RESEARCHER OF THE MONTH

Weekly lab presentations!

More about us:
TALKS,
CONFERENCES,
PUBLICATIONS,
etc.

OUR LAB DIRECTOR
In the 'Prós & Contra' TV show

NEUROPSYCHOPHYSIOLOGY LAB, SCHOOL OF PSYCHOLOGY, UNIVERSITY OF MINHO, BRAGA - PORTUGAL
Replication, Reproducibility and “12 reasons research goes wrong” (Part 1)

Science News (Magazine issue, Vol.187, nº2. Jan 24, 2015) published a striking and thoughtful report on the need to reproduce and replicate experiments and how this is important to foster the science knowledge and research progress. This section starts with the debate around the use of Erythropoietin (Epo) for anemia caused by radiation and chemotherapy in cancer patients. Research in this domain fostered several controversial positions regarding the safe or harmful effects of Epo in these patients. This debate materialized the difficulty in replicate research findings among different laboratories, which is even more dramatic and evident if we consider life sciences and social sciences replication studies. In this line, Prinz, Schlange and Asadullah (2011), three researchers from Bayer company, reported an interesting analysis of their in-house projects - they were able to replicate only in ~20–25% of their projects (Believe it or not: how much can we rely on published data on potential drug targets? Nature Reviews Drug Discovery 10, 712, September 2011). Several explanations were raised as possible, namely incorrect or inappropriate statistical analysis, insufficient sample sizes in combination with the “strategy of claiming conclusive research findings solely on the basis of a single study assessed by formal statistical significance, typically for a p-value less than 0.05.” (Ioannidis, J. 2005. Why most published research findings are false? PLoS Medicine, Aug 2(8): e124, page 0696). This is also reflected in other issue from the Science News on the “12 reasons research goes wrong - Research never reported” that highlights the fact that negative findings are rarely published and the bias in selecting new articles with significant data, or as it is reported: “journals want new findings, not repeats or second-place finishers” (Magazine issue, Vol.187, nº2. Jan 24, 2015). In the next editorials I will present some of the other 11 reasons research goes wrong and highlight the influential paper by Ioannidis in 2005 and its 6 corollaries on the probability that a research result is in fact true.

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RESEARCHERS VISITING THE NPL

Prof. Yann Coello and Prof. Séverine Casalis visited the Lab in the context of the collaboration between our School of Psychology and the Université Lille 3 in the double degree Psychology Masters. They discussed short-term and long-term research and educational projects.
Ana presented her research on the neural correlates of empathy, morality and psychopathy. Ana discussed the work she developed during her PhD at UCL with Profs Essi Viding and Jon Roiser, where she studied how individual variability in neuro-cognitive correlates of empathic and moral processing are associated with individual differences in psychopathic personality traits and antisocial behaviour in the general population, as well as new ideas for her present postdoctoral fellow-
At the Neuropsychophysiology lab I work with Ana Mesquita in my master thesis studying the impact of early life experiences on oxytocinergic system modulation: implications on social behavior development. Our main goal is to evaluate how early life stress experiences can impact on social behaviors, using the maternal separation (MS) model to induce stress in rats. For this study we use two different separation intervals, during the weaning period, in which the pups are deprived not only from contact with the dam but also from food. With these separations we are mimicking early MS that happen to some children (that are institutionalized for example). There has being proved that in severe MS there are a broad of biological alterations. However it has never being studied the impact of more softer separations, specially as we do in our study, and we think that it is very important to point out alterations that happen when we induce stress and their implications on social behaviors. Oxytocin has being described as very important in social behaviors, namely in the first social interaction in mammals – the mother pup bond. At molecular level we intend to see if the expression levels of the oxytocin receptor are altered during these MS periods, and for that, we use molecular biology approaches in RNA extraction and performe RT (Real Time) PCRs. It was also conducted behavioral tests using the animals that are recorded for posterior observation using The Observer software. With these set of tests we intend to see if there are significant behavioral changes at a statistical level. Together, both behavioral and molecular results can connect the behavioral changes with biological alterations in the expression of the oxytocin receptor, linking social behavior development and oxytocinergic system modulation.
Empathy plays a crucial role in the maintenance of close bonds in general social relationships, but it’s particularly important in the context of romantic relationships, since partners rely heavily on each other’s support and validation. The empathic processes have been associated with important neural biomarkers, namely at the level of the autonomic nervous system (ANS), because empirical evidence have shown that ANS is very important to the affective experience and emotional expression. Almost all these studies have focused on the sympathetic branch of the ANS. However, due to the importance of regulatory skills for empathy, this master thesis is focused on the parasympathetic branch one. Thus, this study aims to fill a gap in literature and increase scientific knowledge about the phenomenon of empathy. In this presentation, the most important studies in the area, the method to be used, and the main goals and hypothesis of this study were presented.
In this presentation entitled: “Beyond the neurorevolution” Joana Coutinho discussed some issues that recently have been pointed out in the field of neuroscience both at the conceptual and methodological level. The presentation gave a particular focus to the controversies underlying neuroimaging methodologies, illustrating and discussing specific examples of concerns and critiques often made by the reviewers in this area.
For testing the effects of semantic expectation and semantic context different authors have been used the sentence completion task. The first work with this task was performed by Bloom and Fischler for understanding how words associations can be constrained by linguistic context. Norms for sentence completion are currently available for English, French, Spanish and European Portuguese. These norms are very important for several areas of research like human memory and neuroscience. The norms allowing us to understand the cognitive and neurocognitive mechanisms underlying processes of language comprehension and production. In this study we present a set of sentence contexts and their cloze probabilities for Brazilian children and adolescents. One hundred sentence contexts were presented to 296 children and 71 adolescents. Participants were asked to complete the sentence contexts with the first word that came to mind. The results showed that during development, there is a reduction in the number of errors, essentially syntactic errors; girls give less syntactic errors when compared with boys and culture seems to be an important factor.
Helga presented about functional near infra-red spectroscopy (fNIRS), a non invasive neuroimaging tool that measures haemodynamic response to neural activation. fNIRS measures absorption of near-infrared light projected to the scalp, providing measures of oxygenated hemoglobin, deoxy-hemoglobin and total hemoglobin. It is an ideal tool to study early brain development because of its resilience to movement artifact. Additionally it has a greater spatial resolution compared with event related-potential. The major limitation of this tool is that it only measures the cortical surface, not enabling the study of deep structures and circuits.


Our researchers Ana Mesquita e Patrícia Oliveira-Silva gave a talk titled "The influence of Biology on Psychology", organized by the Training Department of the Psychology Student Association, to the academic community and other interested public.
Atiana Conde Magro obtained a MSc degree in Clinical Psychology from University of Minho (2009). She joined our Lab in 2008 to make an internship in clinical neuropsychology, under the supervision of Prof. Adriana Sampaio. Since then she collaborated with Prof. Adriana Sampaio and Prof. Elena Garayzábal Heinze (Universidad Autónoma de Madrid) in some neuropsycholinguistic research projects in children with rare genetic syndromes – Williams Syndrome and Smith-Magenis.

She is currently undertaking a PhD in Basic Psychology (School of Psychology, University of Minho) funded by FCT, under the scientific supervision of Prof. Ana P. Pinheiro and Prof. Óscar Gonçalves. Her main interests lie on the neural correlates of self-recognition, particularly on the neurocognitive processes of voice identity in healthy and schizophrenia populations. During the PhD, she has developed and tested some experimental paradigms on the ERP correlates of voice identity processing with healthy individuals. Recently, co-authored with her mentors, she got accepted a review paper on voice processing disturbances in schizophrenia and its relationship with auditory verbal hallucinations. At this time, she is working on the preparation and submission of some manuscripts, which are part of her PhD thesis.
I’m Sofia Faria and I finished my Master’s Degree in Psychology last year, in University of Minho. I did my master thesis within the Neuropsychophysiology Laboratory, in the neuromodulation group, where I had been collaborating for 3 years, as a research collaborator. My thesis is entitled “Neuromodulating the interference process of concurrent learning of word lists: a transcranial Direct Current Stimulation Study” - an exploratory study that aimed to evaluate the impact of bilateral temporal stimulation in memory consolidation, when applied during an interfering memory task, in comparison with a placebo condition.

I decided to apply to the doctoral program because it will enable me to improve my abilities and provide quality education in several research areas and methodologies, contributing to my development as a researcher.

Although there are a wide range of topics I would like to investigate in the future, as memory, pain and addiction, at the moment my primary interests rely on plasticity and rehabilitation. I would like to evaluate the potential of tDCS in modulating basic cognitive processes that are affected in psychiatric disorders, as well as its rehabilitation potential as a complementary intervention method, therefore choosing the NPL. At the moment I’m still exploring and discussing the options for my final project with my supervisors, Professor Jorge Leite and Professor Sandra Carvalho. The working environment is very pleasant, the lab members and teachers are approachable and very supporting, contributing to a very constructive and enjoyable experience.
My name is Diana and I completed my master’s degree with specialization in clinical and health psychology at the Faculty of Psychology and Educational Sciences of University of Porto (2012). My research adventure initiated formally in 2008 when I received an integration into research grant to collaborate with the Language Research Group and, since then, I have been involved in different research activities.

In 2010, I moved to the Neuropsychophysiology Lab to develop the investigation for my master’s thesis. Also during this period, I did my curricular internship in the field of neuropsychological assessment and rehabilitation, and I also started to collaborate in the project of PhD student that aims to explore attentional bias associated with emotion in people with chronic pain. After finishing my degree, I started the professional internship of admission to the Ordem dos Psicólogos Portugueses, in which I continued my participation in the chronic pain project and worked in the psychology unit of a public school. Then I started working as a research assistant at the neurosciences department of the Life and Health Sciences Research Institute (ICVS).

In order to endure in this journey, the PhD level studies configure an important step, and the program offered by the School of Psychology is particularly appealing because of the high-level quality in terms of teaching, research projects and environment. Considering that my current research interests embrace the exploration of cognitive processes and associated neuropsychophysiological correlates, and also the study of cognitive assessment/rehabilitation strategies with ecological concerns, the Neuropsychophysiology Lab provide an appellative environment to face new research challenges in this context.

For now, I am in a phase of introspection about my interests and ideas for the PhD project, and I am very grateful that the program allows this flexible initial exploration. Till next time, I hope to have new progresses to share with you and I hope you enjoyed to know a little more about me!
Hi! My name is Sofia Esménio and I am one of the new students in the PhD program of Basic Psychology.

Previously I was working in an online platform called Patient Innovation intended to share and help develop new solutions/treatments discovered by patients.

I studied Biomedical Engineering in Instituto Superior Técnico in Lisbon, where I participated on a project/developed a thesis on Image processing applied to molecular distribution characterization in fluorescence microscopy images.

Right now I’m on the first year of my PhD under the supervision of the Professor Óscar Gonçalves and José Miguel Soares. I

In my PhD I wanted to make use of my technological background and together with methodological and conceptual knowledge in psychology use Neurofeedback training to improve voluntary regulation of localized brain activity and study its impact. This is why I choose this program and NPL. In the future I wanted to expand my knowledge and develop work in fMRI Neurofeedback.

Until now I have been really happy with my change to this town and specially to this research group. It has been demanding but ultimately a delightful experience thanks to all the support and help I have been receiving since the first day I arrived.
Our School of Psychology and the Université des Sciences Humaines et Sociales – Lille 3 established an inter-university cooperation agreement, aiming to promote and deepen academic activities, contributing to the development of training and research activities. In the context of this cooperation, our

My name is Aïsha Sahaï and I’m from Guadeloupe. I have moved to France for 5 years in order to study Psychology and I quickly got interested in cognitive Psychology. More precisely, my focus is how we perceive and process our external environment. I’ve came in Portugal in the context of the European master degree in Neurocognitive Psychology and Affective Sciences from the University of Lille. It’s a good opportunity to discover another lab and another country too. I’ve collected some electroencephalographic data in a healthy population in Lille during my first semester and now I’m in the NPL to analyze them with Prof. Ana Pinheiro. After my master graduation, I would like to carry on in the research area investing myself in a Ph.D.

My name is Alexander Castilla Ferro, I am from Colombia and I participated in the exchange program with the University of Minho. I am finishing off my Master Degree of Neuropsychology at the University of Lille 3 in France where I have focused my end of year dissertations of M1 and M2 on action and perception. When I realized that the second year of this masters’ Degree allowed me to travel abroad, I did not hesitate to seize that opportunity, so unique and valuable to one’s education. Even though the Portuguese culture is familiar to me, this particular chance to study at the University of Minho allowed me to be integrated into an international research-team, striving for innovation and excellence creating the ideal work environment.

Hi, I am Pauline Bertin and I am from the Université de Lille 3, in France. I became interested in cognitive psychology and neuropsychology some years ago. Previously, I worked in new words learning by fast-mapping method, in children and in children with specific language impairment. We used the visual word paradigm coupled to eye-tracking. This year, my study is focused on morphological processing in visual word recognition, in second language. Master PPNSA (Neurocognitive psychology and affective sciences) in Lille is an European Master and proposes a student exchange with Universidade do Minho and I really wanted to live this humanly and intellectually rich experience.
Our lab director, Adriana Sampaio, was invited by a Portuguese TV station to participate in a weekly debate show called “Prós e Contras”, in which a panel discuss every week a controversial and current topic. During the discussion on “Changing the Brain”, Prof. Adriana Sampaio pointed out that despite the widespread availability of powerful new methods for investigating brain structure and function, we should not forget the influence of the environment on the human personality and behaviors. She also had the opportunity to talk about the brain vulnerability during the adolescence, the impact of chronic stress on the recently discovered brain resting state networks, and the social and political
Matthew Lieberman, a renowned psychologist performing research in social neuroscience, is professor of biobehavioral sciences at the University of California (Los Angeles). In this book, he explains why he defends that people are more motivated to cooperate with others by the drive for social connection than by self-interest. For him, the humanity's need for social connections is a primary driver behind our behavior supported by complex biochemical mechanisms in our brain. Lieberman also emphasized that most of the time our brain turns to its lifelong passion...

“It turns out our brains have a passion of their own; we know this because the brain seems to devote nearly all of its spare time to one thing (...) our brains, when given a chance, almost all seem to practice the same thing (...) The brain did not evolve over millions of years to spend its free time practicing something irrelevant to our lives. Indeed, the discovery that the brain is constantly practicing something suggests that evolution has, in a sense, made a bet about the value of that particular thing (...) PEOPLE THINK ABOUT PEOPLE WHEN THEY ARE NOT OTHERWISE ENGAGED.”