

# Attitude of Schoolchildren towards Emergency Distance Learning: Relations with Intrinsic Motivation and School Satisfaction

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The results of a study of retrospective attitudes towards distance learning during the COVID-19 pandemic among secondary school students are presented (N=439, grades 5—8th). Motivational predictors of this relationship were analyzed, explaining the individual differences among schoolchildren in their preference for distance learning. With the help of structural equation modeling, it is shown that a negative attitude towards distance learning that took place in the recent past, compared to traditional learning, is associated with greater satisfaction of their basic needs for autonomy, competence and relatedness with teachers and classmates, and this relationship is mediated by intrinsic learning motivation, which, in turn, predicts attitudes towards forced distance learning, school satisfaction, and academic performance. It is shown that intrinsically motivated schoolchildren who are interested in the educational process, in general, have a negative attitude towards the forced distance learning that took place during COVID-19 pandemic and would not want it to return.

**Keywords:** forced distance learning, attitude towards distance learning, intrinsic motivation, basic psychological needs, online education, COVID-19, schoolchildren.

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## Отношение школьников к вынужденному дистанционному обучению: связь с внутренней мотивацией и удовлетворенностью школой

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Представлены результаты исследования ретроспективного отношения к дистанционному обучению во время пандемии COVID-19 у школьников средних классов школ (N=439, 5—8-й классы). Изучены мотивационные предикторы этого отношения, объясняющие индивидуальные различия школьников в предпочтении дистанционного обучения. С помощью структурного моделирования показано, что негативное отношение к имевшему место в недавнем прошлом дистанционному обучению сочетается с большей текущей удовлетворенностью базовых потребностей в автономии, компетентности и связанности с учителями и одноклассниками. Эта зависимость опосредована внутренней мотивацией, в свою очередь предсказывающей отношение к вынужденному дистанционному обучению, удовлетворенность школой и успеваемость. Показано, что внутренне мотивированные школьники, заинтересованные учебным процессом, в целом негативно относятся к вынужденному дистанционному обучению, имевшему место во время пандемии COVID-19, и не хотели бы его возврата.

**Ключевые слова:** вынужденное дистанционное обучение, отношение к дистанционному обучению, внутренняя мотивация, потребности, онлайн-образование, цифровая образовательная среда, COVID-19.

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## Introduction

By the end of April 2020, schools were closed in 178 countries around the world, affecting approximately 98% of schoolchildren (1.3 billion). The period of emergency online learning (EOL) resulting from the COVID-19 pandemic has proved to be not only a serious challenge for those who teach, but also a potential stressor for students and especially schoolchildren. Due to the compulsion, universal obligation, unexpectedness, extremeness and unpreparedness of distance education in case of COVID-19, previous studies comparing the effectiveness of distance learning and face-to-face education are not entirely relevant (see, for example, [1]) and the current situation requires separate consideration. The main problems of forced distance learning at school include the following: the impossibility of using a number of previously used teaching methods, limited communication between teachers and students, the inability to monitor the level of independence of the tasks they perform, the overload of students with tasks, the failure of students to receive the proper level of feedback from teachers, the need to apply more independent efforts to master subjects by students [9; 10].

The study of the attitude of schoolchildren and students to forced distance learning is not only of practical interest, due to the possibility of a repetition of such a situation, but also of theoretical interest — as an opportunity to test models of motivational processes developed on the basis of ordinary educational situations of offline learning to the situation of forced online.

In a study of Swiss schoolchildren in 4th-8th grade conducted during the COVID-19 pandemic, using multilevel structural modeling, it was shown that students who were more autonomously motivated and focused on learning during pandemic had a more positive attitude towards this educational format. Another predictor of positive attitudes was the relatively low level of stress their parents experienced regarding EOL, with the level of

stress being more pronounced if COVID-19 was perceived as a threat [13]. On the other hand, the study by Nevryuev et al. [4] showed that students' preference for distance learning is predicted by emotional burnout and alienation from studies. Gender differences were revealed in relation to this form of education: girls of primary school age perceive it less positively than boys and feel more threatened due to COVID-19 [13].

Intrinsic motivation is one of the most significant indicators of the quality of the motivational process and predictors of persistence, adaptive coping with learning difficulties, and academic performance [2]. In a recent meta-analysis of intrinsic and various types of extrinsic academic motivation [16], covering 344 samples and 223,209 high school students, it was shown that intrinsic motivation is not only the best predictor of academic achievement, but also a predictor of many indicators that characterize well-being, such as positive and negative affect, life satisfaction, social-emotional functioning.

A study of indicators of student engagement, satisfaction with learning, and subjective learning competence before and during the pandemic among students shows that all of them decrease during the pandemic [7]. At the same time, it is shown that the decrease in enthusiasm, subjective competence and satisfaction with studies is less pronounced in students with a higher level of intrinsic and integrated motivation and a lower level of amotivation in learning. Intrinsic motivation and self-esteem (identified) motivation act as variables that determine students' acceptance of the digital educational environment during forced online learning during the last pandemic, and amotivation is much more pronounced in the group that has a negative attitude towards distance learning [6].

According to the self-determination theory, proposed by E. Deci and R. Ryan, three basic psychological needs — autonomy, competence and relatedness — are external sources of in-

trinsic motivation. The role of satisfaction of basic needs in the specifics of learning motivation during the period of forced distance learning was analyzed in a number of studies with the participation of schoolchildren [12; 15] and students [14]. Research confirms the important role of all three basic needs for intrinsic motivation, involvement in learning, and positive emotions in the context of distance learning. Some differences in the results relate only to the role of the relatedness need. It is of interest to further analyze the role of this need, also considering the fact that it was most frustrated among young people during the pandemic [11; 20]. The need for relatedness can be especially frustrated in EOL in adolescents, whose leading activity is intimate-personal communication. This assumption is also consistent with the data of a recent study of parents of adolescents on EOL education: parents complain about the social isolation that arose because of their children's transition to EOL education, the lack of interactivity, and increased screen time [17].

Considering previous studies of students' negative attitudes towards EOL and its psychological sources, the main hypothesis of the study was that intrinsically motivated students in the post-pandemic (not online) period will have a higher level of satisfaction of basic psychological needs and a more negative attitude towards what they had in recent past EOL.

## Method

**Sample and procedure.** The sample comprised 439 students of the fifth (12% of the sample), sixth (34%), seventh (26%), and eighth (28%) grades from a secondary school in Moscow, of which 245 (56%) were boys, 167 (38%) girls, 27 (6%) did not specify gender. The mean age was 12.93 years old ( $SD = 1.06$ ). The study was conducted face-to-face, in the classroom, at the invitation of the school psychologist. Participation was voluntary, feedback or rewards were not provided. The study was conducted immediately after the lifting of restrictions in schools and the return to face-to-face education (Spring 2021).

**Measures.** The Academic Motivation Scale for schoolchildren and college students [3] which is a Russian version of AMS developed by R. Vallerand and his colleagues (1992) was used to assess different types of academic motivation. The questionnaire includes eight scales that allow to assess three types of intrinsic motivation — motivation to learn, achievement motivation and self-development motivation; four types of extrinsic motivation — identified/ self-respect motivation, introjected, positive external, negative external, and amotivation. In contrast to similar foreign studies [13], using this and the following questionnaire we measured the motivation to study normally at school, not the motivation to study in a distance format. The coefficients of internal consistency (Cronbach's  $\alpha$ ) of all questionnaires and scales used in our study are presented in Table.

Satisfaction of basic psychological needs in learning activities was assessed using a questionnaire consisted of 15 items, forming four scales: the need for autonomy, competence, relatedness with classmates and teachers. Considering two different sources of satisfaction of the need for relatedness in adolescence, we evaluated its two subspecies. Using a 4-point Likert scale, the subjects assessed how much they agreed with each option to continue the phrase "Today at school...", for example: "we could choose which tasks to do and what to discuss" (Autonomy), "I was good at everything" (Competence), "I felt that I liked my teachers" (Relatedness with teachers), "I felt that I liked the guys in the class" (Relatedness with classmates). The results of the confirmatory factor analysis indicate a good fit of the four-factor model to the data:  $\chi^2 = 150.75$ ;  $df = 84$ ;  $p \leq 0.001$ ;  $CFI = 0.968$ ;  $TLI = 0.960$ ;  $RMSEA = 0.043$ ; 90% confidence interval for RMSEA: 0.031-0.053;  $PCLOSE = 0.866$  (WLSMV estimation method).

The preference for distance learning was assessed using three items: "I liked studying online (at home)", "I would be better if we stayed to study online at home", "I would not

like to study online anymore”, each of which allowed five answer options from 1 — completely disagree, to 5 — completely agree. After inverting the last question, the average score was calculated on a scale estimating a positive attitude towards distance learning.

Satisfaction with school and relationships with teachers was assessed using two relevant subscales from the Multidimensional Students Life Satisfaction Scale by E.S. Huebner in Russian adaptation [8].

GPA. Academic performance was assessed on the basis of self-reported data: grades obtained during the survey in seven academic subjects (Math, the Russian language, Literature, Biology, History, Foreign language no. 1 and Foreign language no. 2) for the past quarter. Schoolchildren were asked to indicate their grades in the above subjects for the last quarter. Along with the marks obtained from the respondents for each of the subjects separately, the overall average grade obtained by averaging these marks for all the listed disciplines was also used.

The analysis of the relationships between the studied indicators and intergroup differences was carried out using the Pearson correlation coefficient and Student's t-test in the R statistical environment. In order to analyze a holistic system of relationships between indicators of intrinsic motivation, satisfaction of basic needs, academic performance (GPA) and attitude to distance learning, a structural linear modeling was implemented using Mplus 8 [21]. Bootstrap analysis (5000 samples) was used to assess the statistical significance of mediated effects in Mplus [18; 19].

During statistical analysis of the data, considering the large number of statistical tests performed, effects that were significant at  $p \leq 0.001$  were considered as statistically significant.

## Results

**Results of analysis of correlations and intergroup differences.** The correlations shown in the Table indicate the ex-

pected direct relations of the three types of intrinsic motivation with the satisfaction of basic needs, satisfaction with relationships with teachers and school, and the academic performance. At the same time, all intrinsic motives showed inverse correlations with the attitude to distance learning. Various types of extrinsic motivation and amotivation also showed expected correlations with the other variables (see Table).

Satisfaction with all basic psychological needs is directly related to satisfaction with relationships with teachers and school, and inversely with the attitude towards distance learning. At the same time, direct correlations with academic performance were found for the need for competence and relatedness with the teacher. Satisfaction with school and relationships with teachers turned out to be inversely related only to attitudes towards distance learning, while their relationship with academic performance was not found. There was also no correlation between performance and attitudes towards distance education.

*Gender differences.* Comparison of the means in the groups of boys and girls showed that only difference in academic performance ( $t(410) = 5.25$ ;  $p \leq 0.001$ ) has high statistical significance, while its magnitude is moderate (Cohen's  $d = 0.50$ , girls have higher GPA). Less significant (at  $p \leq 0.01$ ) differences were found in motivation for self-development ( $t(410) = 2.95$ ;  $p \leq 0.01$ ) and satisfaction of the relatedness need with teachers ( $t(410) = 2.90$ ;  $p \leq 0.01$ ): in both cases, the mean value for girls is higher than for boys.

Using one-way ANOVA we did not find statistically significant differences between students in the fifth, sixth, seventh, and eighth grades in academic motivation and preference for distance learning.

**Results of structural modeling.** We considered as dependent variables the factors of satisfaction with the school, academic performance, and attitudes towards distance education. It was assumed that intrinsic motivation, dependent on the satisfaction of basic

Table  
**Intercorrelations and descriptive statistics of motivations, attitudes towards distance learning and academic performance (N=439)**

Scales and measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Intrinsic M: Mot. to learn	-															
2. Intrinsic: Achievement mot.	0.69*	-														
3. Intrinsic: Self-development mot.	0.73*	0.65*	-													
4. Self-respect mot. (identified)	0.52*	0.43*	0.73*	-												
5. Introjected motivation	0.28*	0.20*	0.38*	0.52*	-											
6. Positive external motivation	0.03	0.06	0.20*	0.40*	0.55*	-										
7. Negative external motivation	-0.22*	-0.19*	-0.10	0.12	0.44*	0.60*	-									
8. Amotivation	-0.52*	-0.40*	-0.50*	-0.39*	-0.18*	0.04	0.29*	-								
9. Need for autonomy	0.49*	0.46*	0.48*	0.37*	0.14	0.03	-0.15	-0.34*	-							
10. Need for competence	0.45*	0.47*	0.50*	0.31*	0.13	0.01	-0.13	-0.33*	0.48*	-						
11. Need for relatedness with teachers	0.48*	0.39*	0.45*	0.33*	0.23*	0.02	-0.12	-0.39*	0.53*	0.47*	-					
12. Need for relatedness with classmates	0.36*	0.28*	0.34*	0.22*	0.16*	0.05	-0.11	-0.28*	0.38*	0.28*	0.36*	-				
13. Satisfaction with school	0.65*	0.54*	0.56*	0.38*	0.18*	0	-0.21*	-0.56*	0.56*	0.39*	0.54*	0.40*	-			
14. Satisfaction with relationships with teachers	0.58*	0.51*	0.49*	0.33*	0.19*	0.02	-0.16*	-0.42*	0.50*	0.42*	0.67*	0.34*	0.70*	-		
15. Attitude towards distance learning	-0.31*	-0.25*	-0.26*	-0.19*	-0.09	0.01	0.10	0.29*	-0.27*	-0.17*	-0.21*	-0.21*	-0.44*	-0.27*	-	
16. Academic performance	0.25*	0.17*	0.23*	0.13	-0.04	0	-0.15	-0.23*	0.01	0.28*	0.18*	0.09	0.12	0.14	-0.02	-
17. Age	-0.09	-0.10	-0.13	-0.14	-0.07	-0.10	-0.05	0.09	-0.10	-0.13	-0.05	-0.01	-0.13	-0.06	0.03	-0.08
Cronbach's $\alpha$	0.85	0.87	0.82	0.81	0.57	0.85	0.70	0.84	0.70	0.81	0.77	0.81	0.82	0.87	0.85	-
Means	3.21	2.72	3.3	3.47	3.33	3.21	3.44	2.41	2.23	2.74	2.6	2.79	2.74	3.07	3.48	4.26
Standard deviations	0.98	1	0.97	1.03	0.86	1.18	1.06	1.13	0.66	0.74	0.85	0.86	0.84	0.93	1.26	0.45

Note. Significance: \* —  $p \leq 0.001$ . The numbers of variables in the column headings of the table correspond to the numbers of variables in the rows.

needs, is their common predictor. Satisfaction with relationships with teachers was also considered as a predictor of school satisfaction, for which covariance with satisfaction of basic needs was allowed. Considering the fact that one of the indicators of satisfaction of basic needs is the satisfaction of the need for relatedness with teachers, a cross-loading of this indicator on the factor of satisfaction with relations with teachers was added to the model. In addition, according to the revealed correlation between the relationship between distance learning and school satisfaction (see Table), a covariance between the relevant factors was added to the model.

The estimation of this model (see Fig.) showed an acceptable fit to the data:  $\chi^2 = 769.79$ ;  $df = 367$ ;  $p \leq 0.001$ ; CFI = 0.926;

TLI = 0.918; RMSEA = 0.050; 90% confidence interval for RMSEA: 0.045—0.055; PCLOSE = 0.493; N = 439. Analysis of the statistical significance of mediated through intrinsic motivation effects of satisfaction of basic psychological needs showed that such effects are statistically significant at  $p \leq 0.001$  for preference for distance learning (standardized mediation effect  $ab_{cs} = -0.30$ ), school satisfaction ( $ab_{cs} = 0.34$ ), and academic performance ( $ab_{cs} = 0.22$ ).

Thus, the results show that the intrinsic motivation is the predictor of negative attitudes towards distance learning, which in its turn depends on the satisfaction of the basic psychological needs of schoolchildren and also determines higher school satisfaction and academic performance (GPA).

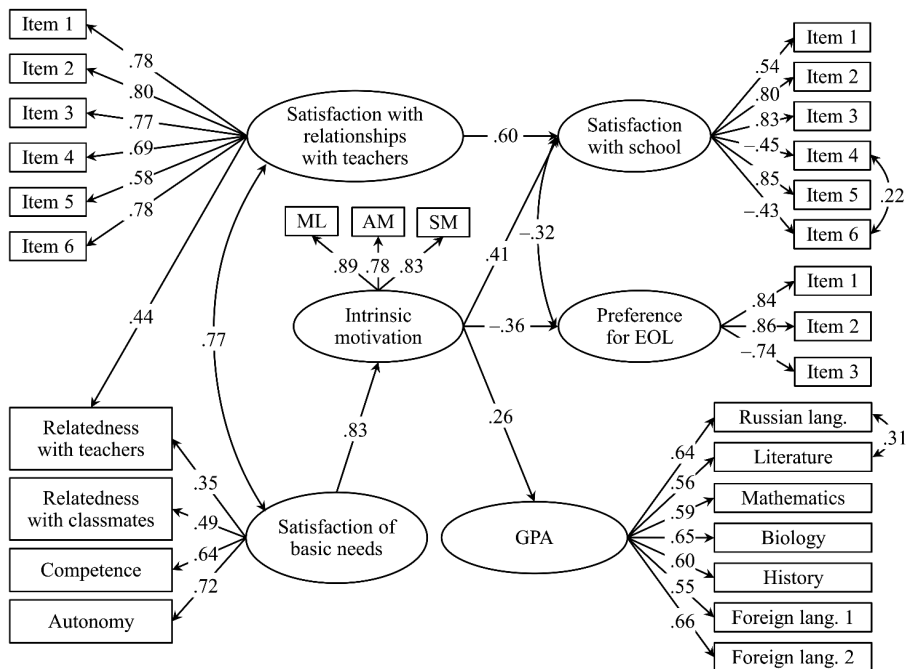


Fig. Structural model of relationships between intrinsic motivation, satisfaction with school and relationships with teachers, academic performance and attitudes towards distance learning (EOL — emergency online learning, ML — motivation to learn, AM — achievement motivation, SM — self-development motivation, lang. — language, all the coefficients are standardized and significant at  $p \leq 0.001$ , residuals are omitted for the sake of parsimony)



Thus, the results show that the predictor of negative attitudes towards distance learning is the intrinsic academic motivation, which, in turn, depends on the satisfaction of the basic psychological needs of schoolchildren and also determines higher school satisfaction and good academic performance.

## Discussion

The data obtained relate to the reasons for the negative attitude of adolescent schoolchildren to distance learning, which is certainly specific for this version of distance learning, since it was forced, unexpected and implemented without proper preparation in organizational, psychological, as well as methodological and technical terms. Turning to the problem of intrinsic motivation that is our main interest, we note that, apparently, schoolchildren intrinsically motivated by ordinary (off-line) studies and distance learning will differ from each other. We have shown that students who are intrinsically motivated and satisfied with the school have a negative attitude towards the EOL that took place and would not want it back. The discovered phenomenon may be related to the lower satisfaction of students with forced distance learning, its overall lower efficiency compared to face-to-face education, and its specifics that do not support engagement and intrinsic motivation. This testifies the need to develop special technologies and teaching methods in case a temporary transition to this format.

The results of our study are in good agreement with the conclusions obtained in the study by Nevryuev et al. [4] on a sample of students, where positive attitude towards EOL was predicted by emotional burnout and alienation from learning. Since these negative states are known to be combined with a decrease in intrinsic motivation for learning and subjective well-being [5], we expected the negative relationships of in-

trinsic motivation and school satisfaction with negative attitudes towards distance learning found in our study. The fact that Nevryuev and colleagues' results were obtained on a student sample, and similar results of our study were obtained on schoolchildren, indicates the universality of the identified phenomena, their prevalence in groups of different ages of students. At the same time, our data did not confirm the opposite relationships found among students [4] of attitudes towards distance learning and academic performance; verification and refinement of this conclusion is one of the prospects of this study. Also, in accordance with the data of previous studies [3; 15] our results show that all three indicators of intrinsic motivation are associated with academic performance.

Comparison of the results of our study with the results of other researchers [12; 14] concerning the role of basic psychological needs in intrinsic motivation and engagement in EOL confirms the conclusions obtained on the Chinese sample [12], in which an approximately equal contribution of each need was demonstrated. Thus, the results obtained in our study once again confirm the universality of the self-determination theory and the applicability of its basic statements not only to regular life situations, but also to situations of force majeure, in this case, based on the attitude of schoolchildren to forced distance learning.

## Conclusion

For the first time, a study of attitudes towards distance learning during the COVID-19 pandemic was conducted among middle school Russian students; motivational predictors of this attitude were identified that explain individual differences in schoolchildren's preference for distance learning. The results obtained relate to a specific variant of EOL, i.e. carried out involuntarily, unexpectedly and without proper technical, methodological and psychological preparation.



The negative attitude towards the EOL that took place, in comparison with traditional learning, is associated with a greater satisfaction of their basic needs for competence, autonomy and relatedness with teachers and classmates, and this relationship is mediated by intrinsic learning motivation, which in turn predicts the attitude towards the recent EOL that took place, as well as school satisfaction and academic achievement.

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The results obtained testify to the lower psychological effectiveness of the forced distance learning that took place compared to traditional full-time face-to-face education, indicating the importance of systematic work to master the existing tools of distance learning, the development of new technologies for distance learning of schoolchildren and the need for psychological support for teachers and students in emergency situations that violate habitual learning processes.

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