

Evaluating Academic Adaptation in Students: A New Technique

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Evaluation of academic adaptation in students is an important aspect of their incorporation into the educational environment of university. Academic adaptation can be considered a complex multicomponent formation that requires a specially developed tool to measure an individual's ability to adapt to the educational environment in general. The aim of the research was to develop, validate and standardize a special technique for evaluating academic adaptation in university students. The study involved 419 1—4-year students aged 17—26, with the average age of $M=19.6$ $SD=2.8$ (18.4% male). A questionnaire was used to assess socio-demographic characteristics. To assess the academic potential, we used a technique called “Adaptability” by A.G. Maklakov and S.V. Chermenin. We assumed that academic adaptation includes cognitive, emotional, motivational, psychophysiological, communicative and personal components. Our technique includes six scales matching these components and a separate integral scale. In the process of designing the technique we tested its reliability, face, content and convergent validity and standardization. The results of these testing showed that the technique has good psychometric indicators and can be used both for research and applied purposes.

Keywords: personality, student, educational environment, evaluation, academic adaptation, questionnaire.

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Академическая адаптация студентов: разработка и валидизация новой методики

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Обращается внимание на то, что диагностика академической адаптации студентов является важным звеном включения личности в образовательную среду высшего учебного заведения. Ее можно рассматривать как сложное многокомпонентное образование, требующее разработки нового инструмента, включающего оценку адаптации к образовательной среде в целом. Целью исследования явились разработка, валидизация и стандартизация оригинальной методики диагностики академической адаптации студентов к вузу. В исследовании приняли участие 419 студентов 1—4 курсов высших учебных заведений очной формы обучения в возрасте 17—26 лет, средний возраст $M=19,6$, $SD=2,8$ (мужчин 18,4%). Для оценки социо-демографических характеристик использована авторская анкета, а оценка академического потенциала проводилась с помощью методики «Адаптивность» (А.Г. Маклаков и С.В. Чермянин). Предполагалось, что академическая адаптация включает когнитивный, эмоциональный, мотивационный, психофизиологический, коммуникативный и личностный компоненты. Разработанная методика включает в себя шесть шкал, соответствующих этим компонентам, и интегральную шкалу. В процессе конструирования методики осуществлены проверка надежности, очевидной, содержательной и конвергентной валидности, стандартизация, по результатам которых выявлено, что инструмент обладает хорошими психометрическими показателями и может использоваться для научных и практических целей.

Ключевые слова: личность, студент, образовательная среда, диагностика, академическая адаптация, опросник.

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Introduction

The issue of students' adaptation to educational conditions currently goes beyond the scope of an individual university and ceases to be an exclusive object of close attention of university's psychological services. When students make a transition from secondary school to a higher educational institution, they find themselves under new conditions both in terms of professional knowledge content and other forms of educational process's organization. All of the above-listed actualizes individual adaptation potential, makes one discover and reflect on the difficulties of educational process under new conditions, as well as look for effective ways to overcome them. Meanwhile, today there is an obvious lack of diagnostic tools, which are capable of adequately evaluating individual's adaptation to educational environment. The already available techniques are aimed at evaluating particular aspects of adaptation.

In studies of academic adaptation [23; 5] authors make an emphasis on the educational process, on the educational organization's requirements and students' ability to meet these requirements and engage into academic activity effectively. Speaking of students' adaptation, A.V. Karpov defines it as a process of individual's entry into a set of roles and forms of activity in the higher educational institution, the process of meaningful and creative adaptation of an individual to peculiarities of choosing their profession and major through academic process [9].

Previous studies of various aspects of students' academic adaptation have made it possible to identify its factors, among which are reflective abilities of first-year students concerning the difficulties that can arise in the course of the academic process and orientation towards academic results [1; 6; 26].

Within the structure of students' adaptation to higher educational institution we can single out the following components: socio-

psychological, psychological and activity-oriented [12]; pedagogical, psycho-physiological, professional [10]; didactic, social and professional [21], as well as satisfaction with one's lifestyle, management of expectations and motivation level [28].

Contemporary scientific sources pay a lot of attention to the issues related to academic adaptation of the first-year students [1], there are studies dedicated to psycho-physiological aspects of students' academic adaptation [3]. A lot of attention has been given to social and socio-psychological aspects of students' adaptation [4]. At that, the research toolset is, as a rule, presented through a set of diagnostic techniques, the use of which is related to a number of difficulties, both temporary and organizational.

Academic Adaptation Assessment Tools

Alongside with using psycho-diagnostic toolsets and popular use of questionnaires in the study of students' academic adaptation, we cannot ignore the fact that there are techniques, which allow assessing various aspects of the phenomenon under study. Among the latest techniques is L.V. Mishchenko's method for diagnostics of satisfaction with one's academic activity [16], which can be used to assess the emotional and evaluative attitude of students to academic activity. To study the cognitive component, we can use the ROADS [35] methodological complex adapted by S.A. Kornilov and E.L. Grigorenko [11]. Another aspect of academic adaptation's diagnostics is associated with the possibility of assessing self-regulation of academic activity, level of procrastination's manifestation, which can be done using "PASS — Procrastination Assessment Scale-Student" [32]. The technique was adapted and tested on a Russian sample by M.V. Zvereva [8]. "The Technique for studying students' adaptation at a higher educational institution" developed

by T.D. Dubovitskaya and A.V. Krylova [7] can be used for determining adaptability to an academic group or academic activity. In some foreign studies scientists use the questionnaire called «Academic adjustment scale (AAS)» [30; 27] to diagnose academic adaptation. This technique can be used to survey international students; it includes three scales: academic lifestyle, academic achievement and academic motivation.

Thus, alongside with timely importance of studying students' academic adaptation, it is necessary to recognize insufficiency of methodological tools for such studies, bulkiness and inconvenience of the psycho-diagnostic toolset, which in most cases makes it possible to assess only certain aspects of the phenomenon under study.

The purpose of the study is to develop and validate the original technique of students' academic adaptation diagnostics.

The study has the following tasks:

— to formulate the list of statements for assessing academic adaptation of students, based on scientific ideas regarding complex construct of the phenomenon under study;

— to design the technique in accordance with theoretical ideas about the components of academic adaptation;

— to check the face, content, convergent validity and various characteristics of the methodology's reliability.

Procedure, Methods and Techniques

Sample. 419 students took part in the study (292 first-year students (69,7%), 41 second-year students (9,8%), 42 third-year students (10%), 44 fourth-year students (10,5%)). All participants were full-time students aged 17—26, mean age $M=19.6$ $SD=2.8$ (18.4% males); participation was voluntary, place of residence before entering higher educational institution was as follows rural area (13.6%), small town (38.3%), city (42.3%), metropolitan city (5.7%); the prevalent marks at higher educational institution were: more satisfactory marks — 14.1%,

more good marks — 39.6%, more excellent marks — 46.3%; students with chronic diseases — 34%. In other words, this sample is representative of the general population we developed the proposed questionnaire for.

In the course of development of the original technique for academic adaptation diagnostics, the team of authors has relied on the approach, according to which academic adaptation is perceived as a process and result of a student's adaptation to various circumstances of an educational environment, which includes physical, material, social, cognitive and ecological components. That is why the development of academic adaptation questionnaire had to take into consideration personal, cognitive, motivational, emotional-evaluative, communicative and psycho-physiological components of students' adaptation to an educational environment.

The major research method is a questionnaire. The technique development process was performed in several stages, according to the requirements for the new techniques' development [15]. During the first stage of the study we assessed the face and content validity of the compiled list of questionnaire statements. The initial test version, which included 61 items, was proposed to non-professional experts (7 people). They were asked to assess the statements from the standpoint of their clarity, stylistic accuracy, and adequate choice of lexical formulas.

Content validity was established through peer review. Four experts (psychology professors from Saratov State University), who had been engaged into scientific investigation of adaptation problems and adaptation readiness, were asked to evaluate the questionnaire statements for their compliance with the phenomenon under study on a four-point scale.

During the next stage we selected statements to form the final version of the questionnaire. Next, based on the analysis of the normalized basic stress graph, which was carried out within the framework of the

exploratory factor analysis and supported by the confirmatory factor analysis results, we singled out 6 factors (scales), which corresponded to the preliminary hypothesis concerning the distribution of questions along the scales; we defined correlation coefficients for each statement with the scale scores and academic adaptation integrative score. Based on the results of this stage we obtained the questionnaire's final version, which can be found in the Appendix together with the instruction and answer key.

During the third stage of the study we assessed the technique's reliability, which reflects diagnostic measurements' accuracy and stability of its results towards random factors. We evaluated its reliability for internal consistency, as well as the reliability of questionnaire elements.

During the fourth stage we studied convergent validity. In order to do that we used the technique which demonstrated good psychometric data, i.e. the multilevel personal questionnaire "Adaptive potential" by A.G. Maklakov and S.V. Chermianin [13]. This technique is aimed at assessing adaptive potential, i.e. an integral characteristic, which includes a stable combination of individual and psychological properties that ensure adaptation [14]. The second important validity indicator is the interconnection between adaptation and academic performance; that is why the ongoing and previous performance of students was also measured. This score was measured by the number of marks in the student's record book (i.e. mostly satisfactory marks — 1, mostly good marks — 2, mostly excellent marks — 3).

To assess socio-demographic characteristics of the test-takers we have developed a questionnaire, which includes the following parameters: gender, age, family status and place of residence before entering higher educational institution, income level, upbringing styles in their parent families, health issues, etc.

To process primary data we used the IBM SPSS Statistics + PS IMAGO PRO

solution, which includes AMOS software used for modeling with structural equations.

Results

As a result of assessment of the questionnaire items by professional experts, a number of formulations were corrected, several of them were deleted from the questionnaire, due to lack of clarity or dubious meanings. As a result of content validation for every item, we calculated average acceptance score. Based on these calculations, we deleted the questionnaire items that scored low (under 2.7). The final version of the questionnaire includes 44 items.

To support the hypothesis regarding six-component structure of academic adaptation and corresponding distribution of the questionnaire items, which have been developed according to this structure, we carried out confirmatory factor analysis, which proved (Fig. 1) the six-factor model validity (CMIN=1497.546; df=834; p=0.000; CFI=0.933; RMSEA=0.044; PCLOSE=0.999; SRMR=0.060; GFI=0.863; AGFI=0.838).

The first factor combines the scores of academic adaptation's personal component and includes nine statements from the questionnaire that deal with the ability of self-regulation in the course of the academic process. Answers to the questions give an idea of the student's abilities and desire to plan and organize his/her academic activity, set academic goals, adapt to changing academic conditions, organize living space around them in the course of learning.

The second factor combines the scores of emotional-evaluative component of academic adaptation. Based on the respondents' answers we can find out the degree of satisfaction with various aspects of the academic process and its results, relations with fellow students and instructors, level of manifestation of positive emotions.

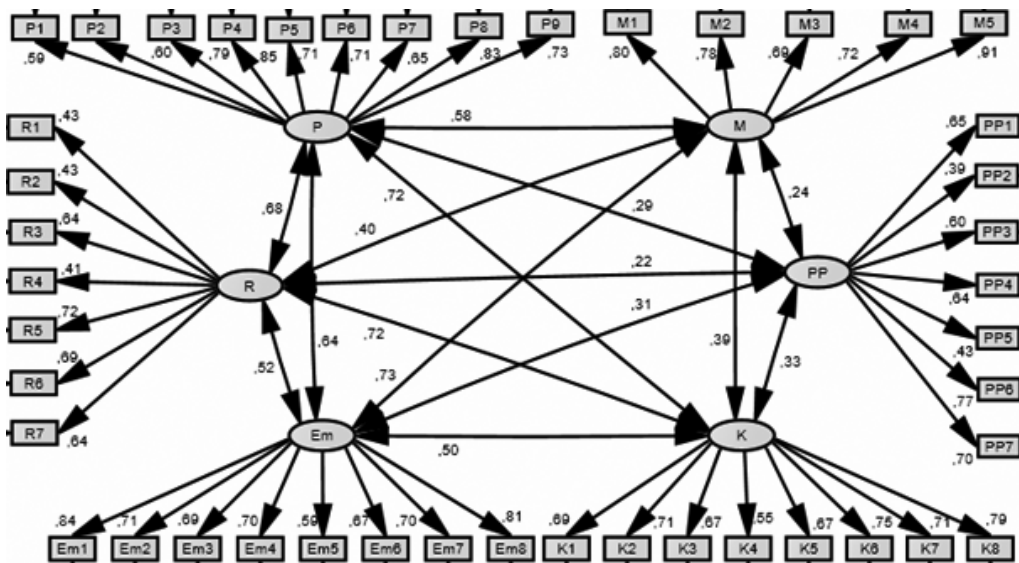


Fig. 1. Proposed model for SEM-based factor analysis validation

The third factor correlates with cognitive components of academic adaptation. Based on the responses for this scale, one can discuss the development of skills for quick and effective processing and memorizing information, switching attention from one subject's content to another subject's content, willingness to include new material into the structures of existing knowledge, level of speech development and its use in the process of cognition; development of logical thinking and ability to model complicated learning situations and the way out of them; use of analysis, synthesis and anticipation in the learning process.

The fourth factor unites the scores for motivational component of students' academic adaptation. With this scale we can single out the most typical academic and professional motives and how strong they are. To a greater extent, motivated professional learning promotes the desire to adapt within academic process.

The fifth factor shows manifestation/lack thereof for the psycho-physiological component of students' academic adaptation. Based on the scores for this scale one

can speak about emotional, intellectual and physical tension in students in the course of learning; presence of negative somatic phenomena; self-assessment of educational impact on chronic diseases exacerbation.

The sixth factor is correlated with the communicative component of students' academic adaptation and is illustrative of the skills and abilities of students that contribute to development of relations with other subjects of education, i.e. developed speech as a way of communication, ability to form contacts, desire for self-presentation, ability to interact with fellow students.

Thus, factor analysis results can serve as the basis for distribution of questions along the corresponding scales. Resulting answers to the questionnaire help to estimate the average score for every component of academic adaptation. It varies from 1 to 7 points. An overall score is calculated as well; it is defined as the sum of average scores for the six components.

As a result of exploratory analysis, it has been found that all 6 components

Table 1

Factor Analysis Results for Academic Adaptation Components

	Component
	1
Personal component	0.838
Emotional-evaluative component	0.787
Cognitive component	0.767
Motivational component	0.698
Communicative component	0.700
Psycho-physiological component	0.417

are included into one single factor (Table 1). Factor weight coefficients are sufficient for contextual interpretation. This indicates that all components of academic adaptation are organized according to the principle of joint variability. However, its weakest element is the psycho-physical component.

As we can see from Table 2, average scores for each component of students' academic adaptation are slightly shifted towards agreement with the statements. The skewness and kurtosis values of the components and the overall indicator of academic adaptation do not exceed acceptable values [18], indicating a normal distribution (see Table 1).

Table 2

One-dimensional Statistical Scores for Components and Overall Result of Students' Academic Adaptation, Correlations with Adaptation Potential Score (Multilevel Personal Questionnaire)

Components	M (SD)	Alpha	Asymmetry (SD)	Kurtosis (SD)	Correlation coefficients		
					With integral assessment of academic adaptation	With adaptation potential	With academic performance
Personal (self-organization)	5.36 (0.98)	0.91	-0.51 (0.12)	0 (0.24)	0.79**	-0.37**	0.27**
Emotional-evaluative	5.26 (1.06)	0.90	0.57 (0.12)	0.21 (0.24)	0.77**	-0.34**	0.16**
Cognitive	5.39 (0.91)	0.89	-0.38 (0.12)	-0.24 (0.24)	0.73**	-0.30**	0.18**
Motivational	5.69 (1.23)	0.87	-1.27 (0.12)	1.18 (0.24)	0.70**	-0.27**	0.12*
Psycho-physiological	4.30 (1.15)	0.80	-0.08 (0.12)	-0.26 (0.24)	0.50**	-0.41**	0.10*
Communicative	5.43 (0.91)	0.81	-0.65 (0.12)	0.42 (0.24)	0.65**	-0.36**	0.16**
Integral evaluation of academic adaptation	31.44 (4.35)	0.79	-0.44 (0.12)	0.54 (0.24)	1	-0.52**	0.22**

Legend: M — mean; SD — standard deviation; ** — level of correlations' significance $p < 0.01$.

The internal consistency check based on the correlations of the components and the integral indicator have also given acceptable results: all correlations are at a high level of significance ($r=0.42-0.84$, $p<0.01$).

From correlation analysis results for academic adaptation scores and the scores of the "Adaptability" questionnaire, it can be seen that all correlations are significant, therefore, there is a conceptual similarity between the phenomena measured using these two methods.

Correlation analysis of academic adaptation indicators and the ongoing progress of students allows to conclude that they are related, which confirms the hypothesis of higher level of academic success in students with high academic adaptation scores.

Discussion of Results

As a rule, the existing techniques for evaluation of students' academic adaptation allow assessing its most obvious aspects, i.e. socio-psychological and/or activity-related. At that, the university's psychological service requires a more sophisticated tool, which is capable of assessing various aspects of students' academic adaptation, so that it could be used in cases of dealing with and preventing adaptation problems in students.

The crucial point in the development of a new technique has been its authors' reliance on the fundamental works of Russian and international psychologists that study adaptation in general [2; 17; 20] and academic adaptation in particular [27; 29; 31]. As a result of development and validation of the technique, that assesses students' academic adaptation, we used confirmatory factor analysis, which allows to confirm the hypothesis about the six-component structure of academic adaptation.

In the course of technique approbation, we have been able to demonstrate its reliability in terms of internal consistency and convergent validity. All scales within the

technique have demonstrated high integral consistency (Cronbach's $\alpha > 0.8$). Comparison of the technique's results with the existing methods of integral assessment of adaptation potential and academic performance has indicated presence of highly significant relations, which means that there is high construct validity of the technique.

The selected scales correspond to representations concerning the structure of students' adaptation [25], as well as representations concerning interferences under various conditions of students' life activity [18]. One of the advantages of the new method is its complexity, versatility and, at the same time, possibility of integral assessment. Another advantage of the technique is that it can be used to work with people with disabilities [33]. The technique's design takes into account issues related to difficulties experienced by the disabled in the course of the academic process.

The obtained data indicates that there is close relationship between characteristics of academic adaptation and indicators of personal adaptation potential, which means that personal adaptive abilities can manifest themselves through different forms of students' adaptation to academic environment. The personal component of academic adaptation reflects students' ability to plan and organize their own academic activities, set learning goals, adapt to changing conditions of education, which is consistent with understanding of academic adaptation in terms of self-regulation of an individual [6], self-organization [21], and their consistency [36]. The emotional-evaluative component of academic adaptation characterizes the manifestation degree of positive emotions in connection with various aspects of academic life. This aspect of academic adaptation has been pointed out in various studies, among which are works by F.B. Berezin [2], Yu.A. Bohonkova [4], and many others. The cognitive component, according to study results, character-

izes the student's ability to process large amounts of information, effectively organize it for understanding, recognition, etc. These data are consistent with previous study results, which indicate that cognitive component of the process of students' academic adaptation is the ability to restructure the processes of memorizing, understanding and mental activity (development of abstract thinking) [22]. The motivational component is the leading one within the structure of academic adaptation [10]. However, in our study, a number of its indicators, which had been identified on the basis of theoretical analysis, were excluded, due to low integration with other characteristics. The psycho-physiological component reflects the degree of stress in students in the course of the learning process, due to their psycho-physiological features. This component's inclusion is consistent with studies that point out the significant importance of physiological processes and their characteristics for students' academic adaptation [23]. As a result of the study, one of the components of academic adaptation is the communicative component. Based on the previous studies, we can see that the socio-psychological aspect of students' adaptation is very important [7; 34]. At the same time, in accordance with the results of studies by Salikhova et al., the most problematic areas of students' adaptation are various aspects of their individual integration into new social communities [21].

Therefore, results of the study indicate that the techniques' structure is consistent with the results of previous studies, as it is aimed at identification of academic adaptation's various components. In the process of technique's approbation, it has been shown that it has good psychometric indicators, which makes it suitable for measuring the integral indicator of students' academic adaptation, as well as its various components and using it for scientific and practical purposes.

Conclusion

Strong differentiation of students' academic adaptation and its connection with higher education quality, successfulness of the academic process, as well as students' mental health state, conditions the necessity of development of the reliable and valid technique for defining both its components and integral assessment.

The unique technique described in this paper is based on the systematic-structural and eco-psychological approaches. It is aimed at identifying adaptation phenomena at various levels, covers all possible variants of adaptive interaction between students' and academic environment of higher educational institutions.

To develop scales and questionnaire statements we used the procedures of peer review, exploratory and confirmatory factor analysis, which made it possible to single out and describe the scales corresponding to academic adaptation components, i.e. personal (regulatory), emotional-evaluative, cognitive, motivational, psycho-physiological and communicative.

In the course of the questionnaire development all psychometric requirements were taken into account, the stages of professional development were observed, and the necessary psychometric indicators were evaluated, i.e. reliability by internal consistency, reliability of questionnaire parts, as well as convergent validity. The main psychometric indicators of the new technique are within the significance or acceptability limits.

The strength of correlations between the technique's scales and the general indicator of academic adaptation and adaptive potential, as well as factor weight (resulting from exploratory factor analysis of the components) allows us to conclude that personal, cognitive and emotional-evaluative components are more important for student's academic adaptation.

The technique is ready for use in psychological practice to assess the degree of students' adaptation or its components. It can also be used for scientific purposes.

The results of theoretical and empirical study allow us to come to the conclusion regarding the prospects for using this tool for scientific research. In particular, understanding of adaptation as a phenomenon of dynamic balance between the individual and the environment suggests possible interference with adaptation in any area of

interaction with this environment. Therefore, comparative studies of the components of academic adaptation at different stages of university studies, studies of socio-psychological and psychological variables mediating academic adaptation and academic productivity at a university, and finally, the study of the psychological and pedagogical conditions of academic adaptation of students in the environment of a higher educational institution, have a lot of potential.

Appendix

Instructions: Answer the following questions about your experiences, relationships and well-being associated with studying at a university using a 7-point scale, where 1 means the complete non-existence of the feature, and 7 means the absolutely complete manifestation of the feature. Please, be thoughtful and honest in your answers.

Strongly agree 1 2 3 4 5 6 7 Strongly disagree

Reference	Statement	Points						
		1	2	3	4	5	6	7
P1	You complete all tasks on time, without putting them off for a long time	1	2	3	4	5	6	7
P2	You take notes during lectures and practical classes to understand the material better	1	2	3	4	5	6	7
P3	Assess the degree of your self-organization in the learning process	1	2	3	4	5	6	7
P4	You strive to achieve your learning goals	1	2	3	4	5	6	7
P5	You strive to adapt to the learning environment	1	2	3	4	5	6	7
P6	You have good skills for self-organization in the learning process	1	2	3	4	5	6	7
P7	You are confident in your success in overcoming the difficulties that arise in the learning process	1	2	3	4	5	6	7
P8	You are able to effectively plan your learning activities	1	2	3	4	5	6	7
P9	You are able to organize the living space around yourself in the learning process	1	2	3	4	5	6	7
E1	You are satisfied with the process of studying at university	1	2	3	4	5	6	7
E2	You are satisfied with your relationship with teachers	1	2	3	4	5	6	7
E3	You are satisfied with the results of your studies at university	1	2	3	4	5	6	7
E4	You are satisfied with the information environment of the university (Internet, library, websites, computer classes, etc.)	1	2	3	4	5	6	7
E5	You are satisfied with the possibility of fulfilling common needs (dining room, toilets, buying stationery)	1	2	3	4	5	6	7
E6	You are satisfied with the convenience of lecture halls, laboratories, gyms, assembly halls, etc.	1	2	3	4	5	6	7
E7	You are satisfied with the possibilities of leisure activities within the educational system of your university	1	2	3	4	5	6	7
E8	Rate the manifestation of your positive emotions associated with learning	1	2	3	4	5	6	7
Cg1	You can easily switch from one subject to another in the learning process	1	2	3	4	5	6	7

Reference	Statement	Points						
Cg2	You can easily find the necessary information in the information sources (books, magazines, the Internet) in the course of preparation for classes at university	1	2	3	4	5	6	7
Cg3	As a rule, you usually try to correlate new material with what you already know	1	2	3	4	5	6	7
Cg4	In general, you can remember large amounts of information by organizing your memory and memorizing process if you want to	1	2	3	4	5	6	7
Cg5	You have a good level of the language of instruction and are able to present the learning material without much effort	1	2	3	4	5	6	7
Cg6	You can easily identify patterns and cause-and-effect relationships in the learning process	1	2	3	4	5	6	7
Cg7	You can mentally represent situations and ways of their development in the learning process	1	2	3	4	5	6	7
Cg8	You are able to analyze the past and take into account the analysis results in the further learning process	1	2	3	4	5	6	7
M1	You are interested in the content of the material and subjects of your major (specialization)	1	2	3	4	5	6	7
M2	You are studying to get a profession in which you then intend to work	1	2	3	4	5	6	7
M3	You study to secure your future	1	2	3	4	5	6	7
M4	You study to become a professional in your field	1	2	3	4	5	6	7
M5	You like your chosen profession	1	2	3	4	5	6	7
PP*1	You experience emotional stress in the process of learning	1	2	3	4	5	6	7
PP*2	You experience intellectual stress in the process of learning	1	2	3	4	5	6	7
PP*3	You experience physical stress in the process of learning	1	2	3	4	5	6	7
PP*4	You have headaches in the process of learning	1	2	3	4	5	6	7
PP*5	You feel the difference in your adaptability to the learning process in comparison with other students	1	2	3	4	5	6	7
PP*6	You usually experience physical discomfort or unpleasant feelings (muscle tension, numbness of the limbs, etc.) during the learning process	1	2	3	4	5	6	7
PP*7	Symptoms of your chronic disorders get worse during the learning process	1	2	3	4	5	6	7
R1	You are satisfied with your relationship with your fellow students	1	2	3	4	5	6	7
R2	You know how to communicate with a stranger	1	2	3	4	5	6	7
R3	You are able to express your thoughts openly and prove your point of view	1	2	3	4	5	6	7
R4	You easily cooperate with others to complete learning tasks	1	2	3	4	5	6	7
R5	You speak so that others understand you	1	2	3	4	5	6	7
R6	You strive to show your best side	1	2	3	4	5	6	7
R7	You can easily interact with your student peers in and outside the classroom	1	2	3	4	5	6	7

Key points for each component are calculated as follows:

Personal component (self-organization)

$$P = \sum P_i / 9$$

Emotional-evaluative component

$$E = \sum E_i / 8$$

Cognitive component

$$Cg = \sum Cg_i / 8$$

Motivational component

$$M = \sum M_i / 5$$

Psychophysiological component (*reverse scale: 7 6 5 4 3 2 1)

$$PP = \sum PP_i / 7$$

Communicative component

$$CC = \sum CC_i / 7$$

Integral assessment of academic adaptation

$$AA = P + E + Cg + M + PP + CC$$

During the standardization procedure, the primary results of respondents after conversion to the z-scale were assigned to one of five intervals (Table).

Normative Indicators of the Methodology

Value range / after z-transform	Interpretation	Integrative indicator SB	
		People (%)	Interval
More than $\bar{M} + 2\sigma (\geq 2)$	Significantly above normal	7 (1.67%)	≥ 40.14
$[\bar{M} + \sigma; \bar{M} + 2\sigma] ([1; 2])$	Slightly above normal	60 (14.32%)	35.73-39.73
$[\bar{M} - \sigma; \bar{M} + \sigma] ([-1; +1])$	Normal	290 (69.21%)	27.23-35.63
$[\bar{M} - 2\sigma; \bar{M} - \sigma] ([-2; -1])$	Slightly below normal	50 (11.93%)	23.46-27.15
Less than $\bar{M} - 2\sigma (\leq -2)$	Significantly below normal	12 (2.86%)	≤ 22.74

The percentage distribution of subjects in the selected groups is close to normative distribution (~2.3%; ~13.7%; ~68%). The further transformation of “raw” points into stens is given in the Table below.

Transformation of “Raw” Points into the Stens of the Academic Adaptation Integral Score

Stens	1	2	3	4	5	6	7	8	9	10
Points	<22.74	22.75— 24.91	24.92— 27.01	27.02— 29.20	29.21— 31.39	31.40— 33.58	33.59— 35.77	35.78— 37.96	37.97— 40.13	>40.14

When working with the technique, the selected test norms allow us to interpret the manifestation of academic adaptation (the lower limit of the normative values interval is the manifestation level of 4 stens, and the upper limit is 7 stens).

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