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Role of Stress and Resilience in the Psychological Health of Students Studying Abroad

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Abstract:

Background and Objective: This article addresses the topic of "psychological health", an independent concept that is not a synonym for "mental health". The term "psychological health" is considered a set of mental properties of a person, providing "harmony" between the needs of an individual and society, which are the prerequisites for stress resistance, social adaptation, and successful self-actualization. The study has considered the psychological health of students studying abroad. While adapting to a new country, as well as learning and cultural environment, it was identified that the role of psychological health and its components increased. The components of students' psychological health, studied in this article, taking into account students' experience of studying abroad, were resilience, chronic stress, quality of life, psychological well-being, mental and physical well-being, and sense of coherence. The sample consisted of 46 Kazakhstani students studying in Kazakhstan (control group) and in Turkey (experimental group).

Methods: The following diagnostic toolkit was used: The Leipzig Screening Questionnaire on Chronic Stress, LKCS (K. Reschke & H. Schröder, adapted by A. Garber, L. Karapetyan); The Resilience Scale, RS-25 (G.M. Wagnild & H.M. Young); Sense of Coherence, SOC (adapted by A. Antonovsky, M.N. Dymshits); SF-36 Health Survey (MOS 36-item Short Form Health Survey), SF-36 (J. Ware, QualityMetric Inc., IQOLA-Project Group); PERMA-Profiler, PERMA (adapted by J. Butler, M. Kern, O.M. Isaeva, A.Yu. Akimova, E.N. Volkova).

Results: The following correlations of various psychological health indicators and latent factors of the structure of psychological health in students studying abroad were identified, compared to those studying in Kazakhstan:
Similarity: Kazakhstani students studying abroad and in Kazakhstan are both characterized by an average level of resilience. There is a similarity in assessing the quality of life and general well-being.
Differences: There is a lower level of chronic stress in students studying abroad, but a greater formation of the sense of coherence in students studying in Kazakhstan.
The structure of psychological health of Kazakhstani students studying abroad is as follows: The key role in the structure is of resilience, associated with the meaningfulness of what is happening in stress and the achievement of goals, *i.e.*, constructive coping behavior in a stressful situation. The first three latent factors of psychological health in general are not related to the indicators of physical health but to psychological indicators: resilience, emotional well-being, and the value of self and relationships with others. Also, the ability to rest and the feeling of happiness determine the psychological health of students studying abroad.
The structure of the psychological health of students studying at home is as follows: in the first place, there is the physical component of health itself (physical condition, healthy sleep). Negative emotions experienced in stress, feelings of helplessness, and depression have a significant impact on the structure of psychological health, *i.e.*, low-stress resistance and insignificant experience of coping behavior.

Conclusion: The role of stress and resistance in the psychological health of students studying in Turkey and Kazakhstan has been revealed in this study. The obtained results can be used to develop programs for the formation of psychological health in students as one of the necessary prerequisites for successful adaptation to studying abroad. The importance of mental rather than physical components of health, the role of resistance, and stress tolerance can also be taken into account.

Keywords: Students, Adaptation to studying abroad, Psychological health, Stress, Resilience, Sense of coherence, Mental health , Physical well-being .

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1. INTRODUCTION

The psychological health of a person belongs to one of the most complex sections of psychological science. Currently, there is no generally accepted understanding and definition of the "psychological health of a person" phenomenon.

The very concept of psychological health was introduced into modern psychology by Russian professor I.V. Dubrovina [1]. It was not a question of opposing the well-known concept of "mental health" to particular psychological health because they are inextricably linked. It was proposed that if the term "mental health" refers primarily to individual mental processes and mechanisms, the term "psychological health" refers to the person as a whole, which is in close connection with the highest manifestations of the human spirit and allows us to distinguish the psychological aspect of mental health problem in contrast to medical, sociological, philosophical and other aspects.

Nowadays, according to Dubrovina [1], a separate approach to understanding and studying the problem of psychological health has been developed in developmental psychology. Within the framework of this approach, psychological health should be considered in the framework of the following concepts: the health of an individual depends on his/her self-realization [2], individuali- zation [3], striving for improvement [4], and self-determination [5].

In any case, the psychological health of a person does not arise by itself. All components of psychological health, such as mental health, psychological literacy, psycho-logical culture, and psychological well-being of a person originate, develop, and strengthen in such social institutions as family, kindergarten, school, and university, and have particular features at each stage of ontogenesis [6]. If psychological, pedagogical, and social conditions are met, all components of the psychological health of a person's interaction, mutual influence, and enrichment create a scientific and practical basis for the psychological health of toddlers, schoolchildren, and students [7].

This study, conducted on students of the Republic of Kazakhstan, studying in Kazakhstan and abroad, has focused on identifying such indicators of students' psychological health as stress, resilience, sense of connectedness, happiness, psychological well-being, and mental and physical well-being.

Researching students studying in different learning conditions (at home and abroad) can help to reveal the peculiarities of students' psychological health in the conditions of adaptation to new living conditions, in a new country, with a different culture and mentality, which is often associated with overcoming themselves and their habits. It usually requires the formation of psychological health in general and its components.

2. LITERATURE REVIEW

Most of the authors still consider the psychological health of the individual within the framework of the historical development of psychology, comparing such equal concepts as "mental health", "social health", and "psychological well-being" [8-14].

The study of human mental health by representatives of different schools has led to various scientific approaches: need-value [15, 16], existential-analytical [17, 18], socio-cultural [2, 3], epigenetic [19], and level-by-level [20].

From the point of view of the need-value approach [15], an author created an image of a psychologically healthy self-actualized person. It is based on a person striving to be everything he can, developing his potential through self-actualization, and listening to his inner voice.

Representatives of the existential-analytical approach [17] drew attention to the fact that "a distinctive feature of human existence is the existence of anthropological unity and ontological differences in oneself, a single human way of being and various forms of being in which a person manifests himself." The term "mental health" appeared in V. Frankl's logotherapy. The author considered its main criteria to include meaningful existence, spirituality, and conscience [17].

Among the concepts of mental health, we include the concept of salute-genesis by Aaron Antonovsky. In his opinion, the key factor and systemic criterion of mental health is a sense of coherence as a general orientation of the individual, which includes three components: comprehensibility, controllability, and meaningfulness [21].

K. Rogers, considering health in the aspect of a naturally developing personality, described a dynamic model of a "fully functioning person", which is characterized by openness to change, an existential lifestyle, orgasmic trust, experiential freedom, and

creativity. Similarly, K. Rogers described the "unadapted person," which is characterized by being burdened by defense mechanisms, subordination to life according to a predetermined plan, distrust of one's body, feeling a lack of freedom, and the predominance of conformity over creativity [18].

Representatives of the sociocultural approach [2, 16] talked about mental health and the existence of different models that correspond to the individual characteristics of a person and the sociocultural conditions of his life.

From the point of view of the epigenetic approach, Erickson [19] drew attention to personality, which develops following the stages accompanied by the readiness of the human body to be stimulated and expanded by significant individuals and social institutions through awareness of them and interaction with them. From his point of view, a person, accepting the challenge of each social crisis, has a chance for personal growth and expansion of his capabilities.

In Russian psychology, there is a historically important work [22], believing that "the main principle of health development is not to have good health, but to realize one's mission." Bratus [20] proposed a level-by-level approach to the study of human mental health; he studied the normal and abnormal development of human personality.

Pahalyan [23] defined a person's psychological health as "the state of subjective, internal well-being of an individual, providing an optimal choice of actions and behavior, allowing him to freely actualize his individual and age-related psychological capabilities." Shuvalov [24] defined psychological health as a state that characterizes the process and result of the normal development of subjective reality within an individual's life; complete psychological health is the integral of completeness and integrity (the vitality and humanity of the individual).

According to a previous study [14], psychological health expresses the dynamic balance between the individual and the environment, and its criterion is the measure of harmony between a person and society. The author describes a "portrait" of a psychologically healthy person, which contains the following characteristics: spontaneity, cheerfulness, openness, and the desire to understand themselves and the world around them through one's mind, feelings, and intuition. The author described that a psychologically healthy person has self-acceptance and recognition of the value of others, responsibility for oneself, and the ability to learn lessons from unfavorable situations, involving consistent development.

Human psychological health is often considered not as homogeneous, but as an integral system with a multi-level structure. Among the components of psychological health, the following are often distinguished: self-attitude, self-actualization, self-regulation [25]; emotional stability, formation of value orientations [12]; social adaptability, intellectual characteristics [10]; axiological (the value of one's own "I" and the value of the "I" of other people), instrumental (the system of relations in society, empathy, responsibility), need-motivational (self-development, activity) [14]. Among the criteria for psychological health, many authors also highlight emotional well-being, including the absence of depression, professional burnout, manifestations of social and personal maladjustment, *etc*.

Modern studies of psychological health conducted in the last few years [26] have considered not only the components of a person's psychological health, but also offered methods for the prevention of its disorders and diagnosis.

Speaking about students and considering the research that has been carried out in the last two years, this article has highlighted several other related studies close to the goals of this study, namely work [27] on the characteristics of coping behavior of boys and girls with different levels of health, considering the problem of maintaining health through the development of conscious and rational forms of behavior, including in stressful situations. A previous article [28] has assessed the level of mental health and psychological well-being of students through monitoring, which allows timely identification of possible risks, namely the risk of depression of various origins.

A study [29] conducted a comparative assessment of the quality of life based on the physical and psychological health of medical university students. Health-related quality of life was studied using the SF-36 questionnaire. The study showed that in many indicators of self-assessment of quality of life, senior students rated their quality of life higher than freshmen.

From all of the above, it can be concluded that the problem of human psychological health remains poorly studied at both the theoretical and empirical levels. Modern researchers attribute psychological health to the individual as a whole, develop the idea of a person's individuality, consider it in close connection with the outside world, highlight the optimal qualities of a psychologically healthy person, and consider the basis of psychological health to be the full mental development, which changes throughout an individual's life. This study has looked at the psychological health of students in the context of studying abroad. Unfortunately, psychological rather than mental health has not yet been considered in cross-cultural studies of students. This research has aimed to fill this gap [30].

Based on the analysis of the literature on psychological health, the following indicators of psychological health as a holistic formation among students were identified: resilience, level of chronic stress, quality of life, well-being, and sense of coherence (Table **1**).

3. METHODOLOGY

3.1. Sampling

An empirical study was conducted, studying the relationship between various indicators of psychological health of Kazakhstani students studying in Kazakhstan and abroad, and the structure of their psychological health. 46

Table 1. Indicators of psychological health and their diagnostics.

Indicators of Psychological Health	Assessment Criteria	Diagnostic Tools (Questionnaires, Tests)
Adaptiveness	Chronic stress	The Leipzig Screening Questionnaire on Chronic Stress - LKCS
	Resilience	The Resilience Scale - RS-25
Quality of life	Physical Functioning (PF)	SF-36 Health Survey (MOS 36-item Short Form Health Survey)
	Role-Physical functioning (RP)	
	Body Pain (BP)	
	General Health (GH)	
	Vitality (VT)	
	Social Functioning (SF)	
	Role-Emotional (RE)	
	Mental Health (MH)	
	Physical Health (PH)	
	Mental Health (MH_O)	
General well-being	Positive emotions	Well-being questionnaire of PERMA-Profiler – PERMA
	Engagement	
	Relationship	
	Sense	
	Accomplishment	
	Negative emotions	
	Health	
	Solitude	
	Happiness	
	Well-being	
Sense of coherence	Comprehensibility	Sense of Coherence - SOC
	Manageability	
	Meaningfulness	

Kazakhstani students studying in the Republic of Kazakhstan and abroad were included as research subjects: 25 students studying at South Kazakhstan State University named after Auezov were a part of the Control Group (CG), and 21 students studying abroad in Turkey, at various universities, were a part of the Experimental Group (EG) of our study. The study was conducted in December 2023. The following characteristics of the experimental group were used: gender and age. There were 14 girls and 7 boys with an average age of 20.5 years. The control group consisted of 19 girls and 6 boys with an average age of 20.0 years. The learning domain of students in the experimental and control groups was Humanitarian Studies. The average time of study in the control group was 2 years and the average time of study abroad in the experimental group was 2 years. Both groups of students were studying under equivalent economic conditions: students studying in Kazakhstan as well as Turkey were studying under state programs financing their studies. All groups of students were chosen randomly.

3.2. Measures

The rationale for the methods is presented in Table **1**. The following diagnostic tools were used in the study: Leipzig Screening Questionnaire on Chronic Stress, LKCS (K. Reschke & H. Schröder, adapted by A. Garber, L. Karapetyan [31]); The Resilience Scale, RS-25 (G.M. Wagnild & H.M. Young); Sense Of Coherence, SOC (A. Antonovsky, adapted by M.N. Dymshits); “Quality of Life Assessment” questionnaire SF-36 Health Survey (MOS 36-item Short Form Health Survey), SF-36 (J. Ware, QualityMetric Inc., IQOLA-Project Group); PERMA-Profiler well-being questionnaire, PERMA (J. Butler & M. Kern adapted by O.M. Isaeva, A.Yu. Akimova, E.N. Volkova).

3.3. Statistical Analysis

The following statistical methods were used: Kolmogorov-Smirnov criterion for checking the normality of data distribution, parametric test for comparing independent samples of the T-Student test, and factor analysis by principal component method with Kaiser normalization. The statistical software package SPSS 23.0 was used.

4. RESULTS

4.1. Quantitative and Qualitative Comparative Analysis

This article has compared the indicators of psychological health of Kazakhstani students studying abroad and those studying in Kazakhstan using the following measurements: Resilience Scale (RS-25, 3 indicators), Express Stress Test (LKCS, 8 indicators), Sense of Coherence (SOC, 4 indicators), Quality of Life Questionnaire (SF -36, 10 indicators), and Well-being Questionnaire (PERMA, 10 indicators). It was assumed that between Kazakhstani students studying abroad and in

Table 2. Results of diagnosing the psychological health of students in EG and CG based on resilience, stress, and sense of coherence.

Phycological Health Indicators	Experimental Group M (SD)	Control Group M (SD)	T-criterion of Student, p Significance
Resilience Scale (RS-25)			
Personal competencies	87,48 (13,78)	91,04 (10,22)	t=-1,006, p=,320
Acceptance of yourself and your life	42,81 (5,54)	42,64 (6,03)	t=,099, p=,922
Overall resilience score	130,29 (17,87)	133,68 (14,40)	t=-,714, p=,479
Leipzig Rapid Chronic Stress Test (LKCS)			
1. Loss of control	1,38 (,67)	1,68 (,99)	t=-1,177, p=,245
2. Loss of meaning	2,14 (,91)	2,60 (,91)	t=-1,694, p=,097
3. Anger, dissatisfaction (frustration)	1,57 (,98)	2,28 (,89)	t=-2,570, **p=,014**
4. Sleep disturbance	1,29 (,56)	2,16 (1,25)	t=-3,146, **p=,003**
5. Inability to rest	1,86 (,85)	2,24 (1,05)	t=-1,338, p=,188
6. Emotionally negative themes	2,29 (1,06)	2,80 (1,04)	t=-1,659, p=,104
7. Lack of social and emotional support	1,71 (,95)	2,12 (1,01)	t=-1,388, p=,172
Total stress score	12,24 (4,01)	15,88 (4,83)	t=-2,747, **p=,009**
Sense of Coherence (SOC)			
Comprehensibility	41,43 (8,26)	42,92 (8,58)	t=-,597, p=,553
Manageability	32,19 (5,11)	47,00 (6,89)	t=-8,137, **p=,000**
Meaningfulness	31,10 (3,60)	42,96 (7,75)	t=-6,827, **p=,000**
Overall sense of coherence score	104,71 (12,68)	132,88 (18,42)	t=-5,923, **p=,000**

Note: M = medium, SD = standard deviation, t = Student's t-test for unpaired samples, p = significance.

the Republic of Kazakhstan, significant differences will be identified in the above-mentioned indicators of psychological health since the experience of living and studying abroad has a significant impact on the psychological health of a student.

In this case, n1=21 (experimental group) and n2=25 (control group 1), df=44, Tcr value=1.6839 for P≤0.1, Tcr=2.0211 for P≤0.05, and Tcr =2.7045 for P≤0.01. Let us characterize the results obtained (Tables **1** and **2**).

As can be seen from Table **2**, for all indicators of resilience, not a single significant difference was identified according to the Student's T-test for unpaired samples between Kazakhstani students studying in Kazakhstan and abroad. In the experimental and control groups, an average level of resilience was revealed (M av.=133.78).

The following hypotheses were put forward:

4.1.1. Null Hypothesis

H0: Between the experimental group and the control group, there are only random differences in individual indicators of psychological health measured using the Resilience Scale, Leipzig Rapid Chronic Stress Test (LKCS), Sense of Coherence (SOC), SF-36 Quality of Life Questionnaire, and PERMA Well-being Questionnaire.

H1: Between the experimental group and the control group, there are non-random differences in certain indicators of psychological health: in indicators of resilience (3 indicators: general level of resilience, personal competencies, acceptance of oneself and one's life), stress (8 indicators of chronic stress: loss of meaning, loss of control, negative emotions, sleep disturbance, inability to rest, emotionally negative themes, lack of social and emotional support, and overall level of chronic stress), feelings of coherence (4 indicators: comprehensibility, manageability, meaningfulness, general indicator), quality of life (10 indicators) and well-being (10 indicators), measured using various questionnaires, namely the Resilience Scale (RS), the Leipzig Rapid Chronic Stress Test (LKCS), Sense of Coherence (SOC), the SF-36 Quality of Life Questionnaire, and the PERMA Well-Being Questionnaire.

During the testing of hypotheses H0 and H1, the results reflected in Tables **2** and **3** were obtained.

In terms of chronic stress indicators, three significant differences were identified according to the Student's T-criterion between Kazakhstani students studying in the Republic of Kazakhstan and abroad, namely negative emotions (3rd indicator), sleep disturbance (4th indicator), and the overall score of chronic stress. All three indicators were more visible in terms of chronic stress among students in the control group compared to students in the experimental group, that is, students studying abroad more often experience positive emotions, less often experience negative feelings, and can better regulate and control themselves compared to students studying locally. In addition, students in the experimental group were less likely to suffer from sleep disorders compared to students in the control group. A low level of negative emotions and the absence of sleep disturbances have been found to have a positive effect on a fairly low level of chronic stress in students studying abroad, compared to students studying in Kazakhstan, for whom stress has been characterized by a predominance of strongly expressed negative emotions (anger, dissatisfaction), difficulties with sleep, and overall increased levels of chronic stress.

Table 3. Results of diagnostics of psychological health of students in EG and CG in terms of quality of life and well-being.

Phycological Health Indicators	Experimental Group M (SD)	Control Group M (SD)	T-criterion of Student, p Significance
Quality of Life Questionnaire SF-36			
Physical Functioning (PF)	89,29 (14,86)	83,40 (20,95)	t=1,079, p=,287
Role-Physical functioning (RP)	72,62 (32,50)	75,00 (31,48)	t=-,252, p=,802
Body Pain (BP)	79,95 (17,58)	72,56 (22,22)	t=1,234, p=,224
General Health (GH)	74,48 (15,14)	61,84 (23,33)	t=2,210, **p=,033**
Vitality (VT)	62,38 (16,93)	56,00 (21,55)	t=1,101, p=,277
Social Functioning (SF)	78,57 (16,37)	73,50 (23,47)	t=,834, p=,409
Role-Emotional (RE)	44,44 (39,91)	64,00 (39,59)	t=-1,662, p=,104
Mental Health (MH)	67,81 (17,95)	62,24 (19,22)	t=1,009, p=,319
Physical Health (PH)	53,91 (4,85)	49,98 (8,32)	**t=1,992, p=,053**
Mental Health (MH_O)	42,44 (9,59)	43,09 (11,03)	t=-,210, p=,835
Well-being Questionnaire PERMA			
Positive emotions	8,14 (1,17)	8,24 (1,57)	t=-,233, p=,817
Engagement	7,16 (1,52)	7,52 (1,32)	t=-,865, p=,392
Relationship	7,68 (1,92)	7,17 (2,12)	t=,845, p=,403
Sense	7,76 (1,74)	7,53 (1,48)	t=,482, p=,632
Accomplishments	7,18 (1,65)	7,76 (1,26)	t=-1,362, p=,180
Negative emotions	4,38 (1,95)	5,83 (2,35)	t=-2,240, **p=,030**
Health	6,91 (1,91)	6,55 (2,50)	t=,539, p=,593
Solitude	2,90 (2,36)	3,96 (2,98)	t=-1,312, p=,196
Happiness	9,05 (1,24)	8,24 (1,98)	t=1,679, p=,101
Well-being	7,68 (1,28)	7,68 (1,05)	t=-1,019, p=,985

Note: M = medium, SD = standard deviation, t = Student's t-test for unpaired samples, p = significance.

At the same time, students in the control group had a more developed sense of coherence in terms of indicators: manageability, meaningfulness, and general indicators compared to students in the experimental group. The result obtained was an unexpected result and deserves special attention. It was found that studying abroad is associated with difficulties in developing a sense of coherence among students as one of the indicators of psychological health. A new country, a new experience of living according to the rules of a different culture, the absence of the usual rhythm of life, and a different educational system may have a negative impact on the sense of coherence among students studying abroad. At the same time, the level of chronic stress among students studying abroad has been found to be lower compared to students studying in Kazakhstan. Perhaps studying abroad helps students learn to manage negative emotions, feelings, tension, and relaxation, which has a positive effect on the overall level of chronic stress, the ability to control and regulate their emotions, and thus improves the quality of sleep.

Next, this article has considered other indicators of the psychological health of students in the control and experimental groups.

As can be seen from Table **3**, in terms of quality of life, two significant differences have been identified in terms of indicators: General Health (GH) and the Physical component of Health (PH) according to the Student's T-test for unpaired samples between students in the experimental and control groups. Students studying abroad have rated their general health and overall physical health (physical functioning, role-physical functioning, pain intensity, and general health) more highly compared to students studying in Kazakhstan.

According to the indicators of the well-being questionnaire, only one significant difference has been revealed: negative emotions between students in the experimental and control groups. As in the case of chronic stress, students studying in the Republic of Kazakhstan had more pronounced negative emotions compared to students studying abroad, undoubtedly having a positive impact on the assessment of their well-being in the experimental group. Also, at a significance level of $p \leq 0.1$, a significant difference was revealed in the happiness indicator of the PERMA well-being questionnaire, namely, students studying abroad expressed to feel happier compared to students studying in Kazakhstan.

Thus, significant differences have been identified in various indicators of psychological health between students studying abroad and at home. Based on the identified differences in psychological health indicators between Kazakhstani students studying locally and abroad, the research has identified latent factors in the structure of students' psychological health in the experimental and control groups separately and compared them.

4.2. Factor Analysis

Due to the large amount of quantitative data, to identify the structure of latent factors in the psychological health of Kazakhstani students studying abroad, the following factor analysis was used, the meaning of which was to represent the number of variables obtained during the study with a smaller number of other variables, called factors. Factors act as more fundamental variables that characterize the subject being studied. When conducting factor analysis, the original variables are combined into groups, each of which represents a certain factor.

For statistical processing of factor analysis, the statistical software package SPSS 23.0 was used.

The processing was carried out using the principal component method, the Varimax rotation procedure with Kaiser normalization was chosen, and factors with eigenvalues greater than one were considered. Rotation in the case of 35 variables (3 variables - resilience scale, 8 variables - rapid test for chronic stress, 4 variables - SOC questionnaire, 10 variables - SF-36 quality of life questionnaire, 10 variables - PERMA well-being question naire) required 11 iterations in the experimental group of students studying abroad.

As a result of factor analysis, nine new factors were formed, which together explained more than 89.01% of the total variance, providing a good result.

The following results were obtained. When analyzing the data, factor loadings with a modulus greater than 0.7 were identified (Table 4). During the interpretation, the largest factor loading in absolute value has been especially highlighted for each variable (Table 4).

Table 4. Factor structure of psychological health of Kazakhstani students studying abroad (after rotation).

Indicators	Component								
	1	2	3	4	5	6	7	8	9
1. Loss of control	-	-	-	**,701**	-	-	-	-	-
2. Loss of meaning	**-,705**	-	-	,428	-	-	-	-	-
3. Anger, dissatisfaction (frustration)	-	-	-	-	-	-	**,847**	-	-
4. Sleep disturbance	-	-	-	-	-	-	-	-	**,819**
5. Inability to rest	-	-	-	-	-	-	-	**-,735**	-
6. Negatively colored theme	-,512	-	-	-	-	-	-	-	-
7. Lack of social and emotional support	-	-	-,452	-	-	,507	-	-	-
Total stress score	-,483	-	-	,419	-	-	**,613**	-	-
Personal competencies	**,761**	-	-	-	-	-	-	-	-
Acceptance of yourself and your life	**,779**	-	-	-	-	-	-	-	-
Overall resilience score	**,828**	-	-	-	-	-	-	-	-
PERMA_positive emotions	,509	-	**,651**	-	-	-	-	-	-
PERMA_engagement	**,732**	-	,476	-	-	-	-	-	-
PERMA_relationship	-	-	**,818**	-	-	-	-	-	-
PERMA_sense	**,795**	-	-	-	-	-	-	-	-
PERMA_accomplishment	**,791**	-	-	-	-	-	-	-	-
PERMA_happiness	,445	-	-	-	-	-	-	**,651**	-
PERMA_well-being	**,744**	-	,577	-	-	-	-	-	-
PERMA_negative emotions	-	-	-	-	-	-	**,670**	-	-
PERMA_health	**,728**	-	-	-	-	-	-	,409	-
PERMA_solitude	-	-	**-,859**	-	-	-	-	-	-
Physical Functioning (PF)	-	-	-	-	-	,554	-	,478	-
Role-Physical functioning (RP)	-	,478	-	-	-	**,692**	-	-	-
Body Pain (BP)	-	,409	-	**-,776**	-	-	-	-	-
General Health (GH)	-	-	-	-	-	,485	-	,451	-
Vitality (VT)	-	,496	-	**-,630**	-	-	-	-	-
Social Functioning (SF)	-	**,789**	-	-	-	-	-	-	-
Role-Emotional (RE)	-	**,837**	-	-	-	-	-	-	-
Mental Health (MH)	-	,633	-	-	-	-	-	,477	-
Physical Health (PH)	-	-	-	-	-	**,937**	-	-	-
Mental Health (MH_O)	-	**,903**	-	-	-	-	-	-	-
Comprehensibility	-	-	-	-	**,898**	-	-	-	-
Manageability	-	-	-	-	,509	-	-	-,437	-
Meaningfulness	-	-	-	**,615**	,606	-	-	-	-
SOC total score	-	-	-	-	**,963**	-	-	-	-

The positive pole of a factor is interpreted based on the positive poles of the variables that have the largest positive loadings and the negative poles of the variables that have the largest absolute negative loadings. Accordingly, the negative pole of the factor corresponds to the negative poles of the variables with the maximum positive loadings and the positive poles of the variables with the largest absolute negative loadings.

Below is provided the summary of the results of the work done and a list of the latent factors discovered as a result of a joint analysis of the methods, RS-25 resilience scale, LKCS express test for chronic stress, Sense of Coherence Questionnaire, PERMA Sense of Well-being Questionnaire, SF-36 Quality of Life Questionnaire, in descending order of significance for the structure of psychological health of Kazakhstani students studying abroad.

1. Resilience interconnected with the experience of meaningfulness of life and the experience of achieving goals.

2. Mental component of health (primarily): role functioning, determined by the emotional state and social functioning.

3. A sense of self-worth, support from the closest people, and lack of feelings of loneliness.

4. Low level of ability to influence the situation in case of intense pain or low level of vital activity.

5. A sense of coherence based on comprehensibility.

6. Physical component of health (primarily): role functioning determined by physical condition.

7. Negative emotions under stress.

8. The ability to relax interconnected with the feeling of happiness.

9. Sleep disturbance.

Rotation in the case of 35 variables (3 variables - Resilience Scale, 8 variables - rapid test for chronic stress, 4 variables - SOC questionnaire, 10 variables - SF-36 Quality of Life questionnaire, 10 variables - PERMA Well-being questionnaire) required 14 iterations in the control group of students studying in Kazakhstan (Table **5**).

Table 5. Factor structure of psychological health of Kazakhstani students studying at home (after rotation).

Indicators	Component							
	1	2	3	4	5	6	7	8
1. Loss of control	-	-	,586	-	-	-	-	-
2. Loss of meaning	-	-	-	-	-	-	**,863**	-
3. Anger, dissatisfaction (frustration)	-	-	,604	-	-	-	-	-
4. Sleep disturbance	**-,701**	-	-	-	-	-	-	-
5. Inability to rest	-	-	**,720**	-	-	-	-	-
6. Negatively colored theme	-	-	**,792**	-	-	-	-	-
7. Lack of socio-emotional support	-,562	-	,565	-	-	-	-	-
Total stress score	-,438	-	**,781**	-	-	-	-	-
Personal competencies	-	-	-	-	**,888**	-	-	-
Acceptance of yourself and your life	-	-	-	-	**,604**	-	-,500	-
Overall resilience score	-	-	-	-	**,883**	-	-	-
PERMA_positive emotions	-	**,721**	-	-	-	-	-	-
PERMA_engagement	-	-	-	-	-	**,881**	-	-
PERMA_relationship	-	**,709**	-	-	-	-	-	-
PERMA_sense	-	**,827**	-	-	-	-	-	-
PERMA_accomplishment	-	-	-	-	**,704**	-	-	-
PERMA_happiness	-	**,691**	-,411	-	-	-	-	-
PERMA_well-being	-	**,866**	-	-	-	-	-	-
PERMA_negative emotions	-	-	**,803**	-	-	-	-	-
PERMA_health	,463	-	-	-	-	-	-	,572
PERMA_solitude	-	-,517	,444	-	-	-	-	-
Physical Functioning (PF)	**,757**	-	-	-	-	-	-	-
Role-Physical functioning (RP)	**,837**	-	-	-	-	-	-	-
Body Pain (BP)	**,762**	-	-	-	-	-	-	-
General Health (GH)	**,792**	-	-	-	-	-	-	-
Vitality (VT)	-	,547	-	,552	-	-	-	-
Social Functioning (SF)	**,700**	-	-,432	-	-	-	-	-
Role-Emotional (RE)	**,695**	-	-	-	-	-	-	-
Mental Health (MH)	-	,470	-,435	,434	-	-	-	-
Physical Health (PH)	**,943**	-	-	-	-	-	-	-
Mental Health (MH_O)	,427	-	-,502	,468	-	-	-	-

(Table 5 contd.....

Indicators	Component							
	1	2	3	4	5	6	7	8
Comprehensibility	-	-	-	**,763**	-	-	-	-
Manageability	-	-	-	**,782**	-	-	-	-
Meaningfulness	-	**,625**	-	,443	-	-	-	-
SOC total score	-	-	-	**,835**	-	-	-	-

Table 6. Analysis of the psychological health structure of Kazakhstani students studying abroad and in the Republic of Kazakhstan.

Latent Factors	Experimental Group (Factor Loading, in %)	Control Group (Factor Loading, in %)
1. Factor	Resilience, correlated with the experience of meaningfulness in life and the experience of achieving goals (20,76%)	Physical component of health (primarily): role functioning due to physical condition and general health (healthy sleep) (19,16%)
2. Factor	Mental health component (primarily): role functioning, emotional state, and social functioning (11,10%)	A general measure of well-being related to meaning in life and positive emotions in everyday life (15,54%)
3. Factor	Feeling of self-worth, support from closest people, lack of feelings of loneliness (9,40%)	Negative emotions increasing chronic stress levels, inability to rest, and presence of emotionally negative themes (14,74%)
4. Factor	Low level of ability to influence the situation with intense pain or low level of vital activity (9,28%)	A sense of coherence based on comprehensibility and manageability (11,93%)
5. Factor	A sense of coherence based on comprehensibility (9,09%)	Resilience based on a sense of personal competence (9,21%)
6. Factor	Physical component of health (primarily): role functioning determined by physical condition (8,26%)	Engagement (absorption) (5,43%)
7. Factor	Negative emotions under stress (8,01%)	Feeling depressed and helpless under stress (4,99%)
8. Factor	The ability to relax being interconnected with the feeling of happiness (7,60%)	The feeling of physical strength and health (3,61)
9. Factor	Sleep disturbance (5,50%)	-

As a result of factor analysis, nine new factors were formed, which together explained more than 84.62% of the total variance, providing a good result.

Here are the results of the work done and a list of the latent factors discovered as a result of a joint analysis of the methods, RS-25 resilience scale, LKCS express test for chronic stress, Sense of Coherence Questionnaire, PERMA Sense of Well-being Questionnaire, SF-36 Quality of Life Questionnaire in descending order of significance for the structure of psychological health of Kazakhstani students studying in the Republic of Kazakhstan.

1. Physical component of health (primarily): role functioning due to physical condition and general health (healthy sleep).

2. A general indicator of well-being associated with meaningfulness in life and positive emotions in everyday life.

3. Negative emotions that increase the level of chronic stress, inability to rest, and the presence of an emotionally negatively charged topic.

4. A sense of coherence based on understandability and manageability.

5. Resilience based on a sense of personal competence.

6. Involvement (absorption).

7. Feeling of depression and helplessness under stress.

8. Feeling of physical strength and health.

Next, there was a comparative analysis conducted of the identified latent factors in the structure of the psychological health of Kazakhstani students studying abroad and at home (Table **6**).

As can be seen from Table **6**, among Kazakhstani students studying abroad, the resilience indicator played a key role in the structure of psychological health; in the group of Kazakhstani students studying in the Republic of Kazakhstan, the resilience indicator played a less significant role in the structure of psychological health, being only in fifth place. At the same time, resilience among students studying abroad has been associated with the comprehension of what is happening under stress and the accomplishment of set goals, that is, overcoming.

Among students in the control group, the physical component of health itself (physical condition, healthy sleep) came first in the structure of psychological health. This latent factor of psychological health among students in the experimental group was only in 6th place. At the same time, sleep disturbances constituted the last factor in the structure of psychological health (factor 9), which also indicated resilience, associated with the ability to adapt, to be of greater importance for students studying abroad than physical health itself for psychological health.

Physical health as an indicator of psychological health among students in the experimental group was located in fourth and sixth places, primarily taking into account the experience of pain that interferes with vital activity.

The first three latent factors of psychological health of students studying abroad were generally associated not with indicators of physical health as in the control group students, but with indicators of resilience, mental health

(emotional well-being), and the value of oneself and relationships with other people.

In the control group, negative emotions had a greater impact on the latent structure of psychological health than in the experimental group, in which this factor was located in the seventh place. At the same time, the sense of coherence among students in the control group and the experimental group played approximately the same role in terms of significance for psychological health, although the indicator of coherence in terms of significance was slightly more pronounced in the degree of significance among students in the control group.

A latent factor also significant in the structure of the psychological health of students in the experimental group was the ability to relax, which was interconnected with the experience of a feeling of happiness, not characteristic of the structure of the psychological health of students in the control group. The feeling of involvement (absorption), as well as the feeling of helplessness and depression under stress, was more typical for the structure of psychological health of students in the control group than for students in the experimental group.

Thus, the study has identified the relationships between various indicators of psycho- logical health among students studying abroad and in the Republic of Kazakhstan, as well as differences in the structure of psychological health among students studying in the Republic of Kazakhstan and abroad. In general, the role of stress and resilience in the psychological health of students studying abroad and in the Republic of Kazakhstan has been identified.

5. DISCUSSION

This study on the psychological health of Kazakhstani students studying abroad and in the Republic of Kazakhstan is one of the first studies of such a comprehensive holistic education as psychological health among students. It is one of the necessary prerequisites for successful adaptation to studying abroad. Scientific work on the study of the psychological health phenomenon is still largely theoretical and methodological in nature. The term psychological health itself is still mostly used by the Russian psychological school. This research will hopefully attract the attention of world psychological science to the study of the phenomenon of psychological health, along with the phenomenon of mental health, the research of which has been the subject of a large number of empirical and practical studies. As part of our research, there have been proposed criteria for assessing psychological health, developed testing, and standardized psycho-diagnostic tools, which can allow to both identify the characteristics of psychological health indicators among students studying abroad and in Kazakhstan and identify the latent structures of students' psychological health, including students studying abroad and at home.

CONCLUSION

From all of the above, it is concluded that the problem of the psychological health of a student remains unexplored to this end. Modern researchers refer to psychological health as the personality on the whole, develop the idea of human individuality, consider it in close connection with the surrounding world, emphasize the optimal qualities of a psychologically healthy personality, and consider the basis of psychological health as a full-fledged mental development, changing throughout an individual's life.

In this study on psychological health, based on the conducted literature analysis, the following indicators of psychological health as a holistic entity have been identified: resilience, level of chronic stress, quality of life, well-being, and sense of coherence.

In this research, conducted on students of the Republic of Kazakhstan, studying at home and abroad, there have been found certain correlations in statistically significant indicators of psychological health. Namely, the factor analysis has revealed both correlations and components of psychological health with respect to the selected indicators of stress, resilience, sense of coherence, happiness, psychological well-being, and mental and physical well-being among students. At the same time, there have also been found statistically significant differences and similarities of separate indicators of the psychological health of Kazakhstani students studying in Kazakhstan and abroad.

In our opinion, the study of students in different learning conditions (at home and abroad) will help to reveal the peculiarities of students' psychological health in the conditions of adaptation to new living conditions, in a new country, with a different culture and mentality, which is often associated with overcoming oneself and one's habits. It will lead to the formation of psychological health in general and also its components.

THEORETICAL AND PRACTICAL IMPLICATIONS

1. Both similarities and significant differences in the severity of various indicators of psychological health have been identified between Kazakhstani students studying abroad and in the Republic of Kazakhstan. Kazakhstani students studying abroad and in Kazakhstan have been generally characterized by an average level of resilience. The identified significant differences have included a lower level of chronic stress among students studying abroad and a greater sense of coherence (coherence) among students studying locally. In assessing the quality of life and general well-being, more similarities have been revealed than differences in various indicators of psychological health between students studying abroad and in the Republic of Kazakhstan. Significant differences have been found only in two indicators of quality of life and one indicator of well-being.

2. Kazakhstani students studying abroad have been found to more often experience positive emotions and less often negative feelings, better regulating and controlling them under stress, and less likely to suffer from sleep disorders compared to students studying in the Republic of Kazakhstan. Perhaps studying abroad helps students learn to manage negative emotions, feelings, tension, and

relaxation, which has a positive effect on the overall level of chronic stress, the ability to control and regulate their emotions, and improves the quality of sleep.

3. Kazakhstani students studying in the Republic of Kazakhstan have been found to have a more developed sense of coherence in terms of indicators: manageability, meaningfulness, and general indicators compared to students studying abroad. It can be assumed that studying abroad is associated with difficulties in developing a sense of coherence among students as one of the indicators of psychological health. A new country, a new experience of living according to the rules of a different culture, the absence of the usual rhythm of life, and a different educational system may have a negative impact on the sense of coherence among students studying abroad.

4. Kazakhstani students studying abroad have rated their general health and the overall physical state of their health more highly (physical functioning, role functioning due to physical condition, pain intensity, and general health) compared to students studying locally.

5. Kazakhstani students studying abroad have been found to have less pronounced negative emotions compared to students studying in the Republic of Kazakhstan, undoubtedly having a positive impact on the assessment of their well-being. A significant trend has also been identified showing Kazakhstani students studying abroad to feel happier compared to students studying in Kazakhstan.

6. Latent factors in the structure of psychological health among Kazakhstani students studying abroad and in Kazakhstan have been identified. Among Kazakhstani students studying abroad, the resilience indicator has been found to play a key role in the structure of psychological health; in the group of Kazakhstani students studying at home, the resilience indicator has been found to play a less significant role in the structure of psychological health, being only in fifth place. At the same time, resilience among Kazakh students studying abroad has been found to be associated with the comprehension of what is happening under stress and the accomplishment of set goals, that is, overcoming.

7. For students studying in the Republic of Kazakhstan, in the first place, the structure of psychological health has involved the physical component of health itself (physical condition, healthy sleep). This latent factor of psychological health among students studying abroad has been in 6th place.

8. The first three latent factors of psychological health of students studying abroad have been generally associated not with indicators of physical health like those of students studying in the Republic of Kazakhstan, but with indicators of resilience, mental health (emotional well-being), and value of oneself and relationships with other people.

9. For Kazakhstani students studying in the Republic of Kazakhstan, negative emotions during stress have been found to have a greater impact on the latent structure of psychological health than for students studying abroad. At the same time, the sense of coherence among students studying abroad and in the Republic of Kazakhstan has been found to play approximately the same role in terms of importance for psychological health.

10. A significant latent factor in the structure of the psychological health of students studying abroad has been found to be the ability to relax, being interconnected with the experience of a feeling of happiness, which has not been characteristic of the structure of the psychological health of students studying in Kazakhstan. The feeling of involvement (absorption), as well as the feeling of helplessness and depression under stress, has been more typical for the structure of psychological health of students studying in the Republic of Kazakhstan than for students studying abroad.

LIMITATIONS

The limitation of this study is that it has covered only a group of Kazakhstani students studying abroad in Turkey. In future studies, the goal should be to expand the sample of students to include Kazakhstani students studying abroad in other countries. There have also been selected some indicators of psychological health, which cannot yet be compared with other studies, as similar studies on psychological health have not yet been conducted. Most of the studies have focused on mental health rather than psychological health. To ensure the possibility of comparative analysis, the relationship between psychological health and adaptation and acculturation in the country of study can be focused on in the next study, as this may allow to compare the gained results with other studies on students' mental health in terms of adaptation to studying abroad.

LIST OF ABBREVIATIONS

CG	=	Control Group
EG	=	Experimental Group
LKCS	=	Leipzig Rapid Chronic Stress Test
SOC	=	Sense of Coherence
RS	=	Resilience Scale
SOC	=	Sense of Coherence
GH	=	General Health
PH	=	Physical component of Health

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The study was approved by the Al-Farabi Kazakh National University, Kazakhstan, under ethical approval number 2668/20 IRB00010790.

HUMAN AND ANIMAL RIGHTS

No animals were used in this research. All procedures performed in studies involving human participants were in accordance with the ethical standards of institutional and/or research committees, and with the 1975 Declaration of Helsinki, as revised in 2013.

CONSENT FOR PUBLICATION

Informed consent was taken from all the participants upon enrollment.

STANDARDS OF REPORTING

STROBE guidelines were followed.

AVAILABILITY OF DATA AND MATERIALS

The data supporting the findings of the article is available in the Zenodo Repository, at https://openpublichealthjournal.com/availability-of-data-materials.php.

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CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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