POLSKA AKADEMIA NAUK

I N S T Y T U T P S Y C H O L O G I I

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Institute of Psychology of the Polish Academy of Sciences

announces opening of research position in the SHENG 2 project

(project # 2021/40/Q/HS6/00219)

„Towards an integrative model of reward prediction error in substance and behavioural addictions: ERP study."

led by dr hab. Mateusz Gola

(Clinical Neuroscience Lab)

Position: Post Doc full-time in a research project;

Number of Positions: 1

SCIENTIFIC DISCIPLINE: Psychology / Neuroscience

Start of recruitment: 21st of July, 2022

End of recruitment: 31st of August, 2022

DESCRIPTION: We are looking for a creative person with proven expertise in EEG analysis who will join us (and Prof. Li's team from the Institute of Psychology of the Chinese Academy of Sciences) in a quest for explaining brain mechanisms of behavioral (computer games and pornography) and substance addiction (alcohol and amphetamines) and differences between them.

Employment time: 3 years (starting in September/October 2022)

Salary – 5 900 PLN monthly net[1]

1 The given amount applies to situations where the person does not receive a seniority allowance. If you receive a seniority bonus, the amount will change.

1. We invite people who:

• Have a PhD in: neuroinformatics, psychology, neurocognitive science, cognitive science, (or related);
• Experienced in EEG projects
• Experienced in the analysis of the EEG signal
• Advanced in statistical methods
• Proficient in Matlab or Phyton environment
• Prior experience with fMRI / MRI data (e.g. basic knowledge of SPM) is welcome (but not necessary)
• English at advanced level: both speaking and in writing (work in international research teams on daily basis);
• Experience in the independent scientific manuscripts writing (preferably documented with at least 2 first-author publications in JCR journals)

2. Responsibilities:

• Advanced analysis of EEG and behavioral data
• Scientific manuscripts writing
• A critical review of the scientific literature
• Supervision of doctoral students and research assistants
• Assistance in project coordination and scientific cooperation
• Participation in the meetings of the Polish-Chinese team
• Participation in scientific exchanges in China (2 to 4 weeks a year) and foreign conferences

3. We provide:

• work in a dynamic international team
• development - you will improve your research workshop and contribute to the development of knowledge about addictions;
• flexible working hours;
• possibility of trips abroad - we will gladly take you with us to the conference and teach you how to make great presentations;
• joint creation of new and useful knowledge for people

INTERESTED PEOPLE ARE ASKED TO SEND THE SCIENTIFIC CV WITH A MOTIVATION LETTER TO THE E-MAIL ADDRESS: iszumska@psych.pan.pl AND THE E-mail address of the IP PAN secretariat: sekretariat@psych.pan.pl by August 31, 2022 at the latest.

We reserve the right to contact only selected Candidates.

Please kindly add the following (or similar) clause to your CV:

I agree to the processing of personal data provided in this document for realising the recruitment process pursuant to the Personal Data Protection Act of 10 May 2018 (Journal of Laws 2018, item 1000) and in agreement with Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation)

Not agreeing to the above clause is tantamount to rejecting the application for formal reasons.

You have the right to withdraw your consent at any time. Withdrawal of consent does not affect the lawfulness of the processing which was carried out on the basis of consent before its withdrawal. Your consent is voluntary. The consent may be withdrawn at any time by sending an e-mail to the following address: sekretariat@psych.pan.pl

The administrator of your personal data is the Institute of Psychology of the Polish Academy of Sciences with its seat in Warsaw (00-378) at ul. Jaracza 1. In matters related to your data, please contact the Data Protection Officer, e-mail address; sekretariat@psych.pan.pl Personal data are processed in order to implement this contract, pursuant to art. 6 sec. 1 lit. a and b GDPR. The data will be stored for the time necessary to achieve the goal, for a maximum period required by law. The obtained personal data will be transferred only to public authorities or entities authorized to obtain data on the basis of applicable regulations. The data subject has the right to access his data, rectify it, delete it, limit processing, object to its processing, the right to transfer data, and the right to lodge a complaint with the supervisory authority. Providing data is voluntary, but necessary to achieve the indicated purpose.

Project description:

Substance addictions, together with rapidly growing behavioral addictions (e.g., gaming), generate many problems for addicted individuals and the social environment, and the Covid-19 pandemic only increased their prevalence. Addictive substances and behaviors act upon dopaminergic neurons to transiently increase extracellular concentrations of dopamine affecting motor activation, reward expectancy, and processing, as well as prediction error (PE) learning. PE – a mismatch between our expectations and the outcome of our actions increases phasic dopamine response, enhancing learning and allowing us to better predict future events and behavior. Unfortunately, it is still unclear how PE learning looks like in addiction as conducted studies revealed conflicting results, which have been interpreted in the context of two contradictory theories. One theory assumes that general reactivity to cues and reward is lower for individuals with addictions, possibly due to coexisting anhedonia. The other theory assumes that reactivity to cues which are related to specific addiction may be much higher for the addicted person than the healthy person due to sensitization.

In this proposal, we would like to focus on two things: (1) to investigate whether reactivity of the brain differs between addiction-specific and addiction-nonspecific cues (2) to investigate what is the role of anhedonia in possible lower brain activity. Based on recent findings and our preliminary data, we propose an integrative model of additive effects resulting in lower reactivity caused by anhedonia and at the same time, higher reactivity for cues specific for certain addiction.

We designed a series of 6 studies (4 cross-sectional and 2 longitudinal with over 800 participants in Poland and China) using electroencephalography (EEG) for assessment of feedback-related negativity (FRN), a brain activity component signaling PE. In the series of these 6 studies with people diagnosed with alcohol, methamphetamine, gaming, and compulsive sexual behavior disorders, we will compare FRN components in the addiction-specific and non-specific contexts among different types of addictions (substance vs. behavioral). Doing this across two different cultures (Poland and China), we will be able to evaluate the universal character of our potential findings.

If obtained results successfully replicate across different populations, labs, and cultures, this project will provide robust scientific evidence contributing to the field of addiction research with a theoretical framework integrating seemingly contradictory findings of previous studies, showing that both current theories may be complementary and related to the different aspects of addiction.