SCIENTIFIC REPORT

***Mental health and academic adjustment of international and refugee students***

# Project code: PN-IV-P8-8.3-ROMD-2023-0316

* Scientific description highlighting the results of the annual phase and the degree of achievement of objectives;

The first phase of our project, according to the Implementation Plan, included the following thematic dimensions:

1. To identify the differences between international and refugee students in terms of the main study variables.
2. To identify the impact of academic stress, social support and coping mechanisms on the academic adjustment and mental health of the two groups of students.
3. To identify significant mediators of the relationships between post-traumatic stress and academic adjustment and mental health.

**Activity No. 1:** *Literature review and development of an updated research design to identify differences between international and refugee students from Romania and the Republic of Moldova in terms of academic stress and mental health*

Following a literature review, our research design was developed to encompass several socio-demographic and socio-psychological dimensions, which could provide a more comprehensive perspective on the academic adjustment and mental health of international and refugee students in Romania and the Republic of Moldova. In the first phase, we identified a number of socio- demographic and psychosocial parameters relevant for both international and refugee students, such as academic self-regulation and loneliness. In doing so, we proposed new hypotheses for the differentiation between the two groups, expecting, for example, academic self-regulation to be higher among international students, given that this student status is a moderator of the relationship between perceived stress and academic self-regulation.

Further, we identified a number of parameters specific to refugee students, such as exposure to events of violence and aggression specific to theaters of war and personal and/or material losses suffered due to war. We expect these to be among the strongest predictors of post-traumatic stress in separate regression analyses, an association moderated, however, by dimensions such as hope, resilience, and host country experience. Thus, we hope to identify concrete ways to support these populations by developing interventions (as we proposed for Study 3), but also by suggesting empirically tested courses of action to delineate a set of strategies that can be implemented by educational institutions hosting this category of students.

Finally, we expanded the set of potential mediators and moderators of the relationships between our core constructs. For example, we expect the relationships between post-traumatic stress and academic adjustment and mental health to be moderated by factors such as perceived

cultural distance, sense of psychological belongingness to the host school's educational institution, and culture shock, and mediated by physical health and academic self-efficacy, respectively.

The construct assessment instruments below were chosen based on their appropriateness to the target population. Thus, all scales and single-item measures have been adapted and subsequently used in studies of international and/or refugee students.

Our current plan includes assessing the following issues:

# Socio-demographic variables

* + Gender identity
	+ Age
	+ Socio-economic status
	+ Marital status
	+ Religious orientation
	+ Study level and host institution
	+ Family composition and current living situation (e.g. living with or apart from family members)
	+ Personal, social (such as the loss of a family member), and material losses as a result of exposure to war events (for refugee students only)
	+ Reasons for leaving home country and choice of current study institutions
	+ Dangers associated with traveling to the host country (for refugee students only)
	+ Language competences in Russian, Ukrainian, French, English, Romanian (Walther et al., 2020)
	+ Social and/or material, instrumental links with the host country
	+ Ethnic origin
	+ Perceived minority status
	+ Immigration expertise
	+ Physical living conditions in the host country and country of origin (e.g. rural/urban)
	+ Cultural identification
	+ Education and work experience

# Psycho-social variables of interest

* + Perceived cultural distance (Demes & Geeraert, 2014)
	+ Socio-cultural adaptation (Demes & Geeraert, 2014)
	+ Psychological adaptation (Demes & Geeraert, 2014)
	+ Acculturative orientation (Ryder et al., 2000)
	+ Culture shock (Mumford, 1998)
	+ Physical health status (Derogatis & Spencer, 1982)
	+ Loneliness (Wongpakaran et al., 2020)
	+ Acculturative stress, with the dimensions of perceived discrimination, homesickness, perceived rejection/hatred from those in the host country, fear of the social context in the host country, stress caused by changes associated with the host country, guilt towards family members and friends left behind in the home country (Sandhu, 1994)
	+ Academic self-efficacy (Chemers et al., 2001)
	+ Hope, measured with the Future Scale (Snyder et al., 1991)
	+ Human insecurity (Hamyel et al., 2014)
	+ Resilience (Smith et al., 2008)
	+ Multidimensional perceived social support (Zimmet et al., 1988)
	+ Solution-centeredness, with the dimensions of disengaging from current problems, goal orientation and activating internal resources (Grant, 2012)
	+ Students' academic self-regulation (Velayutham et al., 2011)
	+ Sense of psychological belonging to the educational institution in the host school (Goodenow, 1993)
	+ Perceived stress
	+ Academic stress (Wardstruthers et al., 2000)
	+ Symptoms of PTSD (US Department of Veteran Affairs)
	+ Academic adjustment, with dimensions of academic lifestyle, academic achievement, and academic motivation
	+ Well-being (Diener et al., 1985)
	+ Psychological health (PHQ-9)
	+ Anxiety (GAD-7)

**Activity 2 -** *Participant selection and data collection*

The target population of our study consists of refugee students and international students. A first consideration that has come to our attention is the accessibility of the measurement instruments to our prospective participants. In our field of work, a good understanding of the items is essential in order to obtain valid data that reflect the lived reality of our participants. Therefore, all these above- mentioned instruments were translated into five languages, which we concluded to be the languages preferred by our target group, based on discussions with our partners in the Republic of Moldova and with the International Relations Office of Al. I. Cuza University of Iasi, Nicolae Testemitanu State University of Medicine and Pharmacy in Chisinau and Grigore T. Popa University of Medicine and Pharmacy in Iasi. Given the high number of variables in our research plan, the translations and the challenge in accomplishing this task consisted in the need to recruit native speakers of Russian, Ukrainian and French. With the help of our collaborators in the Republic of Moldova, we finalized the translation and adaptation of the tools into Russian. As for the translation and adaptation of the tools into Ukrainian, the situation was more difficult, which caused delays in distributing the tools to the target population. With the help of refugee students enrolled in their first year at our faculty, we contacted a native Ukrainian speaker with excellent English language skills. He supported us by translating the instruments from English into Ukrainian at the end of November 2024.

Another challenge in distributing the toolkit that we had not initially anticipated was to identify international students from the Republic of Moldova currently studying in Romania, as they are not always found on the lists of international students at UAIC International Relations Office, as they often find it more comfortable to participate in the admissions competition as Romanian citizens, having dual citizenship (Romanian and Moldovan). Consequently, the solution for contacting them directly was to contact all the secretariats of the faculties of Al. I. Cuza University of Iași, Nicolae Testemițanu State University of Medicine and Pharmacy of Chisinau and Grigore T. Popa University of

Medicine and Pharmacy of Iași in order to obtain contact details of these students. As we cannot reward participants monetarily or with scores, in order to motivate them to complete such a high number of instruments, we intend to contact them personally or at least through the formal or informal groups of their graduating classes. In this way, we hope to achieve the highest possible participation in our study. At the moment, all our instruments are translated into all five languages, and our participants can opt to complete the instrument packet in the language with which they feel most comfortable.

A central deciding factor for the need to increase the sample sizes of international students and refugees was the expansion of the research design. Thus, along with the increase in the number of variables, the hypotheses of mediation and moderation increased in number. Since the theoretical models to be tested are more complex, we will use structural modeling equations, which implicitly also require an increase in the number of participants in order to capture these relationships. Therefore, in order to remove barriers to participation, we proposed and implemented the translation of the questionnaires into several languages and developed several strategies to recruit these populations. On the other hand, the extension of the research plan will lead to more scientific publications than we had envisaged in the realization plan - a minimum of two articles with an impact factor greater than 1.

The platform we have used for distributing the questionnaires is Google Forms, as it can also be used on mobile devices, and it is one of the most widely used platforms for distributing questionnaires in both countries - so our participants are likely to be familiar with it already. The form will be sent to the international offices of the three universities (Al. I. Cuza University of Iași, Nicolae Testemițanu State University of Medicine and Pharmacy of Chisinau and Grigore T. Popa University of Medicine and Pharmacy of Iași), who will forward it to the refugee and international students respectively. The next step is to send it to all the secretariats all the faculties of these universities with the request to distribute it to the year and group heads, who will further distribute the form to their year fellows. In addition, in the second half of December and in January, our students who are members of student associations (e.g. Union of Romanian Students) will also distribute the form to other members of the association, who will in turn distribute the link to their personal and professional networks at other faculties. In addition, with their help, we are going to contact associations that have provided support to refugees in both countries (Romania and the Republic of Moldova) in order to increase the number of respondents. We anticipate to complete the data collection phase by the end of January 2025, and in February 2025 to analyze the data and draft at least one manuscript for submission for publication in a journal with an impact factor greater than 1, in line with the implementation plan. These are the reasons why **Activity 1.3.** *- Data analysis and manuscript writing* - has not yet been completed. We are confident that we can cumulate it with the activities in the next step, as the literature review we conducted for this study is also useful for the development of the interview guide for the next study (Step 2). In addition, we are yet to have enough contact details of potential participants for studies 2 and 3, so that we can save time in both Step 2 and Step 3 of the implementation plan.

As a deliverable, we aimed to have the manuscript for the first study finalized and submitted for publication. For the reasons stated above, we will be able to achieve this goal at the beginning of the second phase. However, as the literature review has been systematically and rigorously conducted, its results have already been presented by us at the 8th East-European Mental Health Conference *In*

*and Out of Your Mind,* the 4th International Congress of the SPNPPC. Based on the results of the whole team's efforts, we gave a presentation entitled *Contemporary Challenges In Student Academic Functioning: Diversity, Health and Quality of Life* in October 2024. The links with information about this scientific event are: [http://sanatatemintala.md/ro/congres-ro/congres-2024,](http://sanatatemintala.md/ro/congres-ro/congres-2024) <http://sanatatemintala.md/images/congres%202024/Abstract%20Boof%202024%20cu%20coperta.p> df. Although this activity was not foreseen in the project plan, we consider that it can be included in the deliverables for this phase.

The literature review, the extension of the research design, the selection of new variables and the selection of the most appropriate instruments for our population, as well as their translation into the five languages were carried out together with our collaborators in the Republic of Moldova. The research internships foreseen in the Action Plan have been carried out and have been very helpful both in the practical aspects of the research and in establishing, strengthening and organizing our working relationships.

In the first phase of the project, as proposed in the implementation plan, research internships were carried out for all team members from the Republic of Moldova as follows:

1. From 1.09.2024 to 15.09.2024, Ms. Jana Chihai, Partner 1 (P1) was carried out a research internship. The activities carried out together with her were mainly focused on the conceptualization of the first study, the organization of the work of the team in the Republic of Moldova and the coordination of the two teams. Her professional expertise in the field of mental health as well as her extensive experience with different socio-cultural backgrounds were central pillars for planning our new research directions.
2. Between 1.09.2024-30.09.2024, Alina Bologan and Andrei Eșanu, PhD members of the team from the Republic of Moldova, accompanied Ms. Jana Chihai to Romania. They were the main beneficiaries of the trainings carried out during this period and detailed below. Together with the postdoctoral fellows from Romania, they identified more than 600 relevant publications for literature review, starting from 225 search terms (exemplified in Table 1) for the concepts of interest. Moreover, they extracted a wide range of variables of interest from these publications, based on grids designed to optimize this process. Subsequently, in face-to-face as well as online working sessions, attended by all team members, we designed the final research plan, which includes the variables mentioned in the first part of this report.
3. Between 1.10.2024-15.10.2024, Victor Șchiopu, postdoctoral research fellow, carried out his research stay. His visit brought additional value to the project by deepening inter- institutional collaboration. Thus, he facilitated the integration of regional perspectives specific to the two countries, providing applied expertise on the socio-cultural context of refugee and international students. This internship contributed significantly to accelerating the progress of the project through more effective coordination of activities, constant academic advice and knowledge transfer within the joint research team.

The research traineeship in Romania brought significant benefits for the efficient running of the project, strengthening the collaboration between the two teams of researchers through an intensive and well-coordinated working process, carried out in a stimulating and professional academic environment. The internship activities allowed the establishment of a detailed project plan, including

milestones, timetable of activities and division of responsibilities between team members. The specific objectives of each research stage were also clarified, which ensured a coherent and efficient methodological alignment. Working collaboratively, teams conducted literature reviews, exchanging perspectives, sharing specific expertise and identifying relevant sources from international databases. This constant academic exchange helped to develop a deeper understanding of the topic under investigation and to strengthen an interdisciplinary view on the subject. This process led to the selection of relevant variables for international students originating from the Republic of Moldova and refugee students from Ukraine, taking into account their common socio-cultural particularities, such as adaptation to a new educational system, social integration, language skills and factors associated with emotional and academic well-being. The direct interaction facilitated a deeper understanding of the specific context of these students, giving teams the opportunity to adapt the research design to better reflect the challenges and resources available. Through this process, clear hypotheses, well-calibrated data collection tools, and detailed analysis procedures were developed that were appropriate to the overall project objectives.

Within our project, one of the main objectives was to support the development of the team of researchers in the Republic of Moldova by organizing specialized training sessions. Although we aimed to carry out two training sessions in the implementation plan, we carried out six, based on the needs identified by the Moldovan team:

1. **The objectives of the project**, which discussed the initial research plan, the theoretical underpinning of the research hypotheses, study methods and anticipated results, based on the literature.
2. **Strategies for searching specialized publications in databases**, in which Boolean operators and their use in international databases were presented and illustrated, applied to the variables presented in the first training.
3. **Systematic review of the scientific literature,** in which we presented PRISMA, Prospero, Revman.
4. **Complex statistical analysis (3 sessions of 4 hours each),** in which we presented and practiced averaging, moderation, moderated averaging, structural modeling equations in Jamovi and R.

The training sessions followed the realization stages of the project, aimed at developing skills in conducting systematic reviews of the literature using modern and efficient methods, as stipulated in the realization plan. The training included several key aspects of the systematic review process, starting with the clear delineation of research objectives and the formulation of specific questions according to the current methodological principles. We discussed the rigorous criteria for inclusion and exclusion of studies as well as the use of advanced search strategies in international academic databases.

Another central aspect of the trainings was to introduce participants to the use of specialized software tools for managing and organizing bibliographic references, such as Zotero and Mendeley. This component was particularly useful for the team of researchers from the Republic of Moldova, providing them with practical resources to streamline the process of analyzing and synthesizing literature data. For example, Zotero was presented as a free and accessible platform useful for storing, organizing and sharing bibliographic references. We demonstrated functionalities such as

automatic saving of sources from online databases, automatic generation of bibliographies in different academic styles, and team collaboration by creating shared groups.

In addition, an important component of the trainings was the use of Boolean operators in the literature search process. We explained the use of operators such as AND, OR and NOT to combine or narrow search results, increasing the relevance and specificity of the identified studies. For example, the use of the AND operator allows finding articles that simultaneously contain multiple terms of interest, while OR expands the search to include papers containing any of the specified terms. The NOT operator was presented as a means of excluding irrelevant terms, to weed out studies that do not meet the selection criteria. These techniques were applied in practical exercises, thus reinforcing participants' search skills.

We also covered methods for critically appraising the quality of the identified studies using standardized evaluation grids, and discussed narrative synthesis and meta-analysis techniques. The interactive sessions allowed for immediate application of the knowledge gained, with participants having the opportunity to draft preliminary sections of a systematic review on a topic of common interest to the project

A key segment of the trainings focused on strategies and protocols for systematic literature reviews, including systematic reviews and meta-analyses. We presented the essential steps for conducting a systematic review, starting with the development of a clear research protocol that defines the study questions, inclusion criteria, and methods of analysis. The importance of registering this protocol in international databases, such as PROSPERO, to ensure transparency and prevent duplication of similar studies was emphasized.

In terms of meta-analysis, we discussed the key steps of this process, including the selection and coding of relevant data, the calculation of size effects and the application of statistical methods to integrate the results. We emphasized the usefulness of software tools such as RevMan and Comprehensive Meta-Analysis for conducting these analyses. Participants were instructed to interpret the results through forest plots and heterogeneity tests, thus ensuring a complete and detailed understanding of the meta-analysis process.

Another important set of trainings focused on complex quantitative analyses, including moderation models, averaging, moderated averaging, and structural modeling equations (SEM). These sessions aimed to familiarize participants with advanced statistical techniques essential for testing complex hypotheses and exploring relationships between variables of interest. The emphasis was on explaining the theoretical principles of each technique, followed by practical applications using specialized programs such as SPSS, R and Jamovi.

In the trainings, participants learned how to specify moderation and mediation models, test for direct and indirect effects and interpret the regression coefficients obtained. We also discussed advanced methods to validate models by analyzing fit indices such as Chi-square, CFI, TLI and RMSEA. Practical exercises included examples applied on simulated data and real data relevant to the project topic.

These training sessions brought significant benefits to the team of researchers from the Republic of Moldova, providing them with advanced statistical tools necessary for formulating and testing

complex hypotheses in the project. This knowledge contributed directly to the planning stage of the research, allowing a more precise specification of theoretical models and the choice of relevant variables for international and refugee students. Collaboration was thus strengthened through a better shared understanding of analytical methods, ensuring a solid methodological alignment between the two research teams.

Through these trainings, the team of researchers from the Republic of Moldova acquired both in- depth theoretical knowledge and practical skills necessary to conduct quality research in the field of academic adjustment and well-being of international and refugee students. This first step in our collaboration has created a solid foundation for future joint research activities, strengthening the methodological basis for rigorous and relevant studies.

# Table 1

*Examples of search terms used for literature reviews*

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| "academic performance" AND "sense of security" AND "coping mechanisms" AND "acculturative stress" AND "refugee university students" AND ("posttraumatic stress" OR "post-traumatic stress") AND "mental health" AND "academic stress" |
| "sense of security" AND "social support" AND "acculturative stress" AND "refugee university students" AND ("posttraumatic stress" OR "post-traumatic stress") AND "mental health" AND "academic stress" |
| "academic performance" AND "sense of security" AND "acculturative stress" AND "refugee university students" AND ("posttraumatic stress" OR "post-traumatic stress") AND "mental health" |
| "academic performance" AND "sense of security" AND "refugee university students" AND ("posttraumatic stress" OR "post-traumatic stress") AND "mental health" AND "academic stress" |
| "coping mechanisms" AND "acculturative stress" AND "refugee university students" AND ("posttraumatic stress" OR "post-traumatic stress") AND "mental health" AND "academic stress" |
| "sense of security" AND "acculturative stress" AND "refugee university students" AND ("posttraumatic stress" OR "post-traumatic stress") AND "mental health" AND "academic stress" |
| "academic performance" AND "sense of security" AND ("academic adaptation" OR "academic adjustment") AND "refugee university students" AND "mental health" AND "academic stress" |
| "social support" AND "acculturative stress" AND "refugee university students" AND ("posttraumatic stress" OR "post-traumatic stress") AND "mental health" AND "academic stress" |
| "sense of security" AND "coping mechanisms" AND "refugee university students" AND ("posttraumatic stress" OR "post-traumatic stress") AND "mental health" AND "academic stress" |
| "academic performance" AND "sense of security" AND "acculturative stress" AND "refugee university students" AND ("posttraumatic stress" OR "post-traumatic stress") |
| "sense of security" AND ("academic adaptation" OR "academic adjustment") AND "refugee |

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| university students" AND "mental health" AND "academic stress" |
| "sense of security" AND "social support" AND "acculturative stress" AND "refugee university students" AND "mental health" AND "academic stress" |
| "social support" AND "acculturative stress" AND ("posttraumatic stress" OR "post-traumatic stress") AND "mental health" AND "academic stress" |
| "acculturative stress" AND ("posttraumatic stress" OR "post-traumatic stress") |
| "sense of security" AND "coping mechanisms" AND "refugee university students" |
| "acculturative stress" AND "refugee university students" AND "mental health" |
| "coping mechanisms" AND "refugee university students" AND "academic stress" |
| "sense of security" AND "social support" AND "refugee university students" |
| "academic performance" AND "sense of security" AND "coping mechanisms" AND ("academic adaptation" OR "academic adjustment") AND "international university students" AND "mental health" |
| "academic performance" AND "sense of security" AND "social support" AND ("academic adaptation" OR "academic adjustment") AND "international university students" AND "academic stress" |
| "academic performance" AND "coping mechanisms" AND ("academic adaptation" OR "academic adjustment") AND "international university students" AND "mental health" AND "academic stress" |
| "academic performance" AND "sense of security" AND ("academic adaptation" OR "academic adjustment") AND "international university students" AND "mental health" AND "academic stress" |
| "academic performance" AND "sense of security" AND "social support" AND ("academic adaptation" OR "academic adjustment") AND "international university students" AND "mental health" |

* A summary of progress (deliverables achieved, result indicators, dissemination of results, justification of differences if any)

In short, the results of the first phase were disseminated at the 8th East European Mental Health Conference *In and Out of Your Mind,* the 4th International Congress of the SPNPPC, in the presentation entitled *Contemporary Challenges In Student Academic Functioning: Diversity, Health and Quality of Life* in October 2024. Links with information on this scientific event are: [http://sanatatemintala.md/ro/congres-ro/congres-2024,](http://sanatatemintala.md/ro/congres-ro/congres-2024) <http://sanatatemintala.md/images/congres%202024/Abstract%20Boof%202024%20cu%20coperta.p> df. Although this activity was not foreseen in the project implementation plan, we consider that it can be included in the deliverables for this phase. The research internships for the Moldovan team were carried out according to the implementation plan. Trainings were supplemented to

accommodate the needs of the research team members. The research plan has been significantly expanded based on the literature review, now including more complex theoretical models that will be analyzed using structural modeling equations. Consequently, the sample size needs to be made larger (minimum 400 participants in each category - international students and refugees). In order to increase the chances of collecting such a high number of responses from a special population, the recruitment strategies also had to be diversified: the questionnaires were translated and adapted into 5 languages (English, Romanian, French, Russian, Ukrainian) to allow participants to adequately understand the meaning of the items in the toolkit and to be able to respond as validly as possible according to their experience. These 5 languages are the most widespread languages among the target population. We have devised new strategies to contact these categories of students directly, with the help of collaboration with multiple relevant administrative units. The distribution of the tools will start next week. Thus, the proposed deliverable for this stage, i.e. a manuscript submitted for publication, is not finalized, but by extending the research plan, we hope to obtain 2 such deliverables as a result of the collective efforts made since this stage. The rigorous documentation carried out for this stage will significantly decrease the time needed to go through this work in stages 2 and 3, making our plan to complete the project on time feasible.

* An executive summary of the activities realized during the implementation period (max. 1 page). It may be published by the Contracting Authority on the web page of the competition.

In the first phase of our research and collaboration project, we have carried out the following activities according to the realization plan:

* 1. *Literature review and research design development.* Our research design was developed to encompass several socio-demographic and socio-psychological dimensions that could provide a more comprehensive perspective on the academic adjustment and mental health of international and refugee students from Romania and the Republic of Moldova and their associated psychological mechanisms.
	2. *Participant selection and data collection.* The construct assessment instruments in our research design were chosen based on their appropriateness to the target population. Thus, all single-item scales and measures were adapted and subsequently used in studies of international and/or refugee students. They were translated and adapted into the five most commonly used languages among the target population: Romanian, Russian, Ukrainian, English, French. For direct access to participants, several administrative units associated with the partner universities and other universities, as well as associations with an area of activity relevant to the target population were contacted.
	3. *Research internships.* Four research internships were carried out, during which we had the opportunity to collaborate physically with all partners in the Republic of Moldova. We have increased the training sessions initially proposed for this phase from 2 to 6, based on the needs identified by the team members. Through these trainings, the team of researchers from the Republic of Moldova acquired both in-depth theoretical knowledge and practical skills necessary to conduct quality research in the field of academic adaptation and well- being of international and refugee students. This first step in our collaboration has created a solid foundation for future joint research activities, strengthening the methodological basis for rigorous and relevant studies.