

POLISH ACADEMY OF SCIENCES
INSTITUTE OF PSYCHOLOGY

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Warsaw, 16th June 2023

PhD position offer

Social Neuroscience Lab, Institute of Psychology, PAS is looking for two individuals for the position of PhD student

We are looking for two individuals for the position of PhD student in a project called “*Lonely and selfish? Social decision making and loneliness - investigation with multimodal neuroimaging and experience sampling.*” funded by the National Science Centre, Poland (Grant No: 2022/46/E/HS6/00138). The project is led by Prof. Łukasz Okruszek, the Head of Social Neuroscience Lab, Institute of Psychology, Polish Academy of Sciences, Warsaw.

The project will investigate whether individuals with high levels of loneliness show decreased prosocial behavior compared to individuals with low levels of loneliness. In each of the three main studies, the participants will be asked to complete economic games (e.g. Dictator Game, Ultimatum Game) and/or social dilemma games (Prisoner’s Dilemma). The neural activity observed in participants during the procedure will be investigated with methods that provide either high spatial (functional magnetic resonance imaging; fMRI) or temporal (electroencephalography; EEG) resolution. In order to examine between-person interactions, the final study of the project will use EEG ‘hyperscanning’ to simultaneously record brain activity in two participants who will complete the naturalistic version of the economic and/or social dilemma games against each other. Additionally, the laboratory data will be supplemented with real-life surveys that will be sent to participants’ smartphones during a 7-day period between sessions which will produce a complex model of both what participants declare are doing and what they actually do in social situations.

The PhD students will be responsible for the preparation of experimental procedures; the recruitment of participants and promotion of the project; designing and conducting studies planned for the project; the analyzing of collected behavioral [data from behavioral experiments, survey data, ecological data collected with experience sampling method] and physiological [psychophysiological (ECG),

neurophysiological (EEG), neuroimaging (fMRI)] data; presentation of the results at conferences and preparation of publications.

The candidate's profile and requirements

Employment conditions: the PhD candidate will be selected according to the regulations on awarding scholarships in research projects funded by the National Science Centre. The PhD scholarship amounts to 240 000 PLN and is awarded for a period of 48 months (5 000 PLN per month).

We offer a position at a young, scientifically successful, interdisciplinary research team. In addition, a PhD student will be provided with a workstation and the opportunity to participate in specialized, international courses and workshops to further improve skills related to the project, as well as the possibility of attending international conferences.

PhD students will be employed full-time (40 hours per week). Other requirements for the candidates:

- Master's Degree in psychology, cognitive science, neuroinformatics, physics, mathematics, biology, biotechnology, or related science field, obtained at the latest by the end of September 2023 – the candidate will be required to be a doctoral student of the Graduate School for Social Research (the doctoral school of Institute of Psychology, PAS) by the 1st of October 2023
- high motivation to participate in each stage of the project: preparation of experimental procedures; the recruitment of participants and promotion of the project; designing and conducting studies planned for the project; the analyzing of collected behavioral and physiological data; presentation of the results at conferences and preparation of publications
- fluency in spoken and written English
- preferred experience in modeling behavioral and neural correlates of decision-making in economic games, e.g. using computational neuroscience methods
- due to its crucial role in the project, preferred experience in conducting studies and analyzing EEG data (event-related potentials, time-frequency, functional and effective connectivity analyses)
- experience in conducting studies and analyzing data using experience sampling method (ESM), neuroimaging (GLM, ROI, MVPA, functional and effective connectivity analyses) or psychophysiological (HRV analysis) data will be an additional asset
- preferred experience in advanced statistical analysis of behavioral and/or physiological data (e.g. linear mixed models, Bayesian modeling, joint independent component analysis, hyperscanning analysis)
- preferred scripting experience (e.g. MATLAB, R, Python)

Candidates should apply by attaching the following documents:

1. CV, which should include publications; grants, awards, scholarships, and fellowships; and other relevant information
2. A cover letter
3. Two recommendation letters
4. A copy of the Master's Degree diploma or equivalent certificate of graduation or an official document from the applicant's university stating when the defense of the MA/MSc thesis is due to take place
5. Proof of English language proficiency at level B2 or higher - the formal requirements can be found at <https://www.gssr.edu.pl/admissions/documents-checklist/>

Please submit your application to lukasz.okruszek@psych.pan.pl (Prof. Łukasz Okruszek) and sekretariat@psych.pan.pl with the subject: „Konkurs na stanowisko doktoranta – Okruszek - 2023 – **first and last name**”. The application deadline is **June 30, 2023 (10.00 a.m.)**.

The recruitment process will be carried out in two stages. During the first stage, the scholarship committee will evaluate the candidates' research achievements. The candidates with the highest final scores will be invited for an interview, which will constitute the second stage of the recruitment process.

The interviews will be scheduled between **3rd** and **7th July 2023** at the Institute of Psychology (Warsaw, Jaracza 1) or as an online interview. The recruitment results will be announced no later than July 10, 2023, and they will be published on <https://psych.pan.pl>.

Please include the following statement in your CV: “I hereby consent to have my personal data processed by the Institute of Psychology, Polish Academy of Sciences, with its registered office in Warsaw at Jaracza 1, for the needs of the current recruitment procedure in accordance with the General Data Protection Regulation of April 27, 2016.”

Information clause

Institute of Psychology, Polish Academy of Sciences, with its registered office in Warsaw at Jaracza 1 (00-378), is the controller of your personal data. The Institute's designated Data Protection Officer can be contacted via electronic mail at sekretariat@psych.pan.pl. The Institute of Psychology processes personal data based on Article 6(1)(a) and (b) of the General Data Protection Regulation. Your personal data will be stored for the time necessary to complete the recruitment process until September 30th, 2023. In connection with our processing of your personal data, you have the right to: access your personal data, correct your personal data, limit the processing of your personal data, and, if it is possible under the General Data Protection Regulation, also transfer them to another organization, to

object to us processing your data and to request that they should be erased. The processing of your personal data is based on your consent, you provide the personal data voluntarily. Your data will not be transferred to third countries. The recipients of your personal data may only be entities authorized to collect personal data based on the generally applicable laws.

Project description:

The idea that loneliness is associated with self-centeredness was first and, probably, most powerfully, presented by Hannah Arendt who spent a considerable part of 'The Origins of Totalitarianism' on discussing the way in which isolation and loneliness produce 'self-centered bitterness' and destroy human ability to 'act together in the pursuit of a common concern'. Over half a century later, a prominent psychologist, Prof. John Cacioppo built the Evolutionary Theory of Loneliness (ETL) around the association between loneliness and self-centeredness. As proposed by the ETL, loneliness, defined as a subjective mismatch between the available and preferred quantity and quality of social relationships, may be perceived as a signal that evolved to motivate reconnection with others. While, according to the ETL, this signal evolved to increase the motivation to reconnect with others, in the current, relatively threat-free, times such mechanism seems to produce a deleterious effect on our health and well-being, rather than increase reconnection chances. Prosocial behavior is among the outcomes which may be affected by the cognitive mechanisms induced by loneliness (e.g., increased focus on self-interest). The importance of investigating whether loneliness is associated with prosocial behavior was particularly evident with regard to the adherence to public policies introduced during the COVID-19 pandemics. Yet, the evidence linking loneliness and prosocial behavior is surprisingly sparse and far from conclusive. Thus, the project will investigate whether individuals with high levels of loneliness (HL) show decreased prosocial behavior compared to individuals with low levels of loneliness (LL). In order to determine it, we will use a widely known task called the Prisoner's Dilemma (PD). While originally stated with regard to the amount of jail time which may be sentenced to two criminals depending on their behavior during police investigation, the Prisoner's Dilemma may be easily generalized to any sort of game, where both players are encouraged not to cooperate (i.e., non-cooperation reward exceeds cooperation-reward regardless of the opponent's decision), but if both players decide not to cooperate they end up with worse reward than if they had both decided to cooperate. The project will include three main studies (MS1-MS3), during which HL and LL young adults (18-35 y.o.) will complete various versions of Prisoner's Dilemma (PD). MS1 (90 participants) will use joint analysis methods to investigate spatiotemporal components of neural activity observed in participants during the PD with methods that can either produce highly detailed maps of neural activity observed during specific processes (functional magnetic resonance imaging; fMRI) or capture changes of neural activity at the millisecond level (electroencephalography event-related potentials; EEG ERPs). The MS2 (90 participants) will use the information about the activity of brain networks associated with specific ERPs obtained during the MS1 to examine whether the characteristics of

situation or perception of the opponent have impact on the brain activity during the PD. During the MS2, participants will take part both in the classic version of the PD task which encourages competition between participants and in its modified version which encourages cooperation between participants. Moreover, before the PD task, participants will play the economic game with two players who will behave either in a trustworthy & cooperative or untrustworthy & selfish manner. This way, the impact of previous interaction on the participant's responses to other players during the PD will be tested. Finally, it has been emphasized that similar investigations need to shift their approach from 'spectator science' (passive observation of social stimuli under laboratory constraints) to 'second-person neuroscience' (simultaneous recording of brain activity during naturalistic between-person interactions). Thus, the final study of the project (MS3; 180 participants – 90 dyads) will use a method called EEG 'hyperscanning' to simultaneously record brain activity in two participants who will complete the naturalistic version of the PD task against each other. Finally, by supplementing the laboratory data from MS1-MS3 with real-life surveys that will be sent to participants' smartphones during 7-days period between session, we will produce a complex model of both what participants declare are doing, and what they actually do in social situations. Investigation of the mechanisms linking loneliness and prosociality may have implications which extend well-beyond the advancement of the social neuroscience field. Due to its impact on morbidity and mortality, loneliness is clearly a challenge for public health. Investigation of the factors which may sustain loneliness in young adults may thus be important for developing interventions aimed at reducing loneliness and its adverse health effects. Yet, the potential benefits of the project span beyond this. The COVID-19 crisis has clearly shown that understanding the factors underlying societal response to public policies aimed at collective interest may be of equal (or even higher) importance as developing technological solutions to emerging crises. Experimental social dilemma like PD task are believed to resemble a wide range of situations, in which the lure of the direct short-term self-interest may push all involved parties toward the collectively least preferable option. Examples of such situations include problems as diverse as commuting to work by car instead of public transportation or overuse of various environmental resources. Thus, the extent to which loneliness affects the ability to overcome self-interest for the common good may be of crucial importance, given the potential societal and economic burden of implementing such policies, e.g., to combat climate change.