University of Rome, Italy Advisor: Dr. Maria Casagrande	2010 – 2013
M.A. (Psychology)	Sapienza, University of Rome, Italy	2006 – 2010
B.S. (Psychology)	Sapienza, University of Rome, Italy	2002 – 2006

Ongoing Research Projects

“Examining the attentional functions of children after traumatic brain injury”	Blythedale’s Children’s Hospital The Feil Family Brain and Mind Research Institute Weill Cornell Medicine, NYC, USA	2018- present
“Interactions between Exogenous Attention and Consciousness”	Physiological Investigation of clinically normal and impaired cognition Lab Institute du Cerveau et de la Moelle Épinrière Paris, France	2017 - present
“Capacity of Human Cognitive Control”	Cognitive Neuroscience Laboratory Queens College, CUNY, NYC, USA	2014- present

"Attentional deficits following unilateral brain lesions"	Stroke Rehabilitation Center Icahn School of Medicine at Mount Sinai	2018 – present
"Attentional deficits in pre-term born children"	Division of Neonatology Medical University Vienna, Austria	2019 - present

Awards and Fellowships

ICM Fellowship for Basic and/or Clinical Research Euro €73.200 – "Exogenous Attention and Consciousness".	2017
PSC CUNY Research Award USD \$6.000: "An investigation of supramodal attention across modality and domains".	2017
Outstanding Adjunct Assistant Professor for the Department of Psychology, Queens College, CUNY	2017
Simons Foundation Autism Research Initiative USD \$60.000 Explorer Award - "Investigating the auditory attentional networks in autism spectrum disorder".	2014
Borsa di Perfezionamento – CUN 6: from Sapienza, University of Rome, Italy USD \$12.000: grant to finance visiting scholarship at the Cognitive Neuroscience Jin Fan, Dept. of Psychology, Queens College, CUNY, New York, USA.	2012
Department of Psychology, Sapienza, University of Rome, Italy EURO €43.200 PhD fellowship - Program in Cognitive Psychology, Psychophysiology, Personality at the Department of Psychology, Sapienza, University of Rome.	2010-2013

Submitted Manuscripts

Wu, T., Wang, X., Wu, Q., SPAGNA, A. , Yang, J., Yuan, C., Wu, Y., Gao, Z., Hof, P., Fan, J. (<i>second revision on NeuroImage</i>) Anterior Insular Cortex is a bottleneck of cognitive control.
Wu, T., SPAGNA, A. , Hof, P., Fan, J. (<i>under review to Scientific Report</i>). Supramodal involvement of the cognitive control network in uncertainty processing.
Chen, C., Wu, T., SPAGNA, A. , Mackie, M., Lu, X., Fan, J. (<i>submitted to Neuroscience and Biobehavioral Review</i>). A meta-analysis of the functional neuroanatomy of cognitive control: the cognitive control network.

Peer-Reviewed Publications

= co – first author; total number of citations as of January 2019 = 116; h-index as of January 2019 = 6.

Chen, Y., SPAGNA, A. , Wu, T., Kim, T. H., Wu, Q., Chen, C., ... & Fan, J. (2019). Testing a Cognitive Control Model of Human Intelligence. <i>Scientific Reports</i> , 9(1), 2898. DOI: 10.1038/s41598-019-39685-2
Wu, T., Wang, X., Wu, Q., SPAGNA, A. , Yang, J., Yuan, C., ... & Fan, J. (2019). Anterior insular cortex is a bottleneck of cognitive control. <i>NeuroImage</i> . DOI: 10.1016/j.neuroimage.2019.02.042

- Zeng, W., Eilam-Stock, T., Wu, T., **SPAGNA, A.**, Chen, C., Hu, B., Fan, J. (2019). Multi-feature based network revealing the structural abnormalities in autism spectrum disorder. (*IEEE transactions on Affective Computing*) DOI: 10.1109/TAFFC.2018.2890597
- SPAGNA, A.**, Wu, T., Kim, K., Fan, J. (2018). Right hemisphere superiority for executive control of attention. *Cortex*. DOI: 10.1016/j.cortex.2018.12.012
- SPAGNA, A.**, Dufford, A., Wu, Q., Wu, T., Zheng, W., Coons E., Hof, P. R., Wu, Y., Fan, J. (2018) Grey matter volume of the anterior insular cortex and social networking. *Journal of Comparative Neurology*.
- SPAGNA, A.**, He, G., Jin, S., Gao, L., Mackie, M. A., Tian, Y., ... & Fan, J. (2018). Deficit of supramodal executive control of attention in schizophrenia. *Journal of psychiatric research*, 97, 22-29.
- Casagrande, M., Marotta, A., Canepone, V., **SPAGNA, A.**, Rosa, C., Dimaggio, G., & Pasini, A. (2017). Dysfunctional personality traits in adolescence: effects on alerting, orienting and executive control of attention. *Cognitive Processing*, 1-11. Number of citations = 2.
- SPAGNA, A.**, Martella D., Marotta A., Casagrande M., Fuentes, L.J. (2016). Hemispheric Modulations of the Attentional Networks. *Brain and Cognition*, DOI: 10.1016/j.bandc.2016.07.002. Number of citations = 3.
- Tian, Y., Du, J., **SPAGNA, A.**, Mackie, M. A., Gu, X., Dong, Y., ... & Wang, K. (2016). Venlafaxine treatment reduces the deficit of executive control of attention in patients with major depressive disorder. *Scientific Reports*, 6 (28028) DOI: 10.1038/srep28028. Number of citations = 3.
- Xuan, B., Mackie, M-A., **SPAGNA, A.**, Wu T., Tian, Y., Hof P. R., Fan J. (2016). The activation of interactive attentional networks. *Neuroimage*; DOI: 10.1016/j.neuroimage.2016.01.017. Number of citations = 17.
- Eilam-Stock, T., Wu, T., **SPAGNA, A.**, Egan, L. J., & Fan, J. (2016). Neuroanatomical alterations in high-functioning adults with autism spectrum disorder. *Frontiers in Neuroscience*, 10. Number of citations = 7.
- SPAGNA A.**, Dong Y., Mackie M-A., Li M., Harvey P.D., Tian Y., Wang K., Fan J. (2015): Clozapine improves the orienting of attention in schizophrenia. *Schizophrenia Research*; DOI: 10.1016/j.schres.2015.08.009. Number of citations = 10.
- Marotta A., Delle Chiaie R., **SPAGNA A.**, Bernabei L., Sciarretta M., Roca J., Biondi M., Casagrande M (2015): Impaired conflict resolution and vigilance in euthymic bipolar disorder. *Psychiatry Research* 06/2015; DOI: 10.1016/j.psychres.2015.06.026. Number of citations = 14.
- SPAGNA A.**, Mackie M-A., Fan J. (2015): Supramodal executive control of attention. *Frontiers in Psychology* 03/2015; 6. DOI:10.3389/fpsyg.2015.00065. Number of citations = 21.
- SPAGNA A.**, Martella D., Sebastiani M., Maccari L., Marotta A., Casagrande M. (2014). Efficiency and interactions of Alerting, Orienting and Executive Networks: The Impact of Imperative Stimulus Type. *Acta Psychologica*, 148: 209-215. Number of citations = 8.

Manuscripts in preparation

SPAGNA, A., Kim, K., Fan, J. (*in prep*). Unimodal and crossmodal dual conflict processing: evidence of the existence of a supramodal executive control mechanism.

SPAGNA, A., Wu., T., Egan, L., Hof, P., Fan, J. (*in prep*). Superadditive activation of the cognitive control network is associated with dual conflict processing.

SPAGNA, A., Bayle, D., Sedel-Malkinson, T., Tallon-Baudry, C., Chica, A., Bartolomeo, P. (*in prep*). Interactions between exogenous attention and consciousness.

SPAGNA, A., Sedel-Malkinson, T., Bartolomeo, P. (*in prep*). Attentional Network Functioning is required for vivid mental images: a meta-analysis.

Last ten peer-reviewed conference proceedings or conference attendance.

Neuro Openscience Workshop 2019, January 15-16 2019, Institut du Cerveau et de la moelle epiniere, Paris, France. <http://open-neuro.org/>

Wu, T., **SPAGNA A.**, Hof, P. R., Fan, J. (2018). Supramodal involvement of the cognitive control network in uncertainty processing. November 3rd – 7th, San Diego, California, USA.

BrainHack Global Paris. Institut Pasteur, Paris, May 2nd to 4th, 2018, Paris, France.

Tian, Y.* , **SPAGNA, A.***, Mackie, M. A., Fan J. (2016). Venlafaxine treatment reduces the deficit of executive control of attention in patients with major depressive disorder. 23rd Annual Meeting of the Cognitive Neuroscience Society; April 2-5 2016, NYC, New York.

SPAGNA A., Fan J. (2015): Testing for a supramodal attention network mechanism. 21st Annual Meeting of the Cognitive Neuroscience Society; April 5-8 2014, Boston, Massachusetts.

Berloco B., Marotta A., **SPAGNA A.**, Maccari L., Rosa C., Canepone V., Paciletti S., Staiano A., Pasini A., Casagrande M. (2013). Social attention in adolescents with personality disorders. Congresso Nazionale Associazione Italiana Di Psicologia - Sezione di Psicologia Sperimentale - AIP. Roma, 16-18 Settembre 2013.

Maccari, L., Martella, D., Marotta, A., Sebastiani, M., Banjai, N., **SPAGNA, A.**, Fuentes, L., & Casagrande, M. (2012). Sleep loss and nighttime impair the recognition of emotional facial expressions but not the perception of emotional verbal stimuli. *In: XXI Congress of the European Sleep Research Society, Paris, 4-8 September.*

Maccari, L., Martella, D., Marotta, A., Sebastiani, M., **SPAGNA, A.**, & Casagrande, M. (2012). Night-time, sleep loss and change blindness: how low arousal affects a very engaging task. *In: XXI Congress of the European Sleep Research Society, Paris, 4-8 September.*

Marotta, A., Sebastiani, M., Martella, D., Maccari, L., **SPAGNA, A.**, & Casagrande, M. (2012). Sleep Deprivation affects attentional orienting triggered by central un-informative gaze and arrow cues. *In: XXI Congress of the European Sleep Research Society, Paris, 4-8 September.*

Martella, D., Marotta, A., Maccari, L., Sebastiani, M., **SPAGNA, A.**, Fuentes, L., & Casagrande, M. (2012). Counteracting low alertness during the main sleep gate: effects on attentional networks. In: *XXI Congress of the European Sleep Research Society*, Paris, 4-8 September.

Sebastiani, M., Martella, D., Marotta, A., Maccari, L., Cosco, F., **SPAGNA, A.**, Fuentes, L., & Casagrande, M. (2012). A Double Interference Stroop Task: Effect of Nocturnal Alertness Reduction. In: *XXI Congress of the European Sleep Research Society*, Paris, 4-8 September.

Ad – hoc Reviewer for peer-reviewed scientific journals

Experimental Brain Research	2018 - present
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Teaching

Adjunct Assistant Professor for the Department of Psychology at Columbia University, New York, USA.	Academic Year 2017-2018
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Adjunct Assistant Professor in Cognitive Neuroscience, Behavioral Neuroscience, Experimental Psychology and Statistical Methods for the Department of Psychology, Queens College, CUNY, New York, USA.	Academic Year 2017-2018
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Adjunct Assistant Professor in Experimental Psychology, Sensation and Perception, for the Department of Psychology and Neuroscience, Hunter College, CUNY, New York, USA.	Academic Years 2015-2018
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Invited Colloquia

05 / 2018: Blythedale Children's Hospital, NY, USA. "Supramodal attentional functions across the lifespan".
03/2019: Outreach at Stuyvesant High School: Talk Title: "Watch out! Cognitive Neuroscience of Attention"

Consultancy

04 / 2018: "R-OUT: hypovigilance and other aspects affecting driving behaviors". Consultancy requested by the car company RENAULT®, to evaluate the above-mentioned project.

Mentoring of graduate or undergraduate students

Spring 2019	Eloise West, (B.A.) Supervised Individual Research, Department of Psychology, Columbia Univ.
2014 – 2018	Yu Chen, (M.A.) Department of Psychology, Queens College, CUNY
2015 – 2017	Kevin Kim, (M.A.) Department of Psychology, Queens College, CUNY
2013 – 2014	Antonietta Albano (BSc), Department of Psychology, Sapienza, University of Rome Laura Di Marcello (BSc), Department of Psychology, Sapienza, University of Rome Antonella Tattolo (BSc), Department of Psychology, Sapienza, University of Rome
2012 – 2013	Luisa Canneto, (BSc), Department of Psychology, Sapienza, University of Rome

Training on Neuroscientific Techniques

Behavioral testing	* * * * * / 10
fMRI imaging data collection and analysis	* * * * * / 10
Psychophysiological recordings	* * * * * / 10
Eye tracking	* * * * * / 10

Programming and data analysis skills

E-Prime 2.0	* * * * * / 10
SPSS	* * * * * / 10
StatSoft Statistica	* * * * * / 10
GraphPad Prism	* * * * * / 10
A-V Editing and Analysis	* * * * * / 10
Brainstorm (MEG)	* * * * * / 10
Matlab R2017b	* * * * * / 10
SPM12	* * * * * / 10
Python	* * * * * / 10
Unity VR	* * * * * / 10

Continuing Education

- Writing in the Sciences – STANFORD Online - online.stanford.edu; Fall Semester 2017
- Python for Computer Science (CSCI127) – Hunter College, CUNY; Fall Semester 2017
- Neuroanatomy (PSYCH301) – Queens College, CUNY; Fall Semester 2016;
- Statistical Parametric Mapping: SPM, University College of London 20-22 May, 2013;
- SPM Course, Lausanne, CH, 9-12 April, 2013;
- Python for Neuroscience: PsychoPy. University of Nottingham, UK, 26-28 March 2013;

Professional Memberships

- 1) New York Academy of Science (2015 – Present)
- 2) Cognitive Neuroscience Foundation (2014 – Present)
- 3) Italian National Board of Psychology (2010 – Present)
- 4) Organization for the Human Brain Mapping (2019)

Language Proficiency (ILR):

Italian (5/5), English (5/5), Spanish (5/5), French (3/5).