Women in Neuroscience

Virtual Symposium

International Day of Women and Girls in Science

February 11th, 2021

Organized by:

UNIVERSITAT DE BARCELONA

Brainlab

cognitive neuroscience research group

grup de recerca en neurociència cognitiva

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Institut de Neurociències UNIVERSITAT DE BARCELONA

EXCELENCIA MARÍA DE MAEZTU

Neuroscience is a girl's thing, but not a woman's (yet)

There is a tendency to think that the gap between the number of men and women in science is already closing; however, the statistics provide us with data that indicate the opposite. In fact, nowadays, discrimination and bias against women scientists is more subtle and difficult to perceive. On the one hand, the number of women graduating from different universities around the world every year is still growing and, in some cases, far exceeds the number of men. However, when it comes to positions of highest responsibility and prestige within academic hierarchies, this ratio is reversed, and the number of women occupying these positions has been very low for the last 30 years.

On the International Day of Women and Girls in Science, we are organizing a Women in Neuroscience Virtual Symposium aimed to highlight the significance of the contributions of women in recent neuroscientific advances and acknowledge the difficulties and challenges that may have encountered during their scientific career. At the end of the symposium, we will hold a roundtable discussion where all the speakers will share their personal perspectives, experiences, ideas, and hopes for a more inclusive, equal-opportunities academia.

This symposium is organized by female PhD students of the Brainlab – Cognitive Neuroscience Research Group, and the speakers will be female neuroscientists at different stages of their academic careers. The symposium is addressed to mixed academic audiences and we hope that our speakers' talks will help to encourage women to move forward in their academic careers and inspire collaboration and mutual support and encourage men to support the change that is much needed in this field.

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Barcelona, January 2021

The PhD students of the Brainlab

Program

Time (GMT+1)	
9.00-9.15	***Welcome***
Session 1 **Chair: Sonia Arenillas-Alcón**	
9.15-10:00	**Introduction by Brainlab's PhD students** ***The sound of special places: Neuropsychology and emotion in rock art landscapes.*** Raquel Aparicio ***Prediction and memory processes in motor-sensory interactions.*** Stefanie Sturm ***Role of genes in modulating brain potentials associated with speech and musical processing.*** Giannina Puddu ***Encoding of speech sounds in newborns.*** Marta Puertollano
10.00-10.20	***Neural sharpening of predicted action-outcomes in Primary Visual Cortex*** Emily Thomas, PhD student, Birkbeck University of London, UK
10.20-10.40	***Orienting in an uncertain world: pupil-linked neuromodulation and temporal dynamics of expected and unexpected uncertainty*** Anna Marzecová, Post-doc, Verguts lab, Ghent University, Belgium
10.40-11.00	**Break**
Session 2 **Chair: Teresa Ribas-Prats**	
11.00-11.20	***Neural Processing and Perception of Speech in Children with Mild to Moderate Sensorineural Hearing Loss*** Axelle Calcus, Assistant professor, Université Libre de Bruxelles, Belgium
11.20-11.40	***Studying representation(s) of psychological time.*** Sophie Herbst, Junior PI, Cognition & Brain Dynamics lab, NeuroSpin, France
11.40-12.00	***Somatosensory perception during action.*** Konstantina Kilteni, Assistant Professor / PI, Touch and Tickle Lab, Karolinska Institute, Sweden
12.00-12.20	***Aging, inhibitory deficit, and auditory deviance detection.*** Maryam Aghamollaie, Assistant Professor, Shahid Beheshti University of Medical Sciences, Iran
12.30-12.45	**Break**

Session 3 **Chair: Natàlia Gorina-Careta**	
12.45-13.30	**Keynote Talk** ***Cortico-subcortico-cortical circuitry and the timing of sensorimotor behaviour.*** Sonja Kotz, Maastricht University, Netherlands
13.30-13.45	**Break**
Session 4 **Moderator: Nadia Paraskevoudi**	
13.45-14.45	**Round table** *Participants*: All the speakers ***Short intro on gender bias in academia*** ***Discussion and Q/A***

Keynote Speaker

Cortico-subcortico-cortical circuitry and the timing of sensorimotor behaviour

Sonja Kotz
Dept. of Neuropsychology and Psychopharmacology, Maastricht University, Netherlands

Sonja A. Kotz is a cognitive, affective, and translational neuroscientist who investigates the role of prediction in multimodal domains (perception, action, communication, music) in healthy and clinical populations using behavioural and modern neuroimaging techniques (E/MEG, s/fMRI). She holds a Chair in Translational Cognitive Neuroscience at Maastricht University in the Netherlands, heads the section of Neuropsychology, has multiple honorary positions and professorships (Manchester & Glasgow Universities, UK; Leipzig University, Germany; Washington D.C., Georgetown University, USA; BRAMS, Montreal, Canada; University of Lisbon, Portugal). She works for multiple funding agencies in Europe including the ERC as well as a senior editor for leading journals in the field of cognitive neuroscience.

Abstract:

While the role of forward models that predict the sensory consequences of an action highlight the role of the cerebellum, less is known about its contributions to the perception of complex dynamic signals. Considering temporo-cerebellar-thalamo-cortical circuitry and its respective connectivity patterns, cerebellar contributions should be further explored across domains as they (i) simulate cortical information processing and (ii) compare expected and actual outcomes of stimulations, leading to adaptation in cortical target areas. I will discuss frameworks and present empirical evidence encompassing action, perception, and communication in support of this idea.

Speakers

The sound of special places: Neuropsychology and emotion in rock art landscapes?

Raquel Aparicio
PhD student, Brainlab – Cognitive Neuroscience Research Group, Dept. of Clinical Psychology and Psychobiology, University of Barcelona, Spain.

Raquel Aparicio completed her B.Sc. in Psychology and studied her M.Sc. in Research in Behavior and Cognition at the University of Barcelona. She completed two internships and did her Bachelor's and Master's theses in collaboration with the Brainlab and under the supervision of Dr. Iria San Miguel. During that time, her research interest focused on the neural modulations reported for stimuli generated by our own actions compared to other types of sounds. Currently, she is a PhD Candidate in the Artsoundscapes Project under the supervision of Prof. Carles Escera and Prof. Margarita Díaz-Andreu. In this project, she is exploring brain activity patterns related to the psychoacoustics in selected archaeological rock art landscapes.

Abstract:

Hunter-gatherer and early agricultural societies around the globe might have believed that some landscapes were ensouled, leading them to create rock art. Could the sonic behavior of these landscapes be an essential component to this religious emotion? To answer this question, in the interdisciplinar ERC Artsoundscapes project we are exploring how the acoustics of rock art sites might modulate emotional responses to different types of sound (e.g., naturalistic sounds or musical pieces) compared to similar sites without rock art. To this aim, we have constructed an immersive psychoacoustics room to bring the acoustics of the sites of interest to the comfort of our laboratory. Moreover, we are investigating how comparable are the neural correlates of sound processing in rock art sites with states close to transcendence or meditation with electroencephalography. In this talk, I will discuss how we are measuring the variability in the emotional responses and the brain activity patterns of participants to different types of acoustics.

Role of genes in modulating brain potentials associated with speech and musical processing?

Giannina Puddu
PhD student, Brainlab – Cognitive Neuroscience Research Group, Dept. of Clinical Psychology and Psychobiology, University of Barcelona, Spain.

Giannina Puddu obtained her Bachelor's degree in Psychology in 2009 at the University of Tarapacá (Chile). In 2012 she got a Master's degree in Methodology of Behavioral and Health Sciences at the *Universidad Autonoma de Madrid* (Spain). In the period between 2012-2017, she worked at the *Instituto de Alta Investigación-Universidad de Tarapacá* (Chile) as a research support professional. In 2018 she obtained her second master's degree on Research in Behavior and Cognition at the University of Barcelona (Spain). Currently, she is developing her doctoral thesis in the evaluation of the role of genes in modulating brain potentials associated with speech and musical processing, under the supervision of Prof. Marc Via with the collaboration of the Brainlab-Cognitive Neuroscience Research Group.

Abstract:

It is a fact that individuals differ from each other in their ability to process sound, which can be seen in various contexts, for example skills related to speech (speech perception, ability to learn a new language and pronouncing it correctly) or musical ability (learn to play an instrument, detect different tones, listen to melody and identify their musical notes, etc). However, it is unclear what role genetic factors play in explaining these individual differences in sound processing. In order to answer this question, we must first understand how the auditory system works, how to encode the auditory signal into the different levels of the auditory hierarchy, and then evaluate whether the genetic variants explain these differences observed in sound processing.

Encoding of speech sounds in newborns

Marta Puertollano
PhD student, Brainlab – Cognitive Neuroscience Research Group, Dept. of Clinical Psychology and Psychobiology, University of Barcelona, Spain.

I pursued a Bachelor's degree in Psychology, along with a Master's degree in Cognitive and Behavioural Neuroscience, both at the University of Granada. My field of interest is Developmental Neuroscience. With my research, I expect to contribute in setting up new resources for prevention and intervention in cognitive development difficulties that appear in diverse conditions. Specifically, I see language as a crucial area for a healthy maturation in childhood and its development as the most important tool for the kid's adaptation to the real world.

Abstract:

The Frequency Following Response (FFR) is an auditory evoked potential that reflects neural activity in the auditory pathway from midbrain to cortex. This neural correlate mimics the eliciting stimulus and can provide meaningful information about language abilities and development as it reflects the neural mechanisms involved in speech-sound encoding. Our research is focused on the potential behind this response as a possible biomarker to evaluate speech and language neurodevelopment for early diagnosis in newborns. In collaboration with Sant Joan de Déu Barcelona Children's Hospital, our current endeavor aims at deciphering how speech sounds are encoded in the neonate's brain and whether defective neuronal speech encoding can predict neurocognitive impairment. The research program involves establishing the optimal speech stimuli and recording parameters to address different encoding challenges, identifying the genetic, metabolic and environmental factors that shape the neonatal FFR, and characterizing the normal and pathological development of the FFR.

Prediction and memory processes in motor-sensory interactions

Stefanie Sturm
PhD student, Brainlab – Cognitive Neuroscience Research Group, Dept. of Clinical Psychology and Psychobiology, University of Barcelona, Spain.

I am a PhD student in the Brainlab – Cognitive Neuroscience Research Group, working with Dr. Iria San Miguel and Dr. Jordi Costa Faidella on motor-sensory interactions and the role of agency. I study how real and illusory control over multisensory stimuli affects learning and memory. I use behavioural measures, eye-tracking, and EEG. I have a Bachelor's degree in linguistics and two Master's degrees in cognitive neuroscience.

Abstract:

Humans are able to relate the external consequences of their actions to themselves as the causing agents. The specific mechanisms underlying this important function are unknown. However, previous studies demonstrate that sensory responses to self-generated stimuli are attenuated compared to responses to externally-generated inputs. Although these effects have been traditionally attributed to motor-related prediction, they can also be observed in non-predictive contexts. This suggests that not only predictions, but also non-specific neuromodulatory mechanisms contribute to the observed self-generation effects. Self-generation also appears to have consequences for memory encoding: self-generated, predictable sound sequences, such as piano melodies, are more likely to be recognized on delayed recognition tests. However, some findings suggest that the saliency of unexpected stimuli improves their memorability. The main aim of our research is to investigate the neurophysiological mechanisms underlying self-generation effects (predictive processing, unspecific neuromodulation) and to examine whether and how motor actions affect the memory encoding of concurrent sounds. Our group works on three different but related questions: What are the effects of actions on the encoding and subsequent recall of discrete sounds and how is this modulated by the level of contingency between action and sound (i.e., contingency vs. coincidence)? How do actions structure the encoding of events into different self-generated and externally-generated memory representations? And how can we disentangle the effects of unspecific motor-based neuromodulation from the effects of agency and control on learning and memory? To address these questions, we employ different experimental paradigms while measuring event-related potentials, pupil dilation, and memory performance.

Neural sharpening of predicted action-outcomes in Primary Visual Cortex

Emily Thomas
PhD student, Action Laboratory, Centre for Brain and Cognitive Development, Birkbeck University of London, UK.

Emily Thomas completed her BSc in Psychology at the University of Lincoln in 2015 and studied her M.Sc. in Brain and Cognition at the Erasmus University Rotterdam, where she conducted research into the theory of Embodied Cognition. She is currently doing her PhD at the Action Laboratory at the Birkbeck University of London under the supervision of Clare Press.

Her research is based on the fact that we need to perceive the sensory consequences of our actions fairly accurately in order to interact successfully with our environment, such that we can make corrective actions when we detect unexpected outcomes, e.g., when a cup of tea is lighter than we expect. However, our perception is never perfect due to ambiguities in our environment or high computational processing demands. One way in which we may increase the accuracy of our percepts is to use our learned knowledge about the world - expectations - to guide our interpretation of our senses. Her PhD project is funded by the Leverhulme trust and is based on examining how expectation influences perception during action. She will investigate this predominantly for tactile and visual perception, using a range of psychophysics and neuroimaging methods.

Abstract:

Perception of expected action outcomes is thought to be attenuated, or 'cancelled'. Such a mechanism may be adaptive because surprising inputs signal the need to take new courses of action and update our models of the world. However, theories outside of action purport that predicted events are perceptually facilitated, allowing us to generate largely accurate representations of our noisy sensory world. Following some early indications that the predictive mechanisms deployed during action may operate according to general principles of perceptual prediction, we investigated what kind of neural mechanism generates these effects, as there is continuing controversy surrounding the relationship between predictive effects on the sensory brain and behaviour. Our results suggest that sensorimotor predictions do not appear to exhibit a qualitatively distinct influence on perception than other forms of prediction.

Orienting in an uncertain world: pupil-linked neuromodulation and temporal dynamics of expected and unexpected uncertainty

Anna Marzecová
Post-doctoral Researcher, Verguts Lab, Ghent University, Belgium.

I'm an FWO (Research Foundation – Flanders) post-doctoral fellow at Ghent University, Belgium, in Tom Verguts' lab. I'm interested in neurocognitive and neuromodulatory mechanisms of attention and decision-making under uncertainty. In my work, I use computational modelling, pupillometry, and EEG. I received my PhD in 2017 from Leipzig University. During my PhD, supervised by Erich Schröger and Sonja A. Kotz, I investigated how attention and perceptual expectations interact to shape visual perception. Before I started my PhD, I conducted research on cognitive functioning of bilinguals at Jagiellonian University, Kraków, Poland.

Abstract:

The concept of attention can be formalized as Bayesian inference about which spatial locations are considered to be relevant in the near future. Theoretical computational work (Yu & Dayan, 2005) proposes that attentional inferences may rely on estimating two forms of uncertainty, linked to distinct neuromodulatory systems. Expected uncertainty, signaled by acetylcholine (Ach), is thought to track the unreliability of predictive relationships within a familiar context. Unexpected uncertainty signals, originating from the locus coeruleus-norepinephrine (LC-NE) system, are elicited by sudden changes of the environmental context. Their specific behavioral consequences and underlying neurophysiological mechanisms are not yet understood. We combined computational modelling of behavior, pupillometry, and EEG measurements, with the aim to characterize temporal dynamics of uncertainty estimates, and to probe their link with neuromodulatory brainstem responses. Our results suggest that attentional orienting relies on Bayesian estimates of expected and unexpected uncertainty. These two estimates are distinctly tracked by phasic pupil size fluctuations, which supports the hypothesized links to neuromodulatory brainstem responses. They also appear to be characterized by different temporal profiles.

Neural Processing and Perception of Speech in Children with Mild to Moderate Sensorineural Hearing Loss

Axelle Calcus
Assistant professor, Université Libre de Bruxelles, Belgium.

After obtaining her PhD in 2015 at Université Libre de Bruxelles, Axelle travelled the world as a postdoctoral researcher for 5 years, funded both by individual fellowships and institutional grants. Throughout the years, she worked with Barbara Shinn-Cunningham (then at Boston University), Lorna Halliday, Stuart Rosen and Debi Vickers (then at University College London), and Christian Lorenzi (Ecole Normale Supérieure de Paris). Axelle has recently returned home as an assistant professor at Université Libre de Bruxelles (ULB), focusing on Auditory Cognitive Neuroscience. Her main research questions are: How do we hear in noisy backgrounds? How does auditory processing relate to language outcome during childhood? What is the effect of a hearing impairment on auditory processing abilities in children? Can we design better hearing aids to improve their perception of speech in noisy environments? She is looking forward to presenting a portion of my work on the developmental effects of a hearing loss on speech processing at the Women in Science Day Symposium 2021.

Abstract:

Mild (21-40 dB HL) or moderate (41-70 dB HL) sensorineural hearing loss (MMHL) can lead to persistent changes to the cortical processing of speech sounds (Calcus et al., 2019). However, to date no studies have examined speech processing at the subcortical level in children with MMHL. Moreover, the effects of amplification on the neural encoding of speech remain poorly understood, with previous data suggesting a benefit at the subcortical but not the cortical level. Here, subcortical and cortical EEG activity evoked by speech syllables were simultaneously recorded in 8- to 16-year old children with MMHL and age-matched NH controls. For the MMHL group, stimuli were presented both unamplified (70 dB SPL), and with a frequency-specific gain based on their individual audiograms. At the subcortical level, children with MMHL showed a smaller response than NH controls' in the unamplified condition. With simulated amplification, the response of the MMHL group was comparable to that of NH controls. At the cortical level, there was no significant mismatch negativity in children with MMHL presented with either unamplified or amplified speech. The neural processing of unamplified speech appears impaired at both subcortical and cortical levels in children with MMHL. Amplification may benefit auditory processing at subcortical but not cortical levels in this group. These findings will be discussed with respect to the neurophysiology and developmental trajectories of the auditory system.

Studying representation(s) of psychological time

Sophie Herbst
Junior PI, Cognition and Brain Dynamics Team, Cognitive Neuroimaging Unit INSERM (U922), NeuroSpin, Université Paris-Saclay, France.

Sophie obtained her PhD in 2014 at the Berlin School of Mind and Brain (Humboldt-Universität zu Berlin) under the supervision of Prof. Niko A. Busch, Prof. Elke van der Meer. Throughout the years, she worked as a Post Doc at the Max Planck Research Group Auditory Cognition (Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig) and at Research Group Auditory Cognition (University of Lübeck) under the supervision of Prof. Jonas Obleser and later at the Cognition & Brain Dynamics Group under the supervision of Dr. Virginie van Wassenhove (NeuroSpin, CEA, DRF/Joliot, INSERM, Cognitive Neuroimaging Unit). Since 2019, she has been working as a Junior PI in the Cognition and Brain Dynamics Team (NeuroSpin, CEA, DRF/Joliot, INSERM, Cognitive Neuroimaging Unit, Université Paris-Saclay). Her research focuses on implicit and explicit timing processes and specifically how implicit temporal predictions are formed from temporal statistics of auditory input, and how they are represented endogenously in neural, notably oscillatory dynamics. Furthermore, she investigates whether explicit and implicit timing rely on shared versus separable cognitive and neural mechanisms. Methods-wise her work relies on psychophysical modeling and time-resolved neuroimaging (M/EEG).

Abstract:

Time is one of the great mysteries of science. According to contemporary physics, no material substrate exists for time, yet, from a psychological perspective, there is no doubt that the human mind does represent time, for instance as the duration, synchrony, or order of events. We do notice when a note is slightly off beat when listening to a piece of music, or subjectively perceive time as dragging when waiting for the bus. Time is both implicit and essential for cognition, and explicit, that is consciously represented. In this short talk, I will discuss how in the Cognition and Brain Dynamics Team at Neurospin, we study how time is represented in the mind and brain in different situations using psychophysical experiments and magneto/electroencephalography.

Somatosensory perception during action.

Konstantina Kilteni
Assistant Professor and PI, Touch and Tickle Lab, Department of Neuroscience, Karolinska Institute, Sweden.

Konstantina studied Electrical and Computer Engineering in the National Technical University of Athens and she did her PhD studies in Health and Clinical Psychology using Virtual Reality in the Event Lab, at the University of Barcelona. Konstantina was a postdoc in the group from February 2015 to December 2019, funded in 2017-2018 by a Marie Skłodowska-Curie Postdoctoral Fellowship. In January 2020 she was promoted to assistant professor funded by a career development grant from the Karolinska Institutet. In May 2020 she set up her own independent group at the Department of Neuroscience from the Karolinska Institutet as principal investigator. She is currently awarded with some important grants and prizes, such as the StratNeuro Startup Grant in Neuroscience (2020-2022), the Swedish Research Council Starting Grant in Medicine and Health (2020-2024), the Karolinska Institutet Assistant professor position (2020-2026) and the Neural Control of Movement Scholarship (2020).

The main question of Konstantina's research is: Why can't you tickle yourself when we can be tickled by other people? No matter how hard you try, the resulting sensation will always feel less ticklish and less intense compared to the sensation produced by somebody else tickling you. Using state-of-the-art behavioral, neurophysiological and neuroimaging methods, her lab focuses on studying how the brain predicts the sensory consequences of our actions and the contribution of cerebellum and corticocerebellar connectivity in forming and updating these predictions. Given earlier evidence that predictive mechanisms are disturbed in patients with schizophrenia, they are particularly interested in the relationship between predictions and schizotypy personality traits in healthy subjects. Her current project will reveal the neurocomputational principles of tactile predictions and their relation to social cognition and schizotypal traits in healthy participants. Konstantina's lab research is expected to break new ground in the fields of motor control and social neuroscience and have important implications for schizophrenia research.

Abstract:

In recent decades, research on somatosensory perception has led to two important observations. First, self-generated touches that are predicted by voluntary movements become attenuated compared to externally generated touches of the same intensity (attenuation). Second, externally generated touches feel weaker and are more difficult to detect during movement compared to rest (gating). Researchers today often consider gating and attenuation to be the same suppression process; however, this assumption is unwarranted because, despite more than forty years of research, no study has combined them in a single paradigm. We quantified how people perceive self-generated and externally generated touches during movement and rest. We demonstrate that whereas voluntary movement gates the precision of both self-generated and externally generated touch, the amplitude of self-generated touch is selectively attenuated compared to externally generated touch. We further show that attenuation and gating neither interact nor correlate, and we conclude that they represent distinct perceptual phenomena.

Aging, inhibitory deficit, and auditory deviance detection.

Maryam Aghamollaie
Assistant Professor, Shahid Beheshti University of Medical Sciences, Iran.

Maryam received her BSc (2006) and MSc (2009) degrees in Audiology from Iran Medical University (Tehran, Iran). In 2015, she received her PhD in Audiology from Tehran University of Medical Sciences (Tehran, Iran). During her PhD program, she was awarded a scholarship for research stay abroad by Iranian Ministry of Health and Medical Education and spent a 6-month period in the Brainlab (Barcelona, Spain) working on a project related to the hierarchical processing of auditory deviance detection under supervision of prof. Carles Escera. Following the completion of her PhD, Maryam took a position as an assistant professor in the Department of Audiology at Shahid Beheshti University of Medical Sciences (Tehran, Iran). Here, she participates in clinical and classroom teaching with Audiology BSc and MSc students, supervises students for their Master's theses and serves as the director of Audiology service at Mofid Children's Hospital (Tehran, Iran). Maryam is also involved in research activities and has been awarded, as co-applicant or principal investigator, several research grants. Her research interest focuses on neural mechanisms underlying acoustic regularity encoding, speech processing and age-related plasticity.

Abstract:

Physiological aging is associated with changes in cognitive functions such as inhibitory control that might affect the ability of the auditory system in deviance detection. Previous studies have only examined the effects of aging on the higher stages of auditory deviance processing using Mismatch Negativity (MMN) brain potential. Now we know that auditory deviance detection also includes an earlier stage of processing in the time range of Middle-Latency Responses (MLR). However, the effects of aging on these early deviant-related response has not been clarified yet, although enhancement of auditory MLR amplitudes has been reported as a result of age-related inhibitory deficit in the central nervous system. In this talk, I will present a study I did in collaboration with Barcelona Brainlab addressing this issue. In this study, the MMN and the MLR deviance-related correlates were recorded in 33 young and 29 older adults watching a silent movie to pure tones presented as deviant stimuli in frequency oddball and reversed-oddball conditions.

Scientific & Organising Committee

Sonia Arenillas-Alcón

PhD student, Brainlab – Cognitive Neuroscience Research Group, Dept. of Clinical Psychology and Psychobiology, University of Barcelona, Spain.

Sonia Arenillas-Alcón obtained her Bachelor's degree in Psychology in 2016 at University of Seville (Spain), and one year later she completed a Master's degree in Neuropsychology at University of Salamanca (Spain). When finished, she started to work back at the University of Seville as a research technician at Laboratory of Animal Behavior and Neuroscience, involved in the study of the implications of corticostriatal projections in impulse control. In 2018, she began as a research assistant at Brainlab-Cognitive Neuroscience Research Group and Institute of Neuroscience (University of Barcelona, Spain), where she is currently a PhD student studying speech sound encoding mechanisms in newborns under the supervision of Prof. Carles Escera and Dr. Jordi Costa-Faidella.

Martina Cinca

Specialized Technician, Brainlab – Cognitive Neuroscience Research Group, Dept. of Clinical Psychology and Psychobiology, University of Barcelona, Spain.

Martina graduated in Law and Psychology at the University of Zaragoza and Barcelona respectively and later on she completed a M.Sc. in Research in Behavior and Cognition at the University of Barcelona. Martina joined the Brainlab - Cognitive Neuroscience Research Group as an undergraduate student and completed my Bachelor's thesis under the supervision of Prof. Carles Escera and the Master's thesis under the supervision of Dr. Iria San Miguel. Her Bachelor's thesis focused on auditory processing and language skills and her Master's thesis on predictive processing via motor-auditory interactions and how this processing interacts with memory. Currently, she is working at the Brainlab as a research assistant and her research focuses on the mechanisms behind the learning of action-effect associations.

Marta Font Alaminos

PhD student, Brainlab – Cognitive Neuroscience Research Group, Dept. of Clinical Psychology and Psychobiology, University of Barcelona, Spain.

Marta completed a Bachelor in Psychology and a M.Sc. in Research in Behavior and Cognition at the University of Barcelona. During these studies she had an internship at the Brainlab - Cognitive Neuroscience Research Groupwhere she worked on auditory processing and imagery for her Bachelor's and Master's thesis supervised by Prof. Carles Escera and Dr. Jordi Costa-Faidella. She also did a student assistantship in the Virtual Reality Laboratory supervised by Prof. José Guitiérrez Maldonado where she assisted on the validation of a virtual reality environment for the treatment of alcohol use disorder. Upon finishing her studies, she continued at the Brainlab as Research Assistant working on how repetition affects auditory processing in Autism Spectrum Disorder and on the emergence of prediction error along the auditory system. She is currently pursuing a PhD under the co-supervision of Dr. Iria SanMiguel and Dr. Jordi Costa-Faidella centered around the effects of self-generation on the episodic structure of the memory representation of sounds.

Natàlia Gorina-Careta

Specialized Technician, Brainlab – Cognitive Neuroscience Research Group, Dept. of Clinical Psychology and Psychobiology, University of Barcelona, Spain.

Natàlia Gorina-Careta obtained her BSc in Biomedical Sciences at the Universitat Autònoma de Barcelona in 2013, and one year later completed her MSc in Research in Behaviour and Cognition at the Universitat de Barcelona. Natàlia completed her PhD in 2019 at the Brainlab – Cognitive Neuroscience Research group under the supervision of Prof. Carles Escera, focusing her research on the processing of sounds along the auditory hierarchy. Throughout her study years she has collaborated with many laboratories, including the CIBBIM-Nanomedicine group from the VHIR (Spain), the Biomedical Sciences department from the Università degli Studi di Sassari (Italy) and the Centre for Interdisciplinary Brain Research of the University of Jyväskylä (Finland). Her research focuses on how sounds are processed in the subcortical structures of the auditory hierarchy, before they reach the auditory cortex, and on how the genetics and some environmental factors (i.e., the musical environment or toxic habits) can influence how the development of sound processing is modulated in newborns.

Samantha López

PhD student, Brainlab – Cognitive Neuroscience Research Group, Dept. of Clinical Psychology and Psychobiology, University of Barcelona, Spain.

Samantha López studied her BSc in Biology at the Autonomous University of Barcelona, and her MSc in Biostatistics and Bioinformatics at the University of Barcelona and the Open University of Catalonia. During her MSc, she collaborated as a data scientist with the Mathematical Biology Group of the Centre de Recerca Matemàtica (Bellaterra) and the Plant and Animal Genomics Group in the Center for Agrigenomics Research (Bellaterra). For her MSc final thesis, she developed a bioinformatics tool to identify potential target sequences in viral RNAs for the CRISPR/Cas13a system's diagnosis application 'SHERLOCK'. She is a founder of the biotech startup 'RheoDx' focused on hematology diagnostics using rheology, where she worked for 2 years as Scientific Director. She is currently carrying out research as a PhD Candidate in the Artsoundscapes Project, within the Cognitive Neuroscience Department of the Faculty of Psychology of Universitat de Barcelona, and under the supervision of Prof. Carles Escera Mico and Prof. Margarita Díaz-Andreu.

Nadia Paraskevoudi

PhD student, Brainlab – Cognitive Neuroscience Research Group, Dept. of Clinical Psychology and Psychobiology, University of Barcelona, Spain.

Nadia studied German Language and Literature at the University of Athens (2010-2014) and then she did a Master's in Cognitive Science at the same university (2015-2017). During the last year of her Master's, she joined the Multisensory and Temporal Processing lab (PI: Prof. Argiro Vatakis), working on projects related to multisensory, temporal, and rhythm processing. Since 2017, she has been also collaborating with Prof. John S. Pezaris (Harvard Medical School/Massachusetts General Hospital) in a project focusing on the importance of gaze contingency for visual prosthetics in blind individuals using simulations of artificial vision. In 2018 she started working as a research assistant at the Brainlab-Cognitive Neuroscience Research Group and one year later she started her PhD in Biomedicine at the University of Barcelona under the supervision of Dr. Iria San Miguel. Her research aims to assess the effects of self-generation on auditory processing from the angles of basic physiology, low-level sensory processing, and higher cognitive processes such as memory. Specifically, using psychophysics, pupillometry, and electroencephalography, she has been focusing on the neurophysiological mechanisms underlying the known self-generation effects (e.g., unspecific neuromodulation, specific prediction-matching) and their behavioural correlates.

Teresa Ribas-Prats
PhD student, Brainlab – Cognitive Neuroscience Research Group, Dept. of Clinical Psychology and Psychobiology, University of Barcelona, Spain.

Teresa Ribas-Prats graduated in Special Education and Psychology at the University of Barcelona in 2010 and 2015, respectively. At the same university, one year later she received her master's degree in Neuroscience. In 2017, she started her PhD in Biomedicine at the Brainlab-Cognitive Neuroscience Research Group and Institute of Neuroscience (University of Barcelona, Spain). Regarding her scientific contributions, in 2014 while she was in Granada with a travel scholarship award, she explored the cerebral mechanisms involved in the simple arithmetic automation at the Mind, Brain and Behavior Research Center at University of Granada (CIMCYC-UGR). In 2015, she collaborated with the Neuropsychology research group at the University of Barcelona to explore the executive dysfunctions and cerebral connectivity alterations in the cerebral palsy disorder. Since 2017, her scientific interests have been focusing on the speech processing characterization at the first days of life and on how it is affected in clinical populations such as those neonates being born small for gestational age or large for gestational age. To explore the encoding of complex sounds such as speech, she uses the electroencephalogram (EEG) technique, specifically, the auditory evoked potentials.