



## AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2017

### Turno de acceso general

**Nombre:** RIVA, SILVIA  
**Referencia:** RYC-2017-22233  
**Área Científica:** Psicología  
**Correo Electrónico:** silvia\_riva@icloud.com

#### Título:

Psychology

#### Resumen de la Memoria:

Institution chosen: BioCruces Health Research Institute, Plaza de Cruces 12, 48903. Barakaldo, Bizkaia (País Vasco)

Reference: Prof. Juan Arango (jcalasprilla@gmail.com)

To date, I worked in two different research areas that I would like to improve and to expand at the BioCruces Health Research Institute:

1. The FIRST LINE is focused on Cognitive Psychology applied in health context and is about the process of medical decision making. In the past 10 years, I have improved my skills and my competences in cognitive psychology and I have especially studied factors influencing decisions in health context such as choice dilemmas, the construct of risk, the construct of trust (between doctor and patient) and the personalization of treatment as a Principal Investigator for National and International studies. Significant advances have been made in the field of chronic conditions (eg. diabetes, pain management) as well as acute conditions (eg. different type of cancers), so that even when cure is not possible, many patients can be controlled and managed for long periods of time. Medical routines, however, require patients to take responsibility and continuously to make decisions about their disease management (follow up appointments, adherence and compliance with treatments), creating conditions that have several psychological implications for patients' everyday life. Patients have difficulty managing the perception of their pathology correctly; they feel like survivors for the rest of their life, always struggling with the uncertainty of their medical condition (a possible recurrence, a concomitant disease, an irreversible deterioration of own condition). In this framework, psychological interventions are fundamental in order to help patients to live a life thinking about the chances of living not those of dying.

2. The SECOND LINE of research is focused on Health Psychology applied in specific group of patients population. I have been studying chronic haematological conditions since 2007, especially in the field of coagulation disorders (such as hemophilia, thrombotic thrombocytopenic purpura, von Willebrand disease, stroke), infections (HIV) and onco-haematology (chronic myeloid leukaemia) where I have conducted several studies at National and International level. Even these conditions are different, they are all linked for several similar outcomes including problems in movement, mobility, and pain. I am an active member of the National association of Hemophilia (AICE) and of the World Federation of Hemophilia (WFH). During the last 8 years, I had different collaborations with several Spanish centre for coagulation disorders including the Hemophilia centre of Donostia-San Sebastian, (Spain). Research in this field is related with the evaluation of Health-related Quality of Life (HRQL) and Patient rated outcomes (PROs) in children as well as adult population. Recently, aging issues have represented a new interest of research that I started to study and that I intend to develop within the RYC 2017 Program.

#### Resumen del Currículum Vitae:

My name is Silvia Riva and I am an Italian researcher with a PHD in Psychology. I currently have a position as Marie Curie Fellow at the University of Wolverhampton (UK) working for a European grant about choices under stress conditions.

After a solid postgraduate traineeship in Australia (Melbourne University, 1 year) and in

Germany (Universitätsklinikum Hamburg-Eppendorf, 1 year), I obtained my doctorate (Doctor Europaeus) in Psychology at the Catholic University of Milan in collaboration with the Max Planck Institute for Human Development, Adaptive Behavior and Cognition unit in Berlin (Germany), in late 2012. My dissertation focused on applying the concept of bounded rationality in medical choices in order to analyse the process by which laypersons make decisions in the field of non-prescription drug therapy. I have studied which heuristics (especially fast and frugal) people use, which learning styles they adopt, and the impact of risk perception and risk behaviors on medical decisions. Methods included online surveys (Survey monkey and Lime survey), experiments, virtual-experiments (using JAVA software) and mixed data analysis.

During my PhD, I also embarked upon a study of medical decision processes and behaviors in different chronic conditions.

Over the past 10 years, I have developed my skills and competences in the field of Cognitive Psychology and Health Psychology and I have especially studied treatment decision dilemmas, the construct of risk and the personalization of choices, as a Principal Investigator for national and international studies. Moreover, I have a PhD specialization in psychometrics, which helped me to build a solid foundation and body of knowledge in the area of data analysis, as can be seen from my latest publications.

Throughout my professional career (including my current position as a Marie Curie Fellow). I have always focused my interest in investigating the decision-making process in different types of organizations to study the factors involved in decision processes, in



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## AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2017

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conditions of uncertainty and risk, often characterized by an increased emotional burden.

Over these years, I have particularly deepened the construct of "architecture of choice". Choice architecture is the design of different ways in which choices can be presented to consumers, and the impact of that presentation on consumer decision-making.

The theoretical background of my work in the applied cognitive psychology and health

psychology lies in the theory of bounded rationality in medical choices (Gigerenzer, Todd & ABC group, 2000), the construct of Health related Quality of Life (HRQL) and Patient rated outcomes (Cummins, 2000), the empowerment model (Zimmerman, 1995) and the notion of personalized medicine (Hamburg et al., 2010; Smith, 2012).



## AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2017

### Turno de acceso general

**Nombre:** HYAFIL , ALEXANDRE  
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**Área Científica:** Psicología  
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#### Título:

Computational approaches to perception and decision-making

#### Resumen de la Memoria:

Cognitive neuroscience increasingly relies on sophisticated statistical and modelling approaches to unveil the structure of the complex mechanisms involved in cognition. My work has focused on using such techniques to reveal cognitive principles, principally related to perception and cognitive control. My expertise in computational methods was shaped from studying at Ecole Polytechnique (leading scientific school in France) up until my latest stay at Princeton University.

My PhD (at UPMC, Paris) focused on both theoretical and experimental study of cognitive flexibility in human prefrontal cortex. I showed using neural network modelling how the anterior prefrontal cortex could maintain an intention in memory during the execution of another task (published in Science). Based on a psychophysics and neuroimaging experiment I conducted, I showed that lateral and medial prefrontal cortices have dissociable roles in switching between cognitive tasks (published in Journal of Neuroscience).

After a humanitarian break, I devised during my postdoctorate stay at ENS (Paris) a computational model showing the importance of neural oscillations in auditory cortex for speech perception (published in eLife): slow oscillations parse the speech acoustic signal into syllabic chunks, while fast oscillations carry the phoneme-related spectral details from each chunk. Two projects derived from this: we adapted the model into a neuromorphic algorithm that improves the automatic detection of syllable boundaries (a freely available toolbox was made available); I devised a conceptual framework to bridge mechanistic, mesoscopic and functional levels of neural cross-frequency coupling (published in Trends in Neuroscience).

During two successive postdoctorate stays at UPF and Idibaps (Barcelona), I devised computational models of perceptual decision-making based on non-human experimental data. I discovered that monkeys integrate evidence from different visual sources together prior to reaching perceptual decisions (published in eLife); and that rats behaviour flexibly integrate sensory evidence and recent history of responses and outcomes (in submission).

I have also developed model-fitting techniques to study cultural evolution from quantitative historical datasets. We notably found that economic development (a proxy for general affluence), not political complexity or population size, accounts for the timing of the emergence of spiritual religions at various places in Antiquity (published in Current Biology). In other words affluence has promoted the emergence of spiritual religions.

In 2017 I spent a research stay at Princeton University studying mechanisms of visual attention in temporal cortex during perceptual integration. I am currently an independent researcher (Jovenes Investigadores) at Universitat Pompeu Fabra, investigating the distinctive contributions of linear and oscillatory neural responses during sensory processing. My plan for future research is to use computational modelling of behavioural and neural data to unveil precise cognitive and dynamical principles underlying perception and decision-making.

#### Resumen del Currículum Vitae:

I have shown my versatility, maturity and leadership as a cognitive neuroscientist. I have published 12 peer-reviewed articles publications (and one non-peer reviewed), including 8 as first author (two as single author). These articles, published in the most influential journals in the field of computational neuroscience (Science, Current Biology, eLife, Journal of Neuroscience, etc.), cumulate 915 citations. Overall my work was presented 21 times in international conferences.

I have been awarded with several competitive research grants, including the Marie Curie IEF and the Mineco "Jovenes Investigadores" grants. Both projects as well as all my research in the last 4 years are based on personal original ideas. I have a strong commitment to teaching (during my PhD; and currently teaching statistics and computational neuroscience at bachelor and masters level). I have a growing experience in student supervision, including graduate and (upcoming) postdoctorate researchers. I have initiated and organize a winter school on modelling techniques for behavioural data. I have developed a worldwide network of collaborators in various fields (from Princeton University, UT Austin, ENS, Idibaps, etc.). These lead to impactful publications as diverse as innovative modelling techniques for modelling cultural evolution and new algorithms of automatic speech processing. I have participated in 7 research projects in France, Spain and USA, including four European funded projects. In conclusion, the collection of this experience opens the way for a new stage of my career as a group leader.



## AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2017

### Turno de acceso general

**Nombre:** RAPADO CASTRO, MARTA  
**Referencia:** RYC-2017-23144  
**Área Científica:** Psicología  
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#### Título:

STRUCTURAL AND NEURAL ACTIVATION PATTERNS UNDERLYING COGNITIVE DEFICITS IN YOUNG PEOPLE WITH NEURODEVELOPMENTAL DISORDERS: THE BASIS FOR DIAGNOSIS AND TREATMENT FOR COGNITIVE DISORDERS IN ADOLESCENCE

#### Resumen de la Memoria:

I am a Senior Research Fellow at the Child and Adolescent Psychiatry Department, University General Hospital Gregorio Marañón, IISGM and Centre for Biomedical Research in Mental Health (CIBERSAM); Assistant Professor at the School of Medicine, Department of Psychiatry, Complutense Madrid, Spain; and Honorary Research Fellow at Melbourne Neuropsychiatric Centre of the Department of Psychiatry, University of Melbourne in Australia.

I have been participating on research and clinical programs in Youth Mental Health since 2003 (27 research projects, 8 clinical trials). Since the completion of my PhD, I became specifically interested on identifying biomarkers and new targets for treatment.

I have been awarded a number of fellowships (11), as well as numerous grants (27), such as the 2016 NARSAD Independent Investigator Grant by the prestigious Brain and Behaviour Research Foundation (40 Grants per year for mid-career scientists worldwide/8 of them in Schizophrenia), or the 2012 Research Grant in Child and Adolescent Psychiatry by the Alicia Koplowitz Foundation, which is one of the few research grants for Research in Child and Adolescent Psychiatry in Spain (7 grants per year). The excellence of my research has been recognized by a number of national and internationally competitive fellowships (11), research grants (27) and awards (18) with the 2016 NARSAD Independent Investigator Award, 2016 SIRS Travel Award, 2014 ECNP Fellowship Award or the 2013 Young Investigator Award for Excellence in Research being among the most recent. I have published 65 papers (cited 813 times -average citations 12.51 citations/paper; h-index =14), 16 book chapters and 3 books.

I am currently establishing an area of research which tries to elucidate neurobiological correlates of cognitive function and symptoms in order to identify biomarkers and new targets for early intervention in psychiatry.

Cognitive impairment is a core feature and one of the most important prognostic variables of neurodevelopmental disorders that is not adequately treated by currently available pharmacological therapies. Exploring the underlying neurobiological mechanisms of cognitive function would lead to a more accurate description of the cognitive processes and the identification of new targeted areas of intervention that can result into a more specific therapeutic and preventive approach in cognitive disorders.

#### Resumen del Currículum Vitae:

I am a Clinical Neuropsychologist, a Senior Research Fellow in Youth Mental Health at the Child and Adolescent Psychiatry Department, University General Hospital Gregorio Marañón, IISGM and Centre for Biomedical Research in Mental Health (CIBERSAM); an Assistant Professor in Research in Mental Health and a Clinical Lecturer in Neuropsychology at the School of Medicine, Department of Psychiatry, Complutense Madrid, Spain; and Honorary Research Fellow at Melbourne Neuropsychiatric Centre of the Department of Psychiatry, University of Melbourne in Australia.

I obtained a M.Psych (accredited Health Psychology) at the UCM, Madrid (2004), Spain. I then completed a Doctoral and Master's Program in Neurosciences and Cognition (2006) and a PhD in Medicine (Neuroscience) (2009) at the Department of Neurology and Neurosurgery, Faculty of Medicine, University of Navarra, Pamplona, Spain followed by a Master's Degree in Research Methodology, Design and Statistics (2012) at the University Autonomous of Barcelona, Barcelona, Spain.

Since completing my PhD (2009), I have been concurrently employed in various positions of high responsibility, most of them related to child and adolescent mental health. These include work as a research fellow (2009-2010), clinical neuropsychologist (2008-2012), assistant director/research coordinator (2010-2012), associate professor/clinical lecturer (2015-2016), assistant professor (2010 to present), before being promoted to the position of research leader of the cognition in neurodevelopmental disorders research stream (2014 to present) at the Department of Psychiatry HGUGM.

In 2011 the Spanish Ministry of Science and Innovation awarded me with a Sara Borrell Health Research Fellowship to be undertaken at the Child and Adolescent Psychiatry Department (CAPD), IISGM, HGUGM (2011-2014) in Madrid (Spain), a national reference center in neurodevelopmental disorders research. The CAPD at the HGUGM is attached to the UCM and integrated within the translational and mental health research network CIBERSAM. As a part of this 4-year Fellowship, I completed a 2-years postdoctoral training based at the



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## AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2017

### Turno de acceso general

Department of Psychiatry at the University of Melbourne (UoM) in Australia. Initially based at Orygen, The National Centre of Excellence in Youth Mental Health for 6 months - Australia's first and most internationally recognised National Centre of Excellence in Youth Mental Health-, I was based at the Melbourne Neuropsychiatry Centre (MNC) for the completion of the training (1,5 year), an internationally recognized center for neuroimaging research into brain disorders (both attached to the Department of Psychiatry at the UoM).

Since commencing postdoctoral research, I have been awarded a number of national and internationally competitive fellowships (11), numerous grants (27) and awards (19). I have published 65 papers (cited 813 times -average citations 12,51 citations/paper; h-index =14), 16 book chapters and 3 books. To disseminate the results derived from my work I have delivered more than 70 invited oral presentations at major national and international conferences, as well as University Departmental Colloquia. These events allowed me to present my work around Europe, USA, and Australasia, and to establish collaborations with world experts in my field.

I am currently establishing an area of research, which tries to elucidate neurobiological correlates of cognitive function to provide cognitive treatment for neurod