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Sociocultural Adjustment of Foreign Students to the Educational Ecosystem of North-Western Medical University Named After I.I. Mechnikov

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ABSTRACT

BACKGROUND: Before the age of social digitalization, the internationalization of higher education was a fragmented process, involving only some areas of the academic environment. Over the last 50 years, as a result of the changes caused by globalization, the international status of a university has become a factor that influences all the processes of a university, as well as the global and national rankings of universities. The Russian Federation has been and continues to be an attractive destination for foreign students. As the number of these students increases, educational ecosystems should adapt to their needs in order to successfully integrate them into the student community, increase their motivation to learn, and create the conditions for better academic performance. Educational ecosystems should be sensitive to the sociocultural adjustment of foreign students.

AIM: The aim of the study was to determine the ways to improve the quality of education for foreign students at the North-Western Medical University named after I.I. Mechnikov.

METHODS: The university ecosystem and key processes in the education and life of foreign students were evaluated. The design of the study is based on the authors' hypothesis that first-year students taking their first midterm assessment experience and manifest a state of culture shock that negatively affects their academic performance. To test this hypothesis, a validated tool for assessing sociocultural adjustment, the Sociocultural Adaptation Scale, was used in 106 foreign students enrolled in an English-language general medicine program. Survey results were compared with U-curve parameters from Oberg's culture shock model.

RESULTS: Analysis of the survey results suggested that the students were smoothly integrated into the new university everyday and educational ecosystem, as indicated by result imposition on the U-curve of the culture shock model. The survey did not show the predicted sharp drop in the culture shock curve in the fourth month in the host country.

CONCLUSION: The authors stated that the U-curve hypothesis is no longer justified today due to the creation and active maintenance of a sustainable educational ecosystem at the university, which makes it possible to create conditions for the successful socio-cultural adjustment of foreign students.

Keywords: educational ecosystem at university; socio-cultural adjustment of foreign students; educational integration; cultural and community integration; culture shock.

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Социокультурная адаптация иностранных обучающихся в образовательной экосистеме СЗГМУ им. И.И. Мечникова

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АННОТАЦИЯ

Обоснование. До эпохи цифровизации общества интернационализация высшей школы была фрагментарным явлением, затрагивающим отдельные сферы академической среды. В последние 50 лет вследствие изменений, обусловленных глобализацией, международный статус университета стал фактором, влияющим на все процессы вуза, а также на мировые и внутренние рейтинги университетов. Российская Федерация была и остается привлекательным направлением для иностранных обучающихся. Рост их количества приводит к необходимости адаптации образовательных экосистем к потребностям студентов для успешной интеграции последних в студенческое сообщество, повышения мотивации к обучению и создания условий демонстрации лучшей академической успеваемости. Образовательные экосистемы должны быть чувствительны к обеспечению социокультурной адаптации иностранных обучающихся.

Цель — определить пути повышения качества образования иностранных студентов в СЗГМУ им. И.И. Мечникова.

Материалы и методы. Изучены экосистема университета, а также ключевые процессы обучения и жизни иностранных граждан. Дизайн исследования построен на выдвинутой авторами гипотезе о том, что студенты 1-го года обучения, выходящие на первую промежуточную аттестацию, находятся в состоянии культурного шока со всеми сопутствующими проявлениями, что негативно сказывается на их академической успеваемости. Для проверки данной гипотезы проведен опрос 106 иностранных студентов, обучающихся по программе специалитета «Лечебное дело» на английском языке, при помощи валидизированного инструмента оценки социокультурной адаптации Sociocultural adaptation scale (SCAS), а результаты опроса сравнивали с показателями U-кривой теории адаптации К. Оберга.

Результаты. Анализ результатов опроса, а также их наложение на U-кривую социокультурной адаптации позволили сделать вывод о плавном погружении обучающихся в новую бытовую и образовательную экосистему вуза. Опрос не выявил резкого падения кривой, прогнозируемого для состояния культурного шока на четвертом месяце пребывания в принимающей стране.

Заключение. Авторы констатировали неоправданность гипотезы U-кривой на сегодняшний день в силу создания и активного поддержания устойчивой образовательной экосистемы вуза, позволяющей создать условия для успешной социокультурной адаптации иностранных обучающихся.

Ключевые слова: образовательная экосистема вуза; социокультурная адаптация иностранных обучающихся; интеграция в образовательную систему; интеграция в культуру и общество; культурный шок.

Как цитировать

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BACKGROUND

Before the social digitalization, the internationalization of higher education was a fragmented phenomenon, affecting only certain spheres of the academic environment, such as staff research activities, collaborative research projects, and visiting professorships or fellowships. Due to the economic, social, and cultural changes caused by globalization over the past half century, the international status of universities has become an influencing factor for all processes within universities, including their position in world and domestic university rankings (QS University Ranking, Times Higher Education, Raex, etc.) [1].

The Russian Federation has been and remains an attractive destination for many international students. Russian education is characterized by its focus on fundamentals, relatively low cost, and comfortable living conditions, especially in large cities, which are multinational and multicultural [2]. The growing number of international students has resulted in a growing demand for adapting educational ecosystems (EEs) to their needs to successfully integrate them into the local student community, increase their motivation for learning, and improve their academic performance. In other words, EEs should be sensitive to ensuring international students' sociocultural adaptation as a condition and mechanism for students' fulfillment.

This study measured the sociocultural adaptation of international students in a General Medicine English as a medium of instruction (EMI) course at the North-Western State Medical University named after I.I. Mechnikov (NWSMU) in St. Petersburg, Russia. This paper analyzes the impact on international students' academic performance and overall integration into learning and extracurricular activities and proposes a strategy for enhancing their adaptation mechanisms. The study's objectives were to assess the level sociocultural adaptation level of international students at NWSMU, determine the degree of codependence between sociocultural adaptation and psychological and academic adaptation, establish correlations between the stages of sociocultural adaptation and academic performance, and identify ways for university's EE to facilitate students' sociocultural adaptation.

The study will provide future international students with a clearer understanding of the difficulties they will face and, accordingly, enable them to prepare to deal with these challenges in a more targeted manner. Additionally, university administration will be aware of the challenges that must be addressed to support adaptation processes. Finally, teaching staff will gain a better understanding of the components of their students' academic performance and better harmonize the teaching and learning process in a student-centered approach.

In accordance with the decree of the president of the Russian Federation, Vladimir V. Putin, *On the National*

Development Goals of the Russian Federation for the Period up to 2030 and for the Prospect of 2036, the total number of international students pursuing education at Russian universities must reach 500,000 by 2030. As of the 2023–2024 academic year, about 600 international students were studying at NWSMU. Hence, university management faces the task of increasing NWSMU's international attractiveness.

NWSMU's International Department conducted an early analysis of the global geopolitical situation and the demand for educational programs abroad and used this to propose measures to mitigate ongoing risks in Russian international education. It found that it is necessary to provide free EMI courses, as well as English-language courses, to the university's teaching and administrative staff so that they can deliver quality education to international students. It also found a need for the further development of educational programs focused on the needs of specialists in foreign labor markets. Accordingly, in the academic year 2023–2024, NWSMU launched the "Dental Care Provision Within the International Standards" program for overseas citizens. The analysis also noted the need to heighten the international mobility of its staff and students to gain awareness of the status, quality, and development of education in overseas universities. Finally, it noted a hope of attracting students from countries at lower risk of visa restrictions (including China, India, and multiple countries in Latin America, Africa, and South and Central Asia) through promotional activities, participation in international exhibitions, and cooperation with the cultural and educational departments of those countries' general consulates and embassies. However, liaisons with international students does not stop once admission has been granted. Rather, this process must continue throughout the entire period of study through the creation of a safe, comfortable, and effective EE that meets international students' needs no matter their country of origin.

The educational ecosystem

The concept of the EE is a recent one, and the term does not yet have an agreed definition. The ecosystem approach was imported to education from business. It accounts for a complex network of collaborations of stakeholders (teachers, staff, management, students, potential employers, outside agencies, etc.) whose joint efforts form new ideas and products and improve the quality of existing ones [3]. In the educational field, this approach has proved effective, as it creates a synergy in which group efforts accomplish more than individual ones [4].

Today, the need for universities to transition to an EE framework is evident from the new challenges presented by the digitalization of society, sociocultural paradigm shifts, globalization processes, and the COVID-19 pandemic. All these factors require the ensured sustainability of the education system, including the establishment

of a sustainable individual student-centered approach, which is capable of modification according to the needs and abilities of the student throughout all stages of education. Also required is the ensured accessibility of all forms of education alongside the mitigation the risks associated with unequal access to educational services. Universities must also establish an orientation toward lifelong learning alongside timely, adequate responses to changing labor market conditions [5].

In general, a university's transition to an EE framework is a complex, multi-stage process that involves the integration of distance and hybrid teaching methods, the creation of institutes of continuing education, the improvement of mentoring and tutoring systems, and the increased academic mobility of students, teachers, and educational programs. NWSMU, as well as many other Russian universities, is currently undergoing the transition process, which is subject to intensification due to the accelerating exportation of educational services.

Sociocultural adaptation

The growing number of international students is a challenge for EE implementation, which requires a university and individuals to create a mutually enriching space for the successful implementation of all forms of educational, scientific, and creative activities. The creation of such a setting has a positive impact on students' quality of life (QOL), which plays a crucial role in their personal fulfillment. The World Health Organization defines QOL as the individual perception of one's position in life in the context of the cultural environment and value system in which

the individuals live, and in relation to their goals, expectations, standards and views [6].

The indicators of QOL include physical and mental health, financial status, feelings of having a social identity, freedom, security, employment opportunities, adherence to one's religious beliefs, the availability of natural resources, education, health care, leisure options, and so on [7]. The achievement of a high QOL for international students is the result of their adaptation to their new EE. This requires a two-directional process, as EE can also provide conditions for learners' comfortable adaptation.

International students arriving in a new place of study face various problems and difficulties, including: language barriers, new unfamiliar living conditions, sociocultural differences, and significant differences in the perception of personal space [8]. Less obvious problems, which negatively affect the QOL, are the lack of understanding of the local financial system, bureaucracy, and difficulties in adapting to the new climate (which is especially common for students arriving from hot countries like India, Egypt, or Iran). The necessity of adaptation forces students to develop the individual mechanisms of coping with culture shock, which have not been sufficiently studied to date in certain countries and universities.

Culture shock is a stage of sociocultural adaptation that is common among migrants, temporary employees, and expatriots [9]. It takes a specific form among international students due to their age, psychological readiness for independent life, chosen field of study, and other factors. There are several theories suggesting the classifications, stages, and the cyclic nature of sociocultural adaptation. The classical theory developed by K. Oberg in the 1960s was used as the basis for this study [10, 11]. According to Oberg, during the process of sociocultural adaptation, individuals go through four stages: euphoria (also called the "honeymoon"), culture shock, integration, and successful adaptation ("mastery"). These four stages can alternate with each other but are generally visualized as a U-curve [9] (Fig. 1).

Euphoria/Honeymoon

When first arriving in a new country, a person experiences a spectrum of positive emotions related to the novelty of aspects like language, the social environment, and food. Relocation seems to be "the best decision ever made," as it provides the opportunity to explore a new culture, traditions, and values [12]. This stage is characterized by openness to new relationships, experiences, and the history and culture of the host country. Enthusiasm and a general positive attitude are the main psychological characteristics of newcomers at this stage [13]. However, the negative aspects of the relocation will gradually become recognized, which signifies the transition to the next stage.

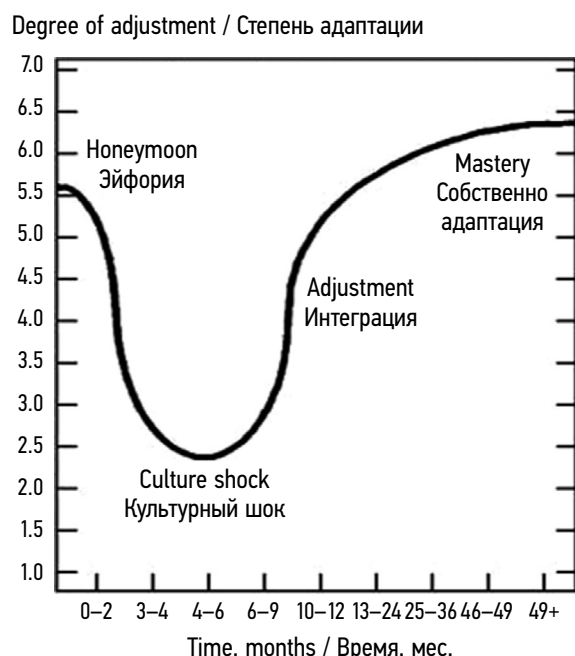


Fig. 1. Diachronic U-curve of sociocultural adjustment.

Рис. 1. U-кривая социокультурной адаптации в диахронии.

Culture shock

Culture shock is the most psychologically difficult period for international students, as it is associated with two negative factors: changes in cognitive perceptions of the “norm” and homesickness. Culture shock involves a spectrum of emotional reactions that manifest themselves in the form of responses to stimuli that appear typical of their home culture but are coded differently or entirely absent. Symptoms include anxiety, feelings of helplessness, irritability, sadness, and alienation [14]. Homesickness can become a significant trigger point for comparing the objective factors of a host country (e.g., climate, urbanism, language, cuisine, social features) with one’s home country. The symptoms of culture shock and homesickness aggravate the newcomer’s condition and often make them appear hopeless [9]. In an academic environment, this can lead to a decrease in their academic performance and motivation alongside an increase in self-isolation.

Adjustment

Adjustment is the most individualistic of all stages of adaptation. Its external factors include gradual assimilation into a new culture, such as getting used to food and social norms, and improving language skills. Internal factors will vary from one individual to another depending on their unique circumstances, experience, personality, and so on. Over time, given a properly developed environment and appropriate mentoring, newcomers can feel increased self-confidence, motivation to learn, and personal fulfillment, and they will develop the flexibility and openness necessary for comfortable integration [15].

Mastery

In most cases, after weeks or months of the emotionally and psychologically difficult stages of adaptation to the norms and peculiarities of a host country, newcomers reach the fourth stage: successful adaptation. Mastery does not mean full acceptance and understanding of one’s new living conditions. Rather, it is successfully functioning in the host country. The adaptation stage can last for many years and, provided that the necessary conditions are met, leads to biculturalism, i.e., an individual’s inclusion in two cultural contexts [16].

In higher education, it is not only the stages of adaptation but its chronological framework that becomes a significant factor, as international students’ lives must also follow the academic calendar. According to U-curve theory, during the first two months of study, the euphoria from the novelty of living and learning in a new country generally begins to pass, and by the fourth month, it typically descends to the lowest point of the U-curve (Fig. 1). The learner begins experiencing the first symptoms of culture shock with all its emotional difficulties.

Since international students in NWSMU’s General Medicine EMI course start their semester a month later than Russia’s typical September starting date, the culture shock period risks overlapping with the first academic assessment period in February, which is already a difficult month for acclimatization in St. Petersburg. Improvement to the condition and the smooth transition to integration was observed only after the sixth month of stay in the host country. According to the academic calendar, this is a vacation period for those who have successfully passed exams that marks the transition to the second semester of study, and it coincides with a significant increase in daylight hours and the onset of spring. Mastery can occur by the 12th month of study, which coincides with end of the first year of study and departure for holidays. This time is important for students as they can evaluate the sociocultural features of their new environment and their integration into it from a distance.

In this paper, the U-curve of adaptation was compared to the results of a survey of international students from multiple levels of study. This process was conducted to identify the period at which the lowest point of the U-curve occurs, the typical speed of recovery, and the areas that present the greatest difficulties for adaptation.

METHODS

This study used a survey to quantitatively identify the stages of sociocultural adaptation the participants were experiencing at the time of the survey, the most problematic aspects of adaptation, and prospects for progressing to the next stages.

The survey was conducted anonymously with international students at NWSMU majoring in General Medicine (specialist level), which is implemented partially in English. The survey dates (February–March 2024) intentionally coincided with the expected lowest point of the U-curve. The sample was formed using the continuous method. The authors excluded fourth-year students, who had enrolled in the program in the 2020–2021 academic year, since the first 1.5 years of their studies had been conducted remotely and their adaptation processes differed significantly from those of their peers.

The survey was designed using a validated tool for assessing sociocultural adaptation, the Sociocultural Adaptation Scale (SCAS) (Appendix 1, DOI: 10.17816/RFD643461-4324187). The methodology involved assessing the sociocultural adaptation of an international student in five domains: interpersonal communication, academic performance, personal interests and community involvement, ecological adaptation, and proficiency in the host country’s language. Participants gave their answers using a scale from 1 to 5, where 1 was “completely incompetent” and 5 was “completely competent.” Questions from different domains were interspersed

Table 1. Demographic profile of students**Таблица 1.** Демографический профиль обучающихся

Indicator	Number of people, n (%)
Age (years)	
17	8 (7.5)
18	29 (27.3)
19	24 (22.6)
20	14 (13.2)
21	15 (14.2)
22	3 (2.8)
23	13 (12.3)
Year of study	
First	71 (66.9)
Second	18 (16.9)
Third	5 (4.7)
Fifth	3 (2.8)
Sixth	9 (8.5)
Country of origin	
India	22 (20.7)
Turkmenistan	19 (17.9)
Republic of Belarus	12 (11.3)
Egypt	10 (9.4)
Tajikistan	8 (7.5)
Uzbekistan	6 (5.6)
Iran	5 (4.7)
Kazakhstan	4 (3.7)
Azerbaijan	4 (3.7)
Algeria	4 (3.7)
Lebanon	2 (1.9)
Moldova	2 (1.9)
Turkey	2 (1.9)
Yemen	2 (1.9)
Saudi Arabia	1 (0.9)
Ukraine	1 (0.9)
Sudan	1 (0.9)
Israel	1 (0.9)
Native language	
Arabic	22 (20.7)
Russian	21 (19.8)
Turkmen	16 (15.1)
Hindi	15 (14.1)
Tajik	10 (9.4)
National languages of India (Tamil/Kannada/Marathi/ Telugu/Punjabi)	7 (3/1/1/1/1) [6.6 (2.8/0.9/0.9/0.9/0.9)]
Uzbek	5 (4.7)
Farsi	5 (4.7)
Azerbaijani	3 (2.8)
French	1 (0.9)
Accommodation	
Student dormitory	93 (87.7)
Rented housing	6 (5.7)
Owned housing	4 (3.8)
Other	3 (2.8)

to allow participants to better perceive the research objectives. The results were processed descriptively using the *SPSS statistics package for Windows* [17]. To meet the research goals (chronologically identifying the success of adaptation processes according to the U-curve theory), two groups of respondents were formed: the first-year students ($n = 71$; 67%) and second-year-and-above (Second-year+) students ($n = 35$; 33%).

Following the U-curve theory and accounting for the time of the survey (fourth to fifth month of living in Russia), the authors hypothesized that the first-year students experiencing their first midterm assessment would be in a state of culture shock, whose symptoms would negatively impact their academic performance. Second-year+ students (16+ months of living in Russia) were hypothesized to be at the stages of adjustment and mastery, which was predicted to entail no or minimal influence on academic performance. That said, sociocultural factors are not the only factors that can influence academic success, as psychological adaptation, academic adaptation, or individual difficulties mastering a particular discipline can also play a large role. However, as discussed above, the study of each component separately will allow the identification of the most effective measures for mitigating culture shock and its symptoms.

The superposition of the SCAS survey results on the chronology of the U-curve of sociocultural adaptation was performed to explore the applicability of the U-curve as well as the potential associations between sociocultural adaptation and academic performance. This would allow for the determination of directions for the university's EE development with the aim of improving its students' adaptation processes.

RESULTS

A total of 106 students took part in the survey (Table 1). The average age was 19.6 years. Most respondents (87.7%) lived in a dormitory for international students.

Domains of adaptation

A student arriving in a new country faces many barriers, a significant part of which is communication in academic, domestic, and bureaucratic domains. Students must deal with administrative issues, such as filling out documents at the border, registering at the university, settling into a dormitory (88% of respondents lived in dormitories), performing daily chores, and beginning academic studies. All this is often carried out amidst little knowledge of the Russian language and differences in worldview, traditions, customs, and beliefs.

According to hypothesized model, first-year students at the time of the survey should be experiencing the greatest difficulties in communication, but the survey revealed that this was not the case (Table 2). The mean value of Domain 1

for all was 3.9, which was high. A discrepancy of 0.2 points was observed in Items 1 and 3. It was assumed that these indicators correlated with each other because of the twin needs to build relationships and be academically successful. Item 1, "Building and maintaining relationships," obtained a lower mean value in the first year, as networking in a new setting is a time-consuming and challenging process that was better realized by the Second-year+ students. Item 3, "Interacting at social events," was better fulfilled in the first year, as first-year students are more actively involved in extracurricular events organized by the university's International Department to assist in their adaptation. The decrease in this item in the Second-year+ students may indicate less regular participation in such events, caused by the increasing academic load and the acquisition of stable interpersonal relationships, due to which the necessity for socialization in larger groups partially disappears.

According to the findings, the attitude of first-year students toward their own academic performance was 0.1 points better, which again contradicted the U-curve theory (Table 3). The mean value of Item 2, "Managing my academic responsibilities," in Second-year+ students was 3.7, which was 0.2 points lower than that of first-year students. This could be explained by the increasing complexity of the fundamental, clinical, and professional studies compared to the general studies undertaken during the first year. Another possible explanation is the asynchronization of the U-curve theory

with the actual adaptation of the participants. It is likely that the students either had not yet reached the lowest point of culture shock or had already begun to adapt. An analysis of the following domains will provide a clearer answer to this question.

Item 12, "Gaining feedback from other students/work colleagues to help improve my performance," was consistent with Domain 1 findings, since first-year students were more involved in extracurricular activities and sought opportunities to be part of a group (mean value: 4), while senior students were less likely to seek and receive feedback (mean value: 3.6). This indicates room for growth for faculty members working with international students. A modern physician should possess not only hard skills (i.e., those directly related to professional realization) but also well-developed soft skills (e.g., empathy, communication, teamwork). Reinforcing students' individualistic tendencies can have a negative impact on their future careers, so team and group activities should be included in the curricula for senior medical students.

Domain 3: Personal interests and community involvement (Table 4) showed the lowest score of the whole survey, with a mean of 3.4 for the first-year students and 3.3 for Second-year+ students. Students found it difficult to keep up with their previous hobbies and passions and lacked participation in social events. Indeed, the change of residence, academic system, and social environment were factors that complicated

Table 2. Responses of the first-year, second-year, and subsequent-years students to Interpersonal Communication subscale

Таблица 2. Ответы респондентов 1-го курса, а также 2-го курса и последующих на индикаторы домена 1 (межличностная коммуникация)

Domain 1 items	First-year students' responses (%)					Mean value	SD	Second-year+ students' respondents (%)					Mean value	SD
	5	4	3	2	1			5	4	3	2	1		
1. Building and maintaining relationships	45	14	25	9	7	3.8	1.2	45	20	20	0	15	4.0	1.0
3. Interacting at social events	45	25	17	10	3	4.0	1.0	31	34	23	6	6	3.8	1.0
6. Accurately interpreting and responding to other people's gestures and facial expressions	31	11	24	28	6	3.7	1.1	29	37	26	6	2	3.8	1.0
11. Varying the rate of my speaking in a culturally appropriate manner	45	21	24	2	3	4.0	1.0	37	37	20	0	6	4.0	1.0
13. Accurately interpreting and responding to other people's emotions	42	32	11	15	0	4.1	0.9	37	37	14	12	0	4.0	0.9
16. Interacting with members of opposite sex	46	15	23	10	6	3.9	1.2	31	29	29	5	6	3.8	1.1
21. Changing my behavior to suit social norms, rules, attitudes, beliefs and customs	44	23	20	6	7	3.9	1.2	37	37	14	3	9	4.0	1.0
Domain 1 mean value						3.9							3.9	

Table 3. Responses of the first-year, second-year, and subsequent-years students to Academic/Work Performance subscale

Таблица 3. Ответы респондентов 1-го курса, а также 2-го курса и последующих на индикаторы домена 2 (академическая успеваемость)

Domain 2 items	First-year students' responses (%)					Mean value	SD	Second-year+ students' responses (%)					Mean value	SD
	5	4	3	2	1			5	4	3	2	1		
2. Managing my academic responsibilities	40	32	15	7	6	3.9	1.1	17	49	28	0	6	3.7	0.9
7. Working effectively with other students	44	34	11	8	3	4.0	1.0	46	29	17	0	8	4.0	1.0
12. Gaining feedback from other students/work colleagues to help improve my performance	41	32	17	6	4	4.0	1.0	23	40	23	11	3	3.6	1.0
17. Expressing my ideas to other students/work colleagues in a culturally appropriate manner	37	24	31	5	3	3.8	1.0	34	46	9	3	8	3.9	1.1
Domain 2 mean value						3.9							3.8	

Table 4. Responses of the first-year, second-year, and subsequent-years students to Community Involvement subscale

Таблица 4. Ответы респондентов 1-го курса, а также 2-го курса и последующих на индикаторы домена 3 (личные интересы и вовлеченность в сообщество)

Domain 3 items	First-year students' responses (%)					Mean value	SD	Second-year+ students' responses (%)					Mean value	SD
	5	4	3	2	1			5	4	3	2	1		
4. Maintaining my hobbies and interests	34	18	18	20	10	3.4	1.4	26	20	29	14	11	3.3	1.3
8. Obtaining community services I require	27	27	25	7	14	3.4	1.3	26	29	29	3	13	3.4	1.3
14. Attending or participating in community activities	30	21	30	11	8	3.5	1.2	29	26	20	11	14	3.4	1.3
18. Dealing with the bureaucracy	24	24	27	10	15	3.3	1.3	17	26	31	14	12	3.2	1.2
Domain 3 mean value						3.4							3.3	

adaptation to new types of academic activities and new lifestyles.

Significant problems arose when interacting with the government and social services. These items received the lowest score of the survey, with no significant differences between students of different levels. The most effective solution to this problem would be improving students' Russian language proficiency, as language barriers pose an obstacle in solving bureaucratic issues: students may be afraid to contact necessary services and encounter possible intolerance. Improving student proficiency in the language of a host country will partially relieve this anxiety and increase satisfaction with government services.

Adaptation is a complex process in which the outside environment plays an important role. Domain 4: Ecological

adaptation generally general obtained a high mean value (3.9) across all levels (Table 5). The noise level was the least satisfactory item. Personal interviews with some participants indicated dissatisfaction with the noise level in the street, but recognition that this is inevitable when living in a large, dynamic city. As mentioned in the introduction, living in St. Petersburg is an attractive factor for international students. The university's EE, however, accounts for urban adaptation: the campus is in a historical district on a large green area, and the dormitories are located within walking distance from the academic buildings.

Domain 5: Language proficiency showed the highest mean values of 4 and 4.1 among the first- and Second-year+ students, respectively (Table 6). Only 20% of respondents indicated Russian as their native language. Undoubtedly,

Table 5. Responses of the first-year, second-year, and subsequent-years students to Ecological Adaptation subscale

Таблица 5. Ответы респондентов 1-го курса, а также 2-го курса и последующих на индикаторы домена 4 (урбанистическая и экологическая адаптация)

Domain 4 items	First-year students' responses (%)					Mean value	SD	Second-year+ students' responses (%)					Mean value	SD
	5	4	3	2	1			5	4	3	2	1		
5. Adapting to noise level in my neighborhood	30	21	25	13	11	3.5	1.2	29	17	34	14	6	3.4	1.2
9. Adapting to the population density	41	37	15	4	3	4.0	1.0	29	43	20	8	0	3.9	0.9
15. Finding my way around	50	31	11	3	5	4.1	1.1	46	31	14	6	3	4.1	1.0
19. Adapting to the pace of life	52	32	10	4	2	4.2	0.9	43	40	14	0	3	4.2	0.9
Domain 4 mean value						3.9							3.9	

Table 6. Responses of the first-year, second-year, and subsequent-years students to Language Proficiency subscale

Таблица 6. Ответы респондентов 1-го курса, а также 2-го курса и последующих на индикаторы домена 5 (владение языком принимающей страны)

Domain 5 items	First-year students' responses (%)					Mean value	SD	Second-year+ students' responses (%)					Mean value	SD
	5	4	3	2	1			5	4	3	2	1		
10. Understanding and speaking Russian	51	15	17	10	7	3.9	1.0	54	14	20	6	6	4.1	0.9
20. Reading and writing in Russian	63	14	10	4	9	4.2	0.8	60	14	11	11	4	4.1	0.9
Domain 5 mean value						4.0							4.1	

proficiency in Russian positively influenced the adaptation process both in daily life and in academia. The other participants' native languages were from other linguistic groups and families. The high levels of confidence in their Russian language competence came as a surprise, since Russian is a difficult language to master and apply in everyday and academic spheres. The absence of significant differences in the results of the first-year and Second-year+ students may be explained by the fact that the program in question uses EMI, providing early linguistic support in the academic sphere. The university's EE framework facilitates the involvement of managerial and teaching staff with well-developed English skills in working with international students. By the time students begin their clinical work and start communicating with patients, most will have acquired sufficient proficiency in Russian, which reduces their stress from language barriers.

DISCUSSION

The analysis of the survey outcomes according to the SCAS and the comparison of the survey outcomes with the U-curve of sociocultural adaptation, indicated that the students' adaptation to new living and educational

conditions was smooth. The survey did not reveal a sharp drop in the curve predicted for the culture shock expected around the fourth month of stay in a host country. First-year students felt involved in their new sociocultural environment, confident in their academic performance, and comfortable communicating in Russian. This divergence from the U-curve can be explained by two factors: first, the university administration has already implemented many classroom and extracurricular initiatives that help integrate foreign students into the academic community. Second, the culture shock due to St. Petersburg's geography, climate, and culture may have occurred at a time outside the predicted period. This discrepancy requires further research. According to the research outcomes, the prediction of culture shock at the stage defined by the U-curve did not accurately reflect its presence in first-year international students.

The study also found a relationship between the level of students' sociocultural adaptation and their academic performance. First-year students must pass two class credits and an exam at the first interim assessment. According to the university's administration, 100% of the 2023–2024 first-year students passed Basics of Russian Statehood, 71% passed Anatomy, and 82% passed the Chemistry exam. The grade point average (GPA) was 3.27. The academic performance

of international students at the end of the first semester was also compared with the performance of domestic students, as well as with the performances of students in upper levels. Of the domestic students, 100% passed Fundamentals of Russian Statehood, 73% passed Anatomy, and 86% passed the Chemistry exam, for a GPA of 3.45. The academic performance of domestic and international students is relatively comparable and does not reveal any significant differences. The GPAs of the Second-year+ international students ranged from 3.39 (Anatomy) to 4.7 (Doctor's Communication Skills).

CONCLUSION

The data from the survey indicated that NWSMU is successful as an ecosystem that supports the medical education and sociocultural integration of international students. It works effectively to prevent international students from experiencing culture shock that falls on the fourth month of staying in a new country according to the U-curve theory. Due to the implementation of the ecosystem students do not demonstrate a rapid decrease in academic performance and their GPA do not differ significantly from those of domestic students. The employment of the SCAS theory to match the U-curve also demonstrated that first-year students being at the greatest risk of experiencing culture shock do not show significant differences from Second-year+ students. Five domains of the SCAS theory, namely interpersonal communication, academic performance, personal interests and community involvement, ecological adaptation, and proficiency in the host country's language were studied. The data showed little deviation from the answers of Second-year+ year students who have supposedly overcome culture shock and progressed to adjustment and mastery in adaptation.

However, the weaknesses identified during the survey entail potential adjustments to current strategies for helping international students achieve a successful, smooth, and fast sociocultural adaptation. In particular, the analysis revealed the need for a greater focus on Russian language acquisition and a wider application of group and collective teaching and learning methods. It also indicated the necessity of promoting students' active involvement in personal hobbies community activities to boost their overall QOL, as well as the more active facilitation of their interactions with bureaucratic and administrative services.

As university EE should evolve to best meet the needs of teaching and learning participants the outcome for this research is the creation of a new structural unit in NWSMU, the Center for international students. The Center facilitates adaptation and learning as it offers preparatory course, helps to deal with bureaucracy and administrative questions, organizes community events and offers psychological support for better adaptation.

ADDITIONAL INFORMATION

Author contributions: A.V. Vozdvizhenskaya, N.G. Koroleva: conceptualization, investigation, writing the draft; A.V. Kuriseva: formal analysis, writing the draft; A.A. Sapaleva: investigation; I.E. Moiseeva: writing the draft, review and editing. All authors approved the version of the manuscript to be published, and agreed to be accountable for all aspects of the work, ensuring that questions related to the accuracy or integrity of any part of it are appropriately reviewed and resolved.

Ethics approval: The study was approved by the local ethics committee of the North-Western Medical University named after I.I. Mechnikov (No. 2 dated February 05, 2025). Written informed consent was voluntarily obtained from all participants prior to be included in the study.

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Disclosure of interests: The authors declare no commercial or non-commercial relationship, activity, or interest with any third party in the past three years that could be affected by the content of the article.

Statement of originality: No previously published information (text, illustrations, or data) was used in this work.

Data availability statement: All data generated during this study are available in this article and its Appendix 1 *Sociocultural Adaptation Scale (SCAS)*.

Generative AI: No generative artificial intelligence technologies were used to prepare this paper.

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Appendix 1. Sociocultural Adaptation Scale (SCAS).

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ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ

Вклад авторов. А.В. Воздвиженская, Н.Г. Королева — разработка концепции, проведение исследования, написание черновика рукописи; А.В. Курисёва — формальный анализ, написание черновика рукописи; А.А. Сапалёва — проведение исследования; И.Е. Моисеева — написание черновика, пересмотр и редактирование рукописи. Все авторы одобрили рукопись (версию для публикации), а также согласились нести ответственность за все аспекты работы, гарантируя надлежащее рассмотрение и решение вопросов, связанных с точностью и добросовестностью любой ее части.

Этический комитет. Проведение исследования одобрено локальным этическим комитетом СЗГМУ им. И.И. Мечникова (№ 2 от 05.02.2025). Все участники исследования добровольно подписали форму информированного согласия до включения в исследование.

Источники финансирования. Отсутствуют.

Раскрытие интересов. Авторы заявляют об отсутствии отношений, деятельности и интересов за последние три года, связанных с третьими лицами (коммерческими и некоммерческими), интересы которых могут быть затронуты содержанием статьи.

Оригинальность. При создании настоящей работы авторы не использовали ранее опубликованные сведения (текст, иллюстрации, данные).

Доступ к данным. Все данные, полученные в настоящем исследовании, доступны в статье и в приложении к ней. В частности, в Приложении 1 «Шкала оценки уровня социокультурной адаптации (SCAS)».

Генеративный искусственный интеллект. При создании настоящей статьи технологии генеративного искусственного интеллекта не использовали.

Рассмотрение и рецензирование. Настоящая работа подана в журнал в инициативном порядке и рассмотрена по обычной процедуре. В рецензировании участвовали два внутренних рецензента из состава редакционной коллегии.

Приложение 1. Шкала оценки уровня социокультурной адаптации (SCAS).

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