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PROGNOSTIC PARAMETERS AND RISKS OF STUDY OVERLOAD IN ADOLESCENT STUDENTS

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The paper presents the results of an empirical study on study overload in adolescent students. The theoretical and methodological grounding of the study is given. The objective relevance of the problem of study overload for the modern system of general education is shown. The nature and manifestations of study overload in the educational process were studied through cause-effect relations. Psychodiagnostic data was subjected to mathematical and statistical processing (correlation analysis, multiple regression analysis), classified, summarized, and interpreted. The results obtained in the empirical study allowed us to understand the prognosis and risks of study overload formation on psychological well-being in adolescence. The conclusion is given that study overload is caused not at the expense of the students' main study load but as a result of attending additional types of educational classes. The results obtained concluded that one in five adolescent students have a significant, often maximum, pronounced excess of study load. Moreover, one in four students experience the presence of moderate study overload. To prevent study overload, we state that one should focus not only on the normative regulation of certain types of educational activities but also on the students' subjective state. Recommendations of possible directions of preventive work with students on psychological prevention of study overload are outlined.

Keywords: *students' health, optimum study load, study overload, psycho-hygiene of educational activity, psychological prevention of study overload.*

Due to the changing requirements for educational results, it is important to form new learning strategies. To this end, creating an integrated psychological and pedagogical support system for secondary school students and preventing disorders in their psychological well-being becomes particularly relevant. For many decades, in Russian education in particular, the problem of study overload, its impact on the health of schoolchildren, and the possibility of psychological prevention have been actively discussed. In today's modern society, success largely depends on the ability to work productively with various media on the ability to systematize, constantly assimilate, and transform new learning content [1, 2]. Study overload arises in learning when there is an active forming of life attitudes and values. This becomes a highly significant risk factor for developmental disorders and reduces the personal need and focus on continuous mastery of knowledge [3].

Middle school, ontogenetically and chronologically coinciding with adolescence (11–15 years), becomes an essential stage in the students' personalities formation and development. Many known Russian and foreign researchers of adolescence (L.I. Bozhovich, B.D. Elkonin, D.I. Feldstein, V.S. Mukhina, I.V. Dubrovina, M. Klee, G. Kreig, D. Bokum) often noted that at this stage of mental development, the formation of worldview and personal self-esteem, life

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principles, attitudes towards various activities, including their health are being developed in students [4–10]. In the works of I.A. Baeva, M.A. Volkova, L.V. Tarabakina, V.R. Kuchma, and other Russian authors, it is stated that, currently, the number of students who devalue the importance of health is increasing. Often they prefer a lifestyle that is destructive to their psychological well-being and physical health [11–16]. All this considered, creating a comprehensive system of psychological and pedagogical support for the development of secondary general school students and the prevention of disorders in their psychological well-being becomes objectively relevant. In particular, for many decades, the problem of study overload, its impact on the students' health and the possibilities of psychological prevention have been actively discussed in Russian education. New studies are regularly undertaken in this direction (M.M. Bezrukikh, M.I. Korsunskaya, S.M. Grombach, I.N. Zakharova, F.V. Ippolitov, G.A. Karakashadze, L.S. Namazova-Baranova, J.Z. Torybaeva, etc.) However, while exciting and scientifically productive, these works are often fragmented in relation to each other and focus on different aspects because of the multidimensionality and versatility of the phenomenon studied, as well as the existing contradictions [17–22]. Data from the reports made by the Scientific Center for Children's Health under the Russian Academy of Medical Sciences indicate that the negative impact of study overload on the development of modern schoolchildren increases from elementary school to high school. It suggests that work on study overload prevention should be strengthened and intensified at each subsequent stage of education and based on the students' age characteristics [23].

Currently, the hygienic ("quantitative") approach to study overload prevails in most general education institutions in Russia. The approach is presented in the state bylaws "Sanitary and Epidemiological Requirements for the Conditions of Education Organization in General Education Institutions" (Sanitary Rules and Regulations), which regulates various types of study load. In Russia, Sanitary Rules and Regulations were first put into effect in 1996 by the Resolution of the Chief State Sanitary Doctor of the Russian Federation. Today, many general education institutions believe that the schedule, drawn up under the Sanitary Rules and Regulations, guarantees the absence of students' study overload. However, some researchers are critical about such study load norms. They believe that the study load quantified by these Regulations in hours and minutes is designed for the average student and does not consider the psycho-physiological characteristics of different groups of students. In particular, some representatives of educational psychology believe that a large number of factors determine the study load. In the ranking of influences on the students' study overload, the number of teaching hours is only ranked third or fourth [24, 25].

To address the presence of study overload in students, one should first review the content of this concept. In the "Explanatory Dictionary of the Russian Language" edited by D.N. Ushakov, the word "overload" is defined as a state of something too heavily loaded, as a state of a person excessively burdened with work [26]. The study of the synonymic line of the concept allows us to say that overload is the presence of something excessive, exceeding the norm, overwhelming. Based on these definitions, we can say that certain external factors psychologically determine the phenomenon of overload. A person gets an internal feeling of overwork, burden, inability to perform the task. Many specialists (teachers, psychologists, doctors, physiologists, hygienists), representing various scientific disciplines, define study overload according to their corresponding fields. Meanwhile, in the case of study overload, almost all researchers agree that there is no recovery of physical resources during rest. It also leads to negative emotional experiences and harms students' cognitive, personal, and communicative development. Excessive stress and rapid fatigue are noted, which can turn into chronic fatigue syndrome with prolonged impact.

A consequence of study overload can be a sharp and prolonged decrease in mental and physical performance, decreased memory abilities and attention, and psychoneurotic disorders (sleep disorders, obsessive fears, tearfulness, moodiness, increased irritability). Other consequences include laziness, bad moods, loss of interest in learning, and reduced motivation for other socially valuable activities that require intellectual and physical activity. There is a noticeable decrease in academic performance and a slowing down in intellectual development, which leads to school maladaptation and violation of interpersonal communication. As a result, it contributes to disharmonious personality development. Hence, the general position of most researchers is that a high learning load can be considered optimal only if it contributes to the child's mental development. If such load helps form the intellectual sphere, it creates conditions for emotional well-being and fully developed personality, i.e., it does not reach the level of study overload [27].

Study overload can be both objective (regulated by Sanitary Rules and Regulations) and subjective in nature. The subjective nature of study overload is understood as the perception of the study load by the student as excessively high. This also includes negative consequences caused by study – a constant feeling of physical fatigue, deterioration of psychological well-being (decrease in mood, inner frustration, etc.), and lack of opportunity for students to devote time to activities of interest or rest. Considering the above, one should start talking about study overload among students if two indicators are present: objective (time-related) and subjective (students' assessment of their study load as excessively high and the presence of its negative consequences). Indeed, it is difficult to determine the optimal level of functioning for each person, especially for the developing psyche of a child or teenager. Imagine a student who spends three to four hours a day on homework and, in addition, attends additional classes with the teacher, subject electives, and tutors. In this case, we can confidently say that such time expenditures are highly likely to cause fatigue and harm this student's health, intellectual and personal development.

It is important to note that among the studies carried out in this direction, there are practically no practice-oriented studies that would present a system of psychoprophylactic support for students focused on study overload prevention. Thus, the study overload problem, and the development of practical methods to prevent and overcome it, cannot be considered completely resolved for students in basic general education.

When studying the nature and manifestations of study overload in the educational process, it is advisable to consider a number of factors. These include psychological predictors and risk factors as well as psychological and pedagogical cause-and-effect relationships that lead to their occurrence. We can distinguish psychological and pedagogical groups by regarding the theoretical analysis data of Russian and foreign studies carried out in this direction. One of them is external – determined by the features of the educational process, interaction with teachers, and parents. The other includes internal – determined by students' individual (type of nervous system, level of performance) and psychological (cognitive and motivational spheres of personality, emotional-volitional self-regulation) features. Hence, the factors causing study overload can be presented as a generalized model shown in Figure 1.

The convergence of psycho-physiological indicators of a nervous system type, quantitative and qualitative performance indicators, motivation for a learning activity, and the emotional-volitional sphere is of greatest interest in the study of risk factors influencing study overload in middle school students. As noted above, the influence of the aforementioned factors on the occurrence of study overload has been considered in various specialists' studies. As theoretical analysis of the available publications shows, there is insufficient information about the influence of these factors' individual indicators on the study overload occurrence. The study of this phenomenon

is of particular importance for the organization of psychoprophylactic work. It allows targeted psychological influence on the specific causes of study overload in students [28, 29].

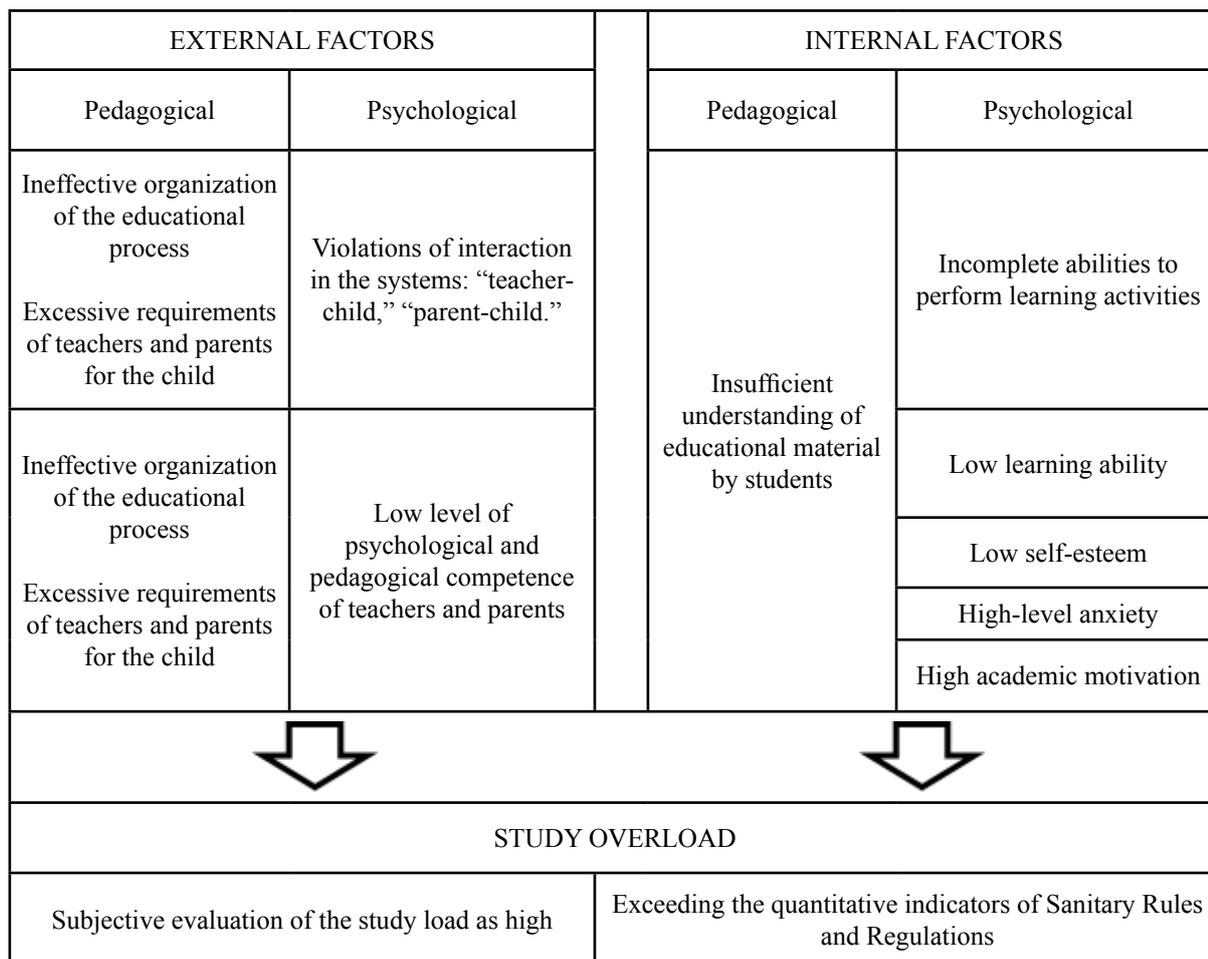


Fig. 1. The system of factors influencing the study overload formation

Let us focus more closely on each of these indicators. The type of human nervous system is a physiological basis on which mental properties are formed. Based on the individual-typical features, it is possible to predict the effectiveness of the human activity, anticipate possible difficulties, and create the necessary conditions to improve activity effectiveness. I.P. Pavlov and his followers B.M. Teplov, V.D. Nebylitsyn viewed the nervous system strength as the most important parameter of higher nervous activity, which reflects the ability of nerve cells to withstand either very strong or long-acting (not necessarily very strong) excitement [30]. The strength of the nervous system allows the determination of cortex cells’ working capacity limit, underlies performance and endurance and sensitivity to stimulus action, as one of its main properties, reflects the limit of working capacity and the analyzer’s sensitivity. So, for example, students with a weak nervous system respond to a task faster but reach the maximum level of activation earlier than students with a strong nervous system. This is a critical indicator because the proper distribution of the educational material by level of complexity and volume will play an essential role in preventing the occurrence of overload.

The next indicator is performance as a characteristic of the individual’s ability to perform a particular type of activity. Considering the time and purpose of the activity itself, regarding the task to be solved, we distinguish the maximum, optimal, and reduced working capacity. In

research, we considered quantitative parameters: 1) information processing speed which influences nervous system functional mobility 2) productivity, as the ability to carry out some activities or process a certain quantity of information in unit time 3) endurance, as the ability to work for a long time without signs of weariness. Qualitative indicators that indirectly characterize the strength of the nervous system should also be considered: accuracy and reliability as the ability to perform an activity error-free and maintain accuracy over a long period, as well as the ability to maintain high performance in activities for a certain time, for example, accurate work. During the schooling period, it is important to purposefully form students' skills by using knowledge of their individual characteristics in the organization and implementation of learning to obtain better results in activities and prevent psychological disadvantage, including study overload [31].

An important factor in the production of study overload is emotional background. As M.A. Kholodnaya, E.G. Gelfman, L.N. Demidova point out, it has a two-way influence. On the one hand, study overload generates a lack of confidence in students because of the impossibility of doing what is planned. On the other hand, school anxiety and emotional discomfort lead to lower efficiency and higher fatigue. As a result, there can be a subjective assessment of high study load and an increase in time costs. Many researchers consider anxiety an individual psychological feature because of a human tendency for frequent and intense anxiety [27]. Traditionally in educational psychology, school anxiety is seen as a manifestation of ill-being, which indicates school disadaptation, caused by various unpleasant factors. It leads to the development of disorders in psychological and personal growth and conditions of somatic character. A.M. Prikhozhan's research showed that school anxiety is a complex psychological phenomenon that cannot be viewed only as a psychological property or as a property acquired due to individual life experiences. According to the author, the emergence and consolidation of anxiety occur according to the mechanism of a "closed psychological circle," i.e., arising in the process of an activity, anxiety partially reduces the latter's effectiveness. The consequence becomes either negative self-esteem or negative assessment by others, resulting in negative emotional experience intensified in relation to the situation. The preconditions for school anxiety can be situational and individual. Anxiety is not the same at different school stages, and in adolescence, it can be fixed within the framework of personal anxiety. Therefore, it is important to study the mutual influence of school anxiety factors and study overload, and determine the direction of psychological intervention to prevent school anxiety influenced by high study loads [32].

Another factor that can provoke study overload is learning activity motivation. When considering the classifications of learning motives proposed by P.M. Yakobson, M.V. Matyuhina, A.K. Markova, in which cognitive and social motives have different levels of representation, we can see that the needs of students provoke different motives. Depending on this, students' attitudes towards the educational processes, such as perceiving, understanding, memorizing, and absorbing the educational material, are formed. In addition, students develop a subjective assessment of the study load, the amount and complexity of work performed the desire or unwillingness to devote time to learning activities. Motives, characterized by students' orientation to mastering new knowledge and facts, primarily satisfy the basic need for understanding. In this case, a student's interests can go far beyond the curriculum, while insufficient development of cognitive abilities and low working capacity may well provoke the study overload. Motives aimed at mastering ways of learning activities, dictated by the desire to satisfy the need for self-confidence, competence, and the desire to achieve mastery, under certain circumstances may also cause study overload. Social motives, which emerge from students' interaction with the surrounding reality, are the result

of satisfying various needs. They are dictated by the personal meanings, requirements, and attitudes of the social environment. Motives dictated by a sense of duty and responsibility are determined by the need to conform to the social environment. Positional motives arise from a desire to get approval, and/or recognition. Motives of social cooperation, when the student is focused on the interaction with the social environment, satisfy their need for interaction. A number of studies prove that motives dictated by the desire for secondary benefit (reward, avoidance of failure), to a lesser extent, ensure success in learning activities. In this case, the content of learning activities becomes a secondary concern. The quality of knowledge decreases. The student does not strive to improve learning activities, develop cognitive abilities, or show exploratory activity. As a result, the increasing complexity of the study load from year to year can become unbearable [33].

The influence of the indicated factors on the study overload has been a subject of consideration in various specialists' studies. However, as theoretical analysis of the available publications shows, there is insufficient information about the individual indicators' influence, for every factor, on the study overload. The study of this phenomenon is of particular importance for the organization of psychoprophylactic work, as it allows a targeted psychological influence on the specific causes of students' study overload.

The empirical research is supposed to find answers to the following questions: what types of learning activities contribute most to the occurrence of study overload; how middle school students with different levels of study load estimate their study load and distribute their free time; whether there is a relationship between academic performance and study overload; what individual psychological features are predisposed to the occurrence of study overload.

For this purpose, a psychological diagnostic was carried out, the results of which were subjected to mathematical and statistical processing (multiple regression analysis, correlation analysis) and interpretation. The empirical study involved a diagnostic complex, including the following:

- 1) questionnaires developed by M.M. Bezrukikh: "General educational (school and extracurricular) workload," "The daily routine of a schoolchild"
- 2) author's questionnaire "Subjective evaluation of the study load" (E.L. Arshinskaya)
- 3) the "Dotting test" method (E.P. Ilyin)
- 4) correction test "Landolt rings" (modified by V.N. Sysoev)
- 5) personal questionnaire "School Anxiety Questionnaire," created by B. Phillips (adapted by A.M. Prikhozhan)
- 6) questionnaire "Attitude to school subjects" (G.N. Kazantseva).

In our study, we also relied on the quantitative data of Sanitary Rules and Regulations on study load (latest edition, September 1, 2011) as an officially accepted, objective and measurable (in minutes and hours) indicator. Psychological and pedagogical analysis of students' learning achievements was carried out based on the grades put in class registers by teachers.

The sample of the empirical study was formed of secondary school students from several general educational institutions of Irkutsk ("Education Center № 47," "Secondary General Education School № 24"). At all stages of the study, the total number of examinees was 527; all of them were schoolchildren from sixth to eighth grade (216 boys, 311 girls). The full-scale empirical study of students was long-term, conducted over eight years from 2010 to 2018, and was implemented in several phases. In particular, the conducting of the ascertaining stage, aimed at studying the volume of training workload, daily routine, and students' well-being, and the study of psychological interactions, presented below, were implemented in 2012–2014 (corresponding to the period of subjects being taught, which made up the sample population of our study, from the sixth to the eighth grade).

The study overload among students was indicated with the help of questionnaires “General Training (school and extracurricular) workload,” “Student’s daily regime,” according to which all the subjects were conditionally divided into four conditional subgroups:

- 1) “super-overloaded” students, who were found to exceed all normative indicators of study load significantly
- 2) “moderately overloaded” students, who had an insignificant excess of normative study load indices
- 3) “non-overloaded” students, whose study load did not exceed permissible norms
- 4) “under-loaded” students whose study load was below the standards recommended by Sanitary Rules and Regulations.

Before proceeding to the comparative characterization and comparison of the aforementioned subgroups, it was noted that according to Sanitary Rules and Regulations, the maximum daily study load for students in grades 6–8 ranges from 370 minutes (6 hours 10 minutes) to 390 minutes (6 hours 30 minutes), and weekly – from 37 hours 10 minutes to 39 hours, which was close to the limit of the weekly workload of an adult (42 hours).

When analyzing the percentage distribution of examinees in the subgroups “super-overloaded” (1), “moderately overloaded” (2), “non-overloaded” (3), and “under-loaded” (4), it was found that more than half of the surveyed students (56.6%) had study overload by objective indicators. At the same time, every fifth student (20%) had a significant, often maximum excess of study load, and every fourth student (36.6%) had a moderate study overload. Slightly less than half of the students in grades 6–8 (45.4%) did not exceed the acceptable norms in terms of study load. The exact number of respondents (20%) with overloaded students was represented by low indicators of study load, which allowed them to form the subgroup of “underloaded students.”

The mathematical-statistical method of multiple regression analysis (MRA) was used to study the relationship between study overload and the types of learning activities that caused it. The selection of factors (variables) was carried out theoretically and empirically by conducting a correlation analysis and assessing the relationship between the factors and the result. The primary data for the multiple regression analysis were variables measured on a metric scale, each of which had a significant relationship with the study overload index ($p \leq 0.01$). No strict functional relationship between them was observed. The “Lessons” variable was excluded from the analysis even though, statistically, it significantly correlated with the dependent variable because it was closely related to the variable “Electives” ($p \leq 0.01$), which in the final model substantially reduced the predictive value of the latter. Derived variables were also excluded from the analysis (e.g., the “Homework” variable was split into two variables: “Basic Homework” and “Additional Homework”). The interpretation of empirical data concerning the significance of one variable’s linear relationship measure with the set of other variables R for each model was reliable. So it was reasonable to interpret the obtained multiple regression models meaningfully. Our study obtained a rather high coefficient of multiple determination (82%), representing the proportion of the dependent variable R^2 . Consequently, the results of our study’s statistical prediction (hypothesis) could be taken into account.

Based on the mathematical and statistical data obtained in our study, the multiple regression equation for the indicator “Study overload” was as follows:

$$SO = -339.21 + 5.39AH + 4.81IS + 2.92BH + 2.71AC + 1.99EC,$$

Where: SO – study overload, AH – additional homework, IS – individual studies (tutors), BH – basic homework, AC – additional classes at school, EC – elective courses.

Numerical coefficients in this formula are indicators of the influence rate of independent variables AH, IS, BH, AC, EC on the dependent variable SO. They were interpreted as the contribution of the corresponding independent variable to the variability of the dependent variable. In the regression equation presented, the terms (coefficients) were given in decreasing order of their significance.

Thus, based on the obtained multiple regression equation (“formula of study overload”), we could state that among the factors we studied, additional homework (5.39) and individual lessons on subjects and tutoring (4.81) had the most significant influence on study overload. Basic homework (2.92) and additional classes with subject teachers (2.71) were also major contributors to study overload. “Elective courses” (1.99) was the indicator with the smallest influence on the magnification of study overload.

Consequently, to normalize the indicators of study load, it is necessary to pay attention to the activities that more likely cause study overload, namely – additional homework and individual studies, in particular with tutors. Statistical averages of the study load distribution (group mean values and standard deviations $M \pm \sigma$) in the previously indicated subgroups of examinees (“super-overloaded,” “moderately overloaded,” “non-overloaded,” “underloaded”) are presented in Table 1, which shows that teenagers experiencing study overload are most actively involved in all types of activities that form study overload.

Table 1

The distribution indicators of schoolchildren’s study load

Study load indicators	Average group values and standard deviations ($M \pm \sigma$), in points			
	Super-overloaded	Moderately overloaded	Non-overloaded	Under-loaded
School lessons	218 ± 15,7	218 ± 10,4	216 ± 14,8	209 ± 22,6
Electives	19 ± 19,4	15 ± 15,3	5 ± 6,2	2 ± 4,2
Additional lessons	16 ± 26,9	15 ± 20,7	5 ± 1,8	4 ± 5,4
Individual additional lessons	18 ± 36,2	10 ± 18,0	6 ± 1,1	0 ± 0
Study load	271 ± 53,0	255 ± 30,2	227 ± 13,9	215 ± 22,6
Study overload	39 ± 51,9	25 ± 27,0	11 ± 11,9	-15 ± 18,1
Basic homework	143 ± 40,4	123 ± 28,5	105 ± 24,0	66 ± 28,8
Additional homework	65 ± 48,5	54 ± 19,5	45 ± 30,6	9 ± 13,8
Total homework time	207 ± 54,1	176 ± 28,5	150 ± 26,3	75 ± 26,3
Homework overload	57 ± 54,1	26 ± 38,1	0 ± 26,34	-74 ± 26,3
Study load	478 ± 51,3	431 ± 37,8	377 ± 23,6	291 ± 20,18
Study overload	98 ± 47,6	48 ± 34,1	0 ± 23,8	-89 ± 21,0

Thus, we can make a general conclusion that the study overload of middle school students is caused not at the expense of the main study load but as a result of attending additional classes. This data suggests that it is necessary to optimize the opportunities of acquiring material and work during the main types of learning activities to prevent study overload.

When studying the data obtained with the help of the author’s questionnaire “Subjective evaluation of study load,” it was established that the students of the first subgroup (“super-

overloaded”) evaluate their study load as high ($M = 2.9 \pm 0.2$), and they regard the consequences of intensive study load for themselves as significant ($M = 2.7 \pm 0.3$). “Moderately overloaded” learners are divided into two subgroups: 1) students (50%) whose subjective assessments indicated study overload by two factors ($M = 2.8 \pm 0.3$, $M = 2.5 \pm 0.4$) and 2) students (50%) who rated their study load as adequate ($M = 2.1 \pm 0.4$, $M = 1.7 \pm 0.3$). Among the students with normal quantitative indicators (“non-overloaded”), the subjective evaluation of the study load was within the norm ($M = 2.0 \pm 0.4$, $M = 1.6 \pm 0.4$). 70% of students with low values of study load (“underloaded”) had a low and sufficient level of intensity of study load, and its consequences were evaluated as insignificant ($M = 1.8 \pm 0.6$, $M = 1.4 \pm 0.8$). It is worth noting that 30% of “underloaded” students chose high rates of study load intensity by one or two factors.

The study of free time distribution in the empirically allocated four subgroups showed that the consequences of study overload were reflected in the fact that “super-overloaded” and “moderately overloaded” students more often than others did not get enough sleep and rarely went out for outside activities. Positive correlations were found in these subgroups between study load indicators and sleep deprivation: $r_{xy} = 0.43$, $p \leq 0.05$, $r_{xy} = 0.46$, $p \leq 0.05$ (in the “overloaded” subgroup), $r_{xy} = 0.30$, $p \leq 0.05$ (in the “moderately overloaded” subgroup). In comparison with the others, moderately overloaded students are characterized by paying more attention to sports, hobbies, and housework. It is quite possible that these activities take extra time away from their studies and, therefore, their study load indicators are lower. The study of correlations demonstrated that attending individual classes and electives causes the “moderately overloaded” student group to attend hobby groups less often $r_{xy} = 0.31$ ($p \leq 0.05$) and spend less time on gadgets and computers $r_{xy} = 0.29$ ($p \leq 0.05$).

Schoolchildren whose study load meets the norms (“non-overloaded”), often do not get enough sleep because they devote a lot of time to gadgets and computers. Compared to the subgroups of overloaded students (“super-overloaded,” “moderately overloaded”), they pay less attention to activities of interest (CAS activities) and housework. Consequently, we can assume that the reduced rest time in this category of students (“non-overloaded”) is due to a passion for social media and gadgets (Internet, computer games), and not for studying, as in the first two subgroups (“super-overloaded,” “moderately overloaded”). The study of correlations between the indicators of the study load and the distribution of free time in this category of students (according to Pearson) also showed that they do not get enough sleep and participate in CAS activities less often because of their homework ($r_{xy} = 0.33$, $p \leq 0.05$; $r_{xy} = -0.32$, $p \leq 0.05$, respectively). They reduce their leisure time and walks because of extracurricular activities at school ($r_{xy} = -0.34$, $p \leq 0.05$).

Students with study load below the recommended norms (“underloaded”) spend more time on recreation. They do not pay enough attention to CAS activities and read less (compared to students in other subgroups). They do the necessary homework and spend a lot of time on computers and gadgets. Thus, unlike students in the third subgroup (“non-overloaded”), their preoccupation with social media and videogames do not occur at the expense of leisure time, but at the expense of study time, or time for hobbies and reading, i.e., those activities that contribute to all-round personal development. No correlations were found between the indicators of free time distribution and the indicators of study load in this category of schoolchildren (“underloaded”).

The analysis of the examinees’ progress allows us to state that in the first two subgroups (“super-overloaded” and “moderately overloaded”), the students’ grades are higher than in the other two subgroups mentioned above (“non-overloaded” and “under-loaded”). Significant differences are found only between students with high and low study load indices (the first and fourth, the second and fourth subgroups).

A Spearman's Rank-Order Correlation was conducted to identify statistically significant correlations between the examinees' performance and study load indicators. As it follows from the obtained data, a high degree of statistical significance (at $p \leq 0.01$) was revealed between academic performance and additional classes at school ($r_s = 0.23$), and academic performance and time of homework ($r_s = 0.25$). Also, a positive relationship of strong significance (at $p \leq 0.01$) was found between academic performance and weekly study load ($r_s = 0.21$), and academic performance and study overload ($r_s = 0.23$). Significant positive relationships at the $p \leq 0.05$ level were found between academic performance and time spent on electives ($r_s = 0.17$), individual studies ($r_s = 0.19$), and daily study load ($r_s = 0.17$). Based on these results, it is statistically plausible that many students have to work on material in extracurricular time to get higher grades. Consequently, it is logical to assume that one of the causes of study overload is incomplete comprehension of the learning material during lessons, requiring additional time and effort to compensate for gaps and deficiencies in learning at school (lessons).

Distribution of students by the level of academic performance in the four subgroups – “super-overloaded” (1), “moderately overloaded” (2), “non-overloaded” (3), “underloaded” (4) – allows us to see that in each of these subgroups there are plenty of students who get a “C”. At the same time, the percentage of “C” marks increases from the first to the fourth subgroup. In the first and second subgroups, there are more students whose average grade point average is “83”, “89,” and “94–100”. All this data allows us to conclude that an increase in study load may not be the key to academic success for all students. Even among significantly overloaded students who devote a lot of time and attention to learning, there are students whose average achievement score is only “73” and “76” points, and in the third and fourth subgroups – “not overloaded” and “underloaded” – there are students whose average achievement score is quite high, equalling “87”, “90” and “100” points.

Returning to the psychoprophylactic aspect of study overload, one should introduce preventive programs both in educational and extracurricular work. It should be carried out in relation to all subjects of the educational process – teachers, tutors, and parents. The task of the educational psychologist is to identify problems that may further cause certain difficulties or deviations in the development of children and eliminate them through preventive work [34]. A psychoprophylactic program should prevent the occurrence of certain difficulties or deviations in a child's mental development in the first place. Consequently, prevention of study overload should be aimed at the psychological causes of overload, such as psycho-emotional stress associated with a long stay in the classroom, poorly formed intellectual skills and learning abilities, low level of learning motivation, low cognitive activity, insecurity, and fear of being called up to the board. Summarizing the results of the empirical study, we believe it is necessary to emphasize that in the educational process, to prevent study overload, it is necessary to focus not only on the normative regulation of certain types of learning activities, but also on the subjective state of students.

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