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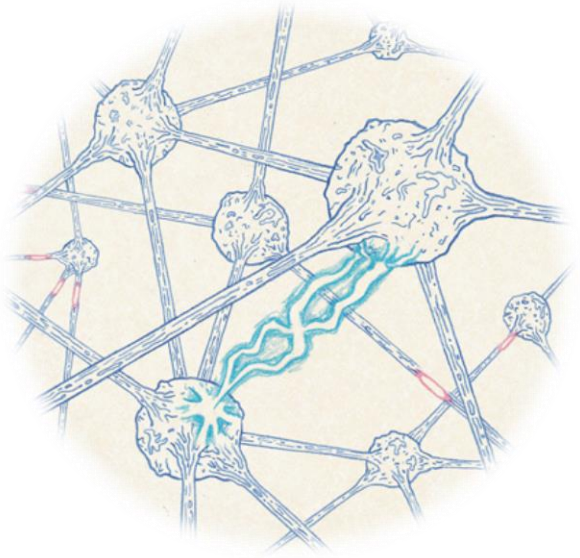

EDUCATION

University of Macau |Faculty of Health Sciences Bioimaging Laboratory & Centre for Cognition and Brain Sciences (August 2018- October 2021)

Doctoral degree awarded in Biomedical Sciences (Emphasis in Neuroscience),

Cumulative Grade Point Average: A, A-, (90-96/100 %)

Thesis entitled: On the Interplay of Affective-Cognitive Neural Plasticity:
Quantitative Electroencephalography-Guided tDCS Intervention in Mental Health amid the COVID-19 Pandemic. Electrophysiological Evidence in Resting State Networks

CRIAP Institute | Postgraduate Education & Psychiatric Hospital Julio de Matos Neurorehabilitation unit, Lisbon, Portugal (January 2012-December 2012)

Post-graduation degree in Assessment and Neuropsychological Rehabilitation

Internship in Neurorehabilitation unit – Psychiatry Hospital Julio de Matos, Lisbon

Cumulative Grade Point Average: 18/20

University of Coimbra |Faculty of Psychology and Educational Sciences, Coimbra, Portugal & Coimbra University Hospital / Sobral Cid Psychiatry Hospital (September 2004 - September 2009)

Integrated Master's degree in Clinical and Health Psychology; Bachelor's degree in Psychology

Thesis entitled: Distress Tolerance, Self-Esteem, Depression and Psychopathological Suffering: Implications in Eating Disorders

Cumulative Grade Point Average: 18/20; 14/20

EMPLOYMENT HISTORY - ACADEMIA

CElab led by Dr. Anna Ciaunica, Faculty of Sciences, University of Lisbon (October 2022-October 2023)

- Postdoctoral Fellow awarded in the framework of the research project: "The Interactive Self from Self-Consciousness to Social Interactions in Human and Artificial Agents" led by Dr. Anna Ciaunica (UL & UCL) and Prof. Antonia Hamilton (UCL)

Language Processing Laboratory led by Prof. Cai Zhenguang, Department of Language in Faculty of Arts, Brain & Mind Institute, Chinese University of Hong Kong (October 2021 -July 2022)

- Postdoctoral Fellow & Research Associate
- Main Research Project: Neurocognitive Mechanisms of Character Amnesia: neuroimaging, electroencephalography, and brain stimulation studies (HD-tDCS) - the project has received a strategic award grant in collaboration with the University College of London UCL
- Lab management (Volunteer Research Assistant/January 2021 - October 2021)
- Research supervision and research training
- Responsible for ethics applications and clinical trial registry

Research laboratory of Brain and Cognitive Sciences (CCBS) and Bioimaging laboratory led by Professor Zhen Yuan, Faculty of Health Sciences (FHS), University of Macau (August 2018 - October 2021)

- PhD student/candidate in Biomedical Sciences (Cognitive and Affective Neuroscience)
- Teaching assistant duties (Laboratory lectures) and research training

Main Research Projects:

<u>Affective & Cognitive Neuroscience</u>

- Quantitative Electroencephalography-Guided tDCS Intervention in Negative Emotion and Fear Extinction during Covid-19 Pandemic
- Optical Neuroimaging of Executive Functions Impairments in Food Addiction

<u>Cognitive Neuroscience</u>

- Effective connectivity study guiding the neuromodulation intervention in Chinese figurative language comprehension using optical neuroimaging
- Inter-brain synchronization during empathic communication between bilingual PT-EN speakers: an fNIRS-Hyperscanning based studies

Other projects and collaborations:

<u>Cognitive Neuroscience</u>

- Effect of tDCS on motor network activity during maximal handgrip contractions performed with dominant and non-dominant hands: an fNIRS study (headset development, experimental implementation, data collection, data processing)
- Collaborations in language, music and decision-making projects: fNIRS studies (conceptualization, paradigm design and data collection)

Bioimaging Core/ Neuroscience Group led by Professor Zhen Yuan at Faculty of Health Sciences, University of Macau (May 2016 – March 2018).

- Research Assistant in Cognitive Neuroscience

Research Projects

<u>Affective & Cognitive Neuroscience</u>

- Optical Neuroimaging of Executive Functions Impairments in Food Addiction

Cognitive Neuroscience

- Using EEG and fNIRS to explore the brain activation and connectivity associated with metaphor comprehension in Chinese mandarin speakers (collaboration between FHS and FED);

Journal Publications:

- **T. A. Couto,** Miriam Akioma, Hanran Li, Xiao Liang , Fei Gao , Zhishan Hu, Chenggang Wu, Zhen Yuan (2022). Do you feel what I am feeling? Social interactions might shape valence-oriented judgments and physiological activation during empathic exchanges: Inter-brain synchronization dynamics during naturalistic storytelling using fNIRS-based hyperscanning paradigm **(submission to Frontiers in Psychology).**
- **T.A. Couto,** Davis Lak, Zhen Yuan. (2022) The pandemic may be over, but the mental distress cost is far from coming to an end: Quantitative electroencephalography-guided tDCS neuromodulation intervention in negative emotion and fear extinction amid Covid-19 pandemic **(submission to Neural Plasticity).**
- **T.A. Couto**, Mengyun Wang, Yuan Zhen (2021). Optical Neuroimaging of Executive Functions Impairments in Food Addiction. **Journal of Innovative Optical Health Sciences (published).**
- **T.A. Couto**., Shiyang Xu, Chenggang Wu, Paulo Armada da Silva, Karl Neergaard, Mengyun Wang, Juan Zhang, Yutao Xiang, Yuan Zhen (2020). Effective Connectivity Study Guiding the Neuromodulation Intervention in Figurative Language Comprehension Using Optical Neuroimaging**. Neural Plasticity (published).**
- Shiyang Xu, LiXing Zhang, Ying Xuang, **T.A. Couto**, Zhen Yuan. Conducting Concurrent Electroencephalography and Functional Near-Infrared Spectroscopy Recordings with a Flanker task (2020). **JoVE (published).**
- Zhishan Hu, Juan Zhang, **T.A Couto**, Shiyang Xu, Ping Luan, Zhen Yuan. Optical mapping of brain activation and connectivity in occipitotemporal cortex during Chinese character recognition (2019). **Brain Topography (published).**
- Feng Mei Lu, Jing Dai, **T.A. Couto**, Zhen Yuan. Diffusion Tensor Imaging Tractography Reveals Disrupted White Matter Structural Connectivity Network in Healthy Adults with Insomnia Symptoms (2019). **Frontiers in Human Neuroscience (published).**

Conference posters and Oral Communication:

- **1st International Symposium on Addiction and Decision Making, 2021. Macau SAR** – Poster presentation
- **6Th Macau Symposium on Biomedical Sciences 2019. Macau SAR** - Poster presentation
- **FHS Symposium on Biomedical Sciences, 2019. Macau SAR** - Poster presentation
- **Neurology and Therapeutics Congress 2018. London, United Kingdom -** Oral presentation
- **Conference on Computation Inverse problems in Physics and Biomedicine, 2017. Macau SAR -** Oral presentation
- **4Th Macau Symposium on Biomedical Sciences 2017. Macau SAR -** Poster presentation
- **I Portuguese Congress of Neuropsychology. 2014. Lisbon, Portugal -** Poster presentation

EMPLOYMENT HISTORY - INDUSTRY

BRAINFIRST |Portuguese Institute of Neurotherapy Lisbon, PT (2014- 2016)

- **Clinical Psychology and Neuropsychology:** qEEG examinations, protocol design and implementation in LENS Neurofeedback, HEG training.
- **Target disorders:** Cognitive and vascular enhancement in Language-based learning disability, autism spectrum disorders/Down Syndrome, Brain Injury, ADHD, Migraines; Affective regulation in Depression and Anxiety disorders.

ENTREPRENEURSHIP/PRIVATE PRACTICE at Clinic Av 24, Labmed, Ambiformed, Porto Lisbon, PT (2010-2012)

- **Clinical Psychology:** Computerized Cognitive Assessment, Vienna Test System

PRIVATE PRACTICE. Porto, PT (2009-2012)

- **Registered/Specialist Clinical Psychologist:** license number 12985, Order of Portuguese Psychologists

CRIAP INSTITUTE, Porto and Lisbon, PT (2009 and 2012)

- **Clinical Psychology:** Clinical Psychologist; Pedagogical coordinator; Coordinator of internships in Neuropsychology Postgraduation.
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HOSPITAL INTERNSHIPS - Neuropsychology and Clinical Psychology

- **Douro Vouga Hospital Center EPE, PT –** Psychiatry Unit (summer internship /2005)
- **University Hospital of Coimbra, Sobral Cid Psychiatry Hospital, PT -** Psychiatry Units (1 year-2008/2009)
- **Psychiatry Hospital of Lisbon, PT -** Neurorehabilitation service (summer internship/2012)
- **Kings Hospital College, London UK -** Acute Stroke Unit (summer internship /2015)

RESEARCH INTERESTS

- Hyperscanning studies in empathic communication / affective neuroscience and social interaction
- Neural plasticity & cognitive enhancement: neuromodulation techniques
- Neuroimaging and connectivity analysis: Granger Prediction Estimation and auto-regressive bivariate modelling
- Virtual reality environments and digital solutions for cognitive enhancement
- Creative language for consumer neuroscience
- Neuroscience of creativity and artistic expression

ENGLISH PROFIENCY

English Proficiency (IELTS): 6.0 score/CEFR B2

PROFESSIONAL SKILLS

Research skills:

- Paradigm design and conduct experiments through EEG/fNIRS and brain stimulation devices (HD-tDCS and tDCS); Ongoing training in fMRI and TMS
- Paradigm design and conduct experiments through hyperscanning methodology - fNIRS-hyperscanning based studies.
- Conduct connectivity analyses (effective and functional connectivity);
- Experience with MATLAB toolboxes: Homer pre-processing, Brain net viewer toolbox, FC-NIRS pre-processing, Wavelength Transfer Coherence toolbox, Granger prediction estimation scripts.

- Coding experience in MATLAB with hyper scanning scripts
- Software experience with Techen/CW6, Neuroguide, Netstation, SPSS and Excel
- Pilot studies with MVGC, Bsmart and EEG lab packages/toolboxes
- Self-taught skills in VR neuroimaging paradigms
- Self-taught skills in development of VR environment to apply in neuroimaging and brain stimulation studies: language & art fields
- Conduct successful ethical applications and experience with clinical trials registry

Clinical skills:

- Experience in QEEG/ NEUROFEEDBACK for clinical practice
- Experience in neuropsychological assessment and cognitive rehabilitation (RehaCOM Cognitive Therapy Software)
- Experience in neuropsychological assessment (VIENNA TEST SYSTEM)
- Experience in DSM guided screening and cognitive-behavioural intervention: depression and anxiety disorders, eating and personality disorders

Service and Research training:

- Peer review contributions in several biomedical engineering journals (e.g., IEEE). Frontiers in Psychology; Neural Plasticity and Autism research.
- Research training - during the doctoral and postdoctoral years, I have provided research training in neuroimaging, neuromodulation, and MATLAB analysis to 1 Assistant Professor, 3 Ph.D. Student and 5 Master students.
- Laboratory lectures - during my doctoral years, I have conducted several laboratory lectures to undergraduate and graduate students in biomedical sciences and biological psychology courses about fNIRS experiments, neuroimaging paradigms, and brain imaging analysis.
- Coordinated weekly seminar series and symposium assistance in the Faculty of Health Sciences.

Art & Educational activities:

Creativity and artistic expression:

- Science communication project about art & science interplay to enhance brain plasticity and body-mind wellbeing (collaboration with Alpha Wellness Clinic in Hong Kong)
- Creativity and artistic expression: How these variables influence cognitive enhancement and psychological wellbeing. Project coordination and development of educational eBook (English and Portuguese versions available upon request)
- Former dancer and violinist (12-14 years); two awards in prose poetry: writing competition for high school students

Science Communication:

- Live experiment & talk about creativity and brain enhancement, Loft work, Hong Kong: Headspace: Creativity x Mindfulness x Neuroscience | Event | loftwork Inc.
- Host, Centre for Cognitive and Brain Sciences, Annual Workshop, University of Macau : CCBS holds the 1st Annual Workshop in Cognitive and Brain Sciences of University of Macau 2019 – University of Macau | Centre for Cognitive and Brain Sciences (um.edu.mo)
- Collaborator & Narrator, Jove: Conducting Concurrent Electroencephalography and Functional Near-Infrared Spectroscopy Recordings with a Flanker Task | Protocol (jove.com)
- Social network: Tania Alexandra Couto (researchgate.net); Tania Alexandra Couto (@tania_azhcouto) / Twitter

Funding

Funding agencies as a collaborator:

- Research grants MYRG2014-00093-FHS; MYRG 2015-00036-FHS from the Faculty of Health Sciences in University of Macau.
- FDCT 025/2015/A1 grants from the Macao government.
- Sabbatical grant SFRH/BSAB/150316/2019 from FCT, Portugal.
- Guangdong-Hong Kong-Macao Greater Bay Area Centre for Brain Science and Brain-Inspired Intelligence Fund (NO.2019011).