Curriculum Vitae

Elena Aggius-Vella

Brief presentation

Dr Elena Aggius-Vella graduated first in pedagogy and after in psychology with a master in neuroscience and neuropsychological rehabilitation at the University of Bologna, with a thesis on the relationship between impulsivity (time perception) and spatial modulation (peripersonal space vs extrapersonal space) with Professor Giuseppe Di Pellegrino and Andrea Serino. After graduation, she won a six-month fellowship to do research abroad, that she spent in Smallwood 's lab at the University of York (UK). Here, she investigated the relationship between self/self-control and the brain default mode network[1]. In York, she gathered some experience with the method of functional magnetic resonance. At the end of the period in York, she won a position of 1 year as a research assistant at CIMEC, Rovereto (TR), where she worked with Professor Peelen, Professor Melcher and Professor Clayton. The period at CIMEC was focused on visual attention and visual memory. Here she did eyetracker studies. After this period, she started her PhD at the Italian Institution of Technology (IIT) in UVIP lab, supervised by Dr. Monica Gori. In the 3 years of research, she investigated the different role of sensory modalities in shaping cognitive skills in the space around the body (i.e. vision calibrating hearing in spatial tasks). She tested her scientific hypotheses in blind and sighted adults, and hemiplegic children (in collaboration with the Stella Maris hospital) using psychophysical methods. During the PhD, she spent 6 months in Cambridge, UK, under the supervision of Dr. Andrew Kolarik and Shahina Pardhan, working on auditory spatial representations [2,3]. During her PhD, she collaborated with Professor Paola Binda from the University of Pisa, in a research project testing different roles of hearing, in non-spatial skills[4] and with Doctor Francesca Tinelli in a work that investigated the motor Influence in developing auditory spatial cognition in hemiplegic children with and without visual field disorder[5]. Her findings on different cognitive skills in the space around the body is summarized in 10 peer reviewed papers, where she applied psychophysical and neuropsychological methods [2–11] plus different presentations to conferences. After her PhD, she started her postdoc work under supervision of Prof Amir Amedi at the Reichman University in Herzliya, Israel. Her research is focused on body representations in different brain areas and their connection with cognitive skills. She is working also on the relation between self and body representation in the default mode network. Other areas of interest are plasticity, sensory impairment, critical periods, spatial cognition and emotions. She is interested also in neuropsychology, rehabilitation and time representation.

CV Aggius Vella Elena

Education and career

2019-2022 REICHMAN UNIVERSITY, PLACE: HERZELIYA, ISRAEL

Post-Doctoral Research Fellow in Amir Amedi's Lab at the Institute for Mind, Brain and Technology Ivcher School of Psychology

Project: The project concerns body motor representations in the brain and their connection with cognitive skills (embodied cognition). I am investigating the involvement of motor homunculi in emotions and spatial cognition. Moreover, I am interested in the interplay between DMN (self) and body maps in the brain. I adopt fMRI methods in order to inspect the neural correlates of these networks and their plasticity during different states (mindfulness, emotions).

PI: Amir Amedi

Grant: ERC Consolidator Grant (773121 NovelExperieSense) and by Horizon GuestXR (101017884)

2018-2019 ISTITUTO ITALIANO DI TECNOLOGIA (IIT), Place: Genoa, Italy

Post-Doctoral Research Fellow in UVIP (Unit for visually impaired people)

Project: I investigated the relationship between portions of space and cognitive skills in different populations trough different methods.

PI: Monica Gori

2015-2018 ISTITUTO ITALIANO DI TECNOLOGIA (IIT), Place: Genoa, Italy

3-year PhD in Bioengineering and Robotics in UVIP (Unit for visually impaired people).

Project: The aim of my PhD was to understand the role of senses and movement in representing different portions of space around the body. The final goal was to clarify if our brain develops different cognitive skills for the several portions of space around the body, on the base of the sensory modalities available. This thesis is based on previous evidence showing that 1) space around the body is not unitary represented but split in different portions and 2) that different sensory modalities are at the base of different cognitive skills.

In the first, my effort was concentrated in investigating how stimuli are differently processed when delivered in different portions of space and the influence of motor action in representing space around our body.

Later, I focused on front and back space at head and feet level. Especially, I analyzed how performance in spatial and temporal tasks is differently affected when performed in different portions of space. Moreover, as spatial representation is influenced and shaped by movement, I investigated better the role of audio motor integration in representing space in different populations (healthy, blind adults and hemiplegic children).

PI: Monica Gori

Research experiences

2022 Research project online in Samandouras research group*:*

1 year of online research in Samandouras research group.

Project: The project concerns brain mapping (functional and anatomical maps). The project will be on tractography (DTI) of different brain areas using data from the connectome project. https://www.samandouraslab.com/home

2018 Anglia Ruskin University and Cambridge University (UK)
6 months of period abroad as visiting PhD in Cambridge, in VERU lab
Project: I worked on auditory spatial representation with Professor: Shahina Pardhan, Dr. Andrew Kolarik and Professor Brian Moore

2014-2015 Cimec, Rovereto (Italy)
Assistant research in the ATTEND project (Characterizing and improving brain mechanisms of attention)
Project: My work was on Attentional selection in natural scenes, and conscious vision: how "top-down" influences determine what we see. I also worked on the spatio-temporal perception of objects, events and scenes. I worked mainly with, Professors Marius Peelen, Clayton Michael Hickey, David Melcher, Timo Stein and Daniel Kaiser.

2013 University of York, York (United Kingdom)
6-month scholarship to carry out research abroad: internship in Jonathan Smallwood's Lab.
Project: Studentship related to my Master thesis degree. During this period, I studied the default mode network and its role in cognition; I acquired basic theoretical knowledge of fMRI studies; and I developed a research project with the aim to analyze the relationship between self-control and future thought.

Academic studies

2012 Master degree in Neuroscience and neuropsychological rehabilitation (Neuroscienze E Riabilitazione Neuropsicologica) at the Alma Mater Studiorum - Universita' di Bologna, 2nd level degree in Psychology (110/110 cum laude).
Dissertation/thesis title: Modulation of impulsivity in intertemporal choice by the expansion of peripersonal space
Aim: to investigate the possibility of modulating the level of impulsivity in intertemporal choices by modification of peripersonal space.
Thesis supervisor: Professor Di Pellegrino Giuseppe and Serino Andrea

2010 Bachelor (1st level degree - Degree/Bachelor) in Psychology at the Universita' degli Studi di Genova, faculty of "Scienze Della Formazione" (110/110).
Dissertation/thesis title: Valutazione dell'attenzione in età dello sviluppo
Thesis supervisor: Professor Benso Francesco

2008 Bachelor (1st level degree - Degree/Bachelor) in Pedagogical Sciences Of Education, at the Universita' degli Studi di Genova. faculty of “Scienze Della Formazione” (108/110).
Dissertation/thesis title: Cambiamenti sociali e disturbi alimentari negli adolescenti
Thesis supervisor: Professor.Ssa Manetti Mara

Awards:

2013 *THIRTY-FIRST EUROPEAN WORKSHOP ON COGNITIVE NEUROPSYCHOLOGY*:
An interdisciplinary approach Bressanone
Funds to participate to the thirty-first European workshop on cognitive neuropsychology

2013 *SCHOLARSHIP COMPETITION FOR A PERIOD OF RESEARCH ABROAD*
Funds to develop a project related to my muster thesis. The scholarship covered part of the expenses for the period abroad

Skills and knowledge

Data analysis and Programming: E-Prime, MATLAB, R, BrainVoyager, Conn, DSI studio, neuropsychological, psychophysical, kinematic and behavioral methods.
Data acquisition: behavioral, eeg, eyetracker, fmri, Vicon
Knowledge in statistic, EEG, FMRI

Foreign language skills

Languages skills Overall Speaking Writing
English Very good, Very good, Very good
French Limited Limited Limited

Teaching experiences

2021 and 2022fMRI course at Reichman University to bachelor and muster students in psychology

Most relevant conference works

2022

1. *Full body motor map in human amygdala*. Aggius-Vella Elena, Amedi Amir. Talk presented at Iambrain, online

2. *Full body motor representation in human amygdala*. Aggius-Vella Elena, Amedi Amir. Talk presented at 20th International Multisensory Research Forum (Imrf), Ulm, Germany

3. *A Multimodal Navigation Area: Post Critical Period Recruitment of V6 by the Congenitally Blind.* Elena Aggius Vella, Daniel-Robert Chebat, Shachar Maidenbaum, Amir Amedi. Poster presented at Organization for Human Brain Mapping (OHBM), Glasgow, Scotland

4. *Neural correlates of egocentric navigation: Body topographic motor map in area V6*. Elena Aggius Vella, Daniel-Robert Chebat, Shachar Maidenbaum, Amir Amedi. Poster presented at Organization for Human Brain Mapping (OHBM), Glasgow, Scotland

5. *V6: a unique hub integrating sensory input in a motor spatial representation*. Elena Aggius Vella, Daniel-Robert Chebat, Shachar Maidenbaum, Amir Amedi. Poster presented at European Conference on Visual Perception (ECVP), Nijmegen, Netherlands

6. *Full body representation in human amygdala*, Amir Amedi, Aggius-Vella, Talk accepted at Sinp Congress, Rovereto, Italy

7. *Challenging Critical Periods in V6: Egocentric Spatial Navigation in Congenital Blindness*. Elena Aggius Vella, Daniel-Robert Chebat, Shachar Maidenbaum, Amir Amedi, Talk accepted at Sinp Congress, Rovereto, Italy

2018

1. *Influence of visual experience on auditory spatial representation around the body*. Aggius-Vella Elena, Campus Claudio, Gori Monica. Poster presented at: 19th International Multisensory Research Forum (IMRF), Toronto, Canada 2018. Abstract Book, page 48

2017

1. *Role of senses in representing portions of spaces around our body*. Aggius-Vella Elena, Campus Claudio, Gori Monica. Poster presented at: Vision Science Society (VSS). Florida, St. Pete Beach (2017)
2. *Indirect visual influence on different spaces around the body*. Aggius-Vella Elena, Campus Claudio, Gori Monica. Poster presented at: 40th European Conference on Visual Perception (ECVP), Berlin 2017. Abstract Book, page 133

2016

1. *Auditory space representation on the horizontal plane*. Aggius-Vella Elena, Campus Claudio, Finocchietti Sara, Gori Monica. Poster presented at: 17th International Multisensory Research Forum (IMRF), Suzhou, China 2016. Abstract Book, page 43
2. *Auditory space around the body.* Aggius-Vella Elena, Campus Claudio, Finocchietti Sara, Gori Monica. Poster presented at: 39th European Conference on Visual Perception (ECVP), Barcelona 2016. Abstract Book, page 225

2015

1. *Space representation on the horizontal plane.* Aggius-Vella Elena, Campus Claudio, Finocchietti Sara, Gori Monica. Poster presented at: International Workshop on Cognitive Development for Friendly Robots and Rehabilitation, Genova (2015)

Publications

1. de Caso, I. *et al.* Knowing me, knowing you: Resting-state functional connectivity of ventromedial prefrontal cortex dissociates memory related to self from a familiar other. *Brain Cogn.* **113**, 65–75 (2017). Cit 10, IF 2.432
2. Kolarik, A. J. *et al.* Factors Affecting Auditory Estimates of Virtual Room Size: Effects of Stimulus, Level, and Reverberation. *Perception* **50**, 646–663 (2021). Cit 3, IF 1.695
3. Aggius-Vella, E. *et al.* Comparison of auditory spatial bisection and minimum audible angle in front, lateral, and back space. *Sci. Rep.* **10**, (2020). Cit 8, IF 5.516
4. Aggius-Vella, E., Gori, M., Animali, S., Campus, C. & Binda, P. Non-spatial skills differ in the front and rear peri-personal space. *Neuropsychologia* **147**, 107619 (2020). Cit 4, IF 3.295
5. Aggius-Vella, E., Gori, M., Campus, C., Petri, S. & Tinelli, F. Motor Influence in Developing Auditory Spatial Cognition in Hemiplegic Children with and without Visual Field Disorder. *Children* **9**, 1055 (2022). Cit 0, IF 2.835
6. Aggius-Vella, E., Campus, C., Finocchietti, S. & Gori, M. Audio Spatial Representation Around The Body. *Front. Psychol.* **8**, (2017). Cit 13, IF 3.213
7. Aggius-Vella, E., Campus, C. & Gori, M. Different audio spatial metric representation around the body. *Sci. Rep.* **8**, (2018). Cit 5, IF 5.516
8. Cuturi, L. F., Aggius-Vella, E., Campus, C., Parmiggiani, A. & Gori, M. From science to technology: Orientation and mobility in blind children and adults. *Neurosci. Biobehav. Rev.* **71**, 240–251 (2016). Cit 76, IF 8.989
9. Aggius-Vella, E., Campus, C., Kolarik, A. J. & Gori, M. The Role of Visual Experience in Auditory Space Perception around the Legs. *Sci. Rep.* **9**, (2019). Cit 10, IF 5.516
10. Aggius-Vella, E., Campus, C., Finocchietti, S. & Gori, M. Audio Motor Training at the Foot Level Improves Space Representation. *Front. Integr. Neurosci.* **11**, 36 (2017). Cit 11, IF 3.213
11. Aggius-Vella, E. *et al.* Auditory distance perception in front and rear space. *Hear. Res.* **417**, 108468 (2022). Cit 0 IF 3.672
12. Aggius-Vella, E., Campus, C. & Gori, M. Role of senses in representing portions of spaces around our body. *J. Vis.* **17**, 1050–1050 (2017). IF 2.08 (Abstract)