

## THE FEATURES OF SOCIAL AND AUTONOMIC ADAPTATION TO STUDY CONDITIONS DEPENDING ON AGE, GENDER AND SOCIO-PEDAGOGICAL EDUCATIONAL ENVIRONMENT


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The study is concerned with a pressing issue of assessing social adaptation (SA) and autonomic stability (AS) in the young people studying in various educational institutions. It is necessary to determine the students' social adaptation and autonomic stability at different ages. The study included 100 schoolchildren who living in the big city; 89 schoolchildren living in rural areas; 70 schoolchildren living and studying in the city boarding school. The schoolchildren were aged 14–15. The group of youth included 248 first-year students aged 17–18 and 136 6<sup>th</sup> year students aged 22–23. The study was performed with the use of the two-factor personality questionnaire by M. Gavlinova approved by the European Union for School and University Health and Medicine and adapted to Russian conditions. The authors provide data for determination of social adaptation and autonomic stability in young people aged 17–23. When analyzing the findings, it was found that the differences in social adaptation and autonomic stability between schoolchildren were partially dependent on their gender, type of learning, and place of residence. Given equal starting opportunities in young males and females in the beginning of high school training, young males showed higher SA and AS values compared to young females by the end of training. A group was distinguished that included students showing low SA and AS values, which, in our view, required psychological and medical rehabilitation. Given the findings, we believe that physicians should further examine the patients with low AS values, and psychologists (neuropsychiatrists) should further assess patients with low SA values during medical check-ups in order to ensure prevention and management of the disorders identified in schoolchildren and students.

**Keywords:** social adaptation, autonomic stability, schoolchildren, students

**Author contribution:** Ganuzin VM — scientific management, data acquisition, statistical processing, manuscript writing; Baraboshin AT — data acquisition, literature review.

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## ОСОБЕННОСТИ СОЦИАЛЬНОЙ И ВЕГЕТАТИВНОЙ АДАПТАЦИИ К УСЛОВИЯМ ОБУЧЕНИЯ В ЗАВИСИМОСТИ ОТ ВОЗРАСТА, ПОЛА И СОЦИАЛЬНО-ПЕДАГОГИЧЕСКИХ УСЛОВИЙ ОБУЧЕНИЯ


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Статья посвящена актуальному вопросу — оценке состояния социальной адаптированности (СА) и вегетативной устойчивости (ВУ) молодежи, обучающейся в различных образовательных учреждениях. Необходимо определить социальную адаптированность и вегетативную устойчивость у учащихся в различные возрастные периоды. В исследование было включено 100 школьников, проживающих в условиях крупного города; 89 учащихся, проживающих в сельской местности; 70 учащихся, проживающих и обучающихся в городской школе-интернате, в возрасте 14–15 лет. Группу молодежи составили 248 студентов первого курса 17–18-летнего возраста и 136 студентов 6 курса в возрасте 22–23 года. Исследование проводилось с использованием двухфакторного опросника М. Гавлиновой, утвержденного Европейским союзом школьной и университетской гигиены и медицины, адаптированного к российским условиям. Авторами предлагаются данные для определения социальной адаптированности и вегетативной устойчивости для молодежи в возрасте от 17 до 23 лет. При анализе результатов исследования выявлено, что часть различий в социальной адаптированности и вегетативной устойчивости у школьников зависит от пола, типа обучения и места проживания. Учитывая равные стартовые возможности у юношей и девушек к началу обучения в вузе, к концу обучения юноши имели более высокие показатели СА и ВУ по сравнению с девушками. Была выделена группа учащихся с низкими показателями СА и ВУ, требующая, по нашему мнению, психологической и медицинской реабилитации. Учитывая полученные результаты, мы считаем, что для профилактики и коррекции выявленных отклонений у школьников и студентов в процессе диспансеризации врачу необходимо дополнительно обследовать пациентов с низкими показателями ВУ, а психологу (психоневрологу) — с низкими показателями СА.

**Ключевые слова:** социальная адаптированность, вегетативная устойчивость, школьники, студенты

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Social adaptation (SA) and autonomic stability (AS) take a special place among factors that have a significant impact on the health of schoolchildren and students during their studies. In some cases, social adaptation and autonomic stability of students may be reduced, which in turn affects their quality of life and full implementation of the training program [1–5].

According to various authors, SA and AS of people involved in the educational process depends of many factors, such as learning environment, communication with fellow students and teachers, and place of residence [6–8].

The study was aimed to assess SA and AS in adolsents studying in various schools, students during their university adaptation, and graduates.

**Table 1.** Distribution of scores by quartiles in first-year students

Quartiles	Social adaptation (points)		Autonomic stability (points)	
	Young males	Young females	Young males	Young females
I	0–9	0–11	0–3	0–6
II	10–11	12–13	4–5	7–8
III	12–13	14	6–8	9–10
IV	15–20	15–20	9–16	11–16

**Table 2.** Distribution of scores by quartiles in 6th year students

Quartiles	Social adaptation (points)		Autonomic stability (points)	
	Young males	Young females	Young males	Young females
I	0–8	0–8	0–3	0–6
II	9–10	9–11	4–5	7–8
III	11–13	12–13	6–8	9–11
IV	14–20	14–20	9–16	12–16

**Table 3.** Social adaptation and autonomic stability according to the schoolchildren's gender and place of residence

Gender	Social adaptation, %			Autonomic stability, %		
	good	normal	poor	good	normal	poor
Boys (urban settings)	20.5	68.2	11.3	26.2	57.2	16.6
Boys (rural settings)	36.5	46.2	19.2	34.6*	57.7	7.7
Boys (boarding school)	21.7	63.0	15.3	11.7	58.8	29.5*
Girls (urban settings)	21.4	59.0	19.64**	30.4**	59.0	10.6
Girls (rural settings)	26.3	59.7	14.0	42.14**	45.6	12.3
Girls (boarding school)	40.9**	50.0	9.14**	5.2**	73.7	21.1**

Note: \*  $p < 0.05$  significance of differences in AS values between boys living in rural areas and the boarding school; \*\*  $p < 0.05$  significance of differences in SA and AS values between girls living in rural areas, urban areas and the boarding school.

## METHODS

The study involved 100 schoolchildren, among them 50 young males and 50 young females, living in the big city; 89 schoolchildren, among them 33 young females and 46 young males, living in rural areas; 70 schoolchildren, among them 42 young males and 28 young females, living and studying in the city boarding school. The schoolchildren's age was 14–15. The group of young adults included 248 first-year students, among them 124 young females and 124 young males aged 17–18, and 136 6<sup>th</sup> year students, among them 35 males and 101 females aged 22–23. Schoolchildren and students lived in the same climate and geographical region.

The adaptive capacity was assessed by determining social adaptation and autonomic stability. Evaluation of autonomic stability and social adaptation was performed using the two-factor personality questionnaire by M. Gavlinova approved by the European Union for School and University Health and Medicine and adapted to Russian conditions. The questionnaire made it possible to obtain the group characteristics of the studied cohort, it could be used for comparison with the groups of different social status, lifestyle, region of residence, etc. [6]. The standards reported by academician of RAMS A. A. Baranov were used as controls [6].

We developed separate SA and AS assessment scales for the first-year and 6<sup>th</sup> year students, the scores were divided into "good", "normal", and "poor" [7].

Taking into account the lack of standard SA and AS values for young adults studying in the universities, we developed the assessment scales for this age group [6, 7]. The distribution of scores obtained when processing the studied sample of young

adults by quartiles (Tables 1, 2) makes it possible to obtain the limits for individual assessment of surveyed individuals and their classification into groups, i. e. the groups with good, normal or poor SA and AS.

The data provided in Tables 1 and 2 show that the limits of autonomic stability found in all quartiles in young females and males have some differences, in contrast to social adaptation values showing no gender differences (Tables 1, 2).

Statistical data processing was performed using the tatSoft Statistica v.7.0 and Biostatistika 4.03 software packages. The analysis of contingency tables involved the use of chi-squared ( $\chi^2$ ) test and two-tailed Fisher's exact test. Two independent samples were compared using the nonparametric Mann-Whitney test. The differences were considered significant at  $p < 0.05$ .

## RESULTS OF THE STUDY

Our study of adolescents studying in various schools revealed the following SA and AS values (Table 3).

The students' SA and AS values of are provided in Table 4.

## DISCUSSION OF THE RESULTS

When assessing the SA and AS status in schoolchildren in accordance with their gender and place of residence the following values were obtained. The largest share of good SA values was observed in girls living in the boarding school and boys living in rural areas (Table 3). At the same time, one-fifth of urban girls and rural boys show low SA values, suggesting the difficulties in communicating with their fellow students and teachers. The smallest share of low SA values was observed in

**Table 4.** Social adaptation and autonomic stability according to the medical students' gender and year at the university

Gender	Social adaptation,%			Autonomic stability,%		
	good	normal	poor	good	normal	poor
Young males (1st year)	15.4	51.2	33.4	30.8	46.1	23.1
Young males (6th years)	34.4*	53.0	12.6*	25.0**	46.9	28.1
Young females (1st year)	18.5	48.4	33.1	26.6	51.6	21.8
Young females (6th year)	24.2	57.6	18.2	14.1	48.4	37.1

Note: \*  $p < 0.05$  significance of differences in SA values between the first-year and 6<sup>th</sup> year male students; \*\*  $p < 0.05$  significance of differences in AS values between the 6<sup>th</sup> year male and female students.

girls living in the boarding school. High and normal SA values observed in the girls from the boarding school were possibly due to their greater autonomy and adaptation to living with others compared to adolescents living in families.

The following results were obtained when assessing the AS values of adolescents. The highest values suggestive of good AS were observed in rural boys and girls, while the lowest values were observed in girls living in the boarding school. We believe that the findings could be explained by living conditions, namely by the less pronounced negative effects on the central nervous system in rural adolescents and the most pronounced negative effects in adolescents living in the boarding school.

The SA and AS values observed in students, both female and male, had some features (Table 4). The number of first-year students showing good values was lower, and the number of those showing low values was higher compared to the 6<sup>th</sup> year students. In turn, the students' autonomic stability decreased by their 6<sup>th</sup> year, possibly due to prolonged increased load on the central and autonomic nervous systems along with insufficient physical exertion and motor activity. These data are in line with the data obtained by other researchers [8–10].

Assessment of the data obtained revealed significant gender differences in the AS values observed in male and female students. The number of young males showing good autonomic stability was larger and the number of those showing low autonomic stability was smaller compared to girls.

## CONCLUSIONS

Analysis of the results showed that the differences in SA and AS values observed in schoolchildren were related to their gender, type of learning, and place of residence. Given equal starting opportunities in young males and females in the beginning of high school training, young males showed higher SA and AS values compared to young females by the end of training. Given the findings of students showing low adaptation, we believe that physicians should further examine the patients with low AS values, and psychologists (neuropsychiatrists) should further assess patients with low SA values during medical check-ups in order to ensure prevention and management of the disorders identified in schoolchildren and students. Moreover, special attention should be paid to students showing both low SA and low AS.

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