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Academic Performance in Different Learning Formats: Contribution of Procrastination and Coping Strategies

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Abstract

The purpose of this research was to study the effect on academic performance of changing the learning format and the contribution of procrastination and coping strategies to the academic performance of students, when changing the learning format from contact to distance. Research methods: analysis of academic performance, Lay General Procrastination Scale in adapted by Vindeker, COPE Kraver in adaptation by Rasskazova; Greenglass Proactive Coping Behavior questionnaire, adaptation by Starchenkova; mathematical methods. The sample size was 151 people. According to the results: 1) The learning format affects the academic performance of students. The nature of this influence, along with external factors, is mediated by a number of psychological characteristics of students, in particular, the level of procrastination and the nature of coping strategies. 2) When switching from contact to distance learning, the success of educational activities was associated with the level of academic performance. The transition to the distance format led to an improvement in the performance of senior students. 3) Students with low academic performance have a higher level of general procrastination associated with delay in making vital decisions than students with high academic performance. 4) Students with low academic performance are more likely to use humor as a coping strategy, and this is associated with a deterioration in academic performance. High academic students are more likely to find emotional support, and this is associated with improved academic performance. The research result can be used in the development of work programs of academic disciplines in a differentiated manner for senior and junior students.

Keywords: academic performance, the success of education activities, learning format, procrastination, coping strategies.

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Introduction

The problem of student learning success in the higher education system, the analysis of its external and internal predictors, becomes especially relevant in a pandemic, when the learning format changes dramatically, students need more self-organization, independence and volitional regulation of activity, and the number of stress situation increases. The topic of integration of different learning formats in the higher education system is given a lot of attention in modern pedagogy and educational psychology. But integration presupposes complementarity, enrichment of the educational process by introducing different forms and methods of teaching. While educational institutions, including universities, faced the need to quickly change the format of education from contact to distance learning in 2020.

And if the change of the contact format of training to distance learning is a external factor which cannot be predicted and controlled, but to which one needs to adapt, then internal factors, including cognitive processes, motivation, psychological properties of a person, ways of adapting to changing conditions can be as a personal resource that contributes to improving the effectiveness of educational activities, and an obstacle that interferes with successful learning. This work is devoted to the study of the influence such an external factor as a change in the format of training on academic performance, and the study of the contribution such internal, psychological factors as procrastination and coping strategies to the academic performance of students in different formats of training.

Purpose and objectives of the study

The aim of the study was to study the impact on academic performance of changing the learning format and the contribution of procrastination and coping strategies to the academic performance of students, when changing the learning format (from contact to distance learning). Research objectives: 1) analysis of the dynamics of academic performance during the transition from contact to distance learning for students of different courses; 2) a study of differences in the level of general procrastination and the severity of coping strategies (in particular, proactive ones) among students with high and low academic performance; 3) analysis of the relationship between academic performance and the severity of procrastination and coping strategies among students in different learning formats.

Literature review

Academic performance as a resultant aspect of the learning process is polyfactorially conditioned (Meshkov, 1996) and is determined by a number of both external and internal factors.

The researchers attribute to external factors the peculiarities of the organization of the educational process, and management of educational activities of students (Nam, 2005), a system of pedagogical requirements, including the degree of consistency and coordination of actions and requirements of different teachers, the teaching method of a particular discipline, the teacher's attitude to the student (Khizroeva & Kimpaeva, 2010). Based on the allocated Nam (2005) factors of academic success, such as management of educational activities and organization of the educational process, then a sharp transition from contact to distance learning format led to difficulties in organizing the educational process. In terms of the academic load, the number of hours of independent work of students increased, difficulties arose with material and technical support, due, on the one hand, to the different capabilities of students in providing computers, Internet connections, webcams and microphones, on the other, to the impossibility of carrying out a number of laboratory work outside university without special equipment.

The researchers attribute to internal factors the student's motivation, the level of his intellectual development, the volitional component in the structure of educational activity (Ashirbekova, 2019; Meshkov, 1996; Nam, 2005), strength, quality and type of motivation (Gordashnikov & Osin, 2009; Meshkov, 1996), anxiety and emotional stability (Nam, 2005), type of attribution, self-efficacy, peculiarities of self-organization of students (Khizroeva & Kimpaeva, 2010) and others. A number of authors attribute procrastination and coping strategies to internal predictors of academic performance.

There is no clear understanding of the phenomenon of procrastination among psychologists. The inconsistency stems from the fact that procrastination can have both negative and positive consequences. It is possible to combine the definitions of Kovylin (2013), Pychyl (2014), Lay (1986, 1988), Steel (2007), defining procrastination as a deliberate irrational delay in the execution of planned affairs, accompanied by negative consequences for a person. Procrastination is irrational, because a person understands the illogicality of his decision, foresees negative consequences, it is accompanied by negative emotional experiences, which distinguishes it from laziness (Varvaricheva, 2010).

Milgram and Tenne (2010) distinguish “task procrastination” and “decision-making procrastination” describing the types of procrastination. The vast majority of studies on the relationship of procrastination to academic performance have looked at academic procrastination as a form of task procrastination. Much less studied is the relationship between academic performance and procrastination in life-saving decision-making.

The researchers have found a number of interrelationships between academic procrastination with different psychological properties: low volitional self-regulation, persistence, impulsivity, insecurity, a low level of self-leadership and self-acceptance, a high level of internal conflict (Bazyko, 2016), negative relationships with academic performance, achievement motivation, self-development and self-esteem (Rudnova, 2017), links between the parameters of academic procrastination with mental states, the level of subjective control, educational motivation and academic performance among students-procrastinators (Tron, 2017).

An analysis of works devoted to the study of differences in the severity of procrastination among students with different academic performance and, conversely, differences in academic performance among students with different levels of procrastination shows a controversial picture. A number of researchers (Karlovskaya & Baranova, 2008; Ivutina & Shurakov (2013); Rudnova, 2017) provide data that among low and high performing students, there are differences in the level of academic procrastination. At the same time, in the study of Goncharova and Gvozd (2017), there were no differences in the level of academic performance among students with different levels of academic procrastination. In the work of Karlovskaya and Baranova (2008) were found a relationship between low academic performance and academic procrastination, but no connection with general procrastination was found. Kim and Seo (2015) presents the results of a meta-analytical study based on the results of 33 studies of the relationship between academic performance and academic procrastination with the participation of 38,529 respondents. It has been found that high levels of academic procrastination are associated with low academic performance. But the results depended on the method used to assess the level of procrastination and student performance. There no expected association was found between academic performance and procrastination rates when self-reported were used. If the variables were evaluated externally, a negative correlation was found.

Studies that have found links between academic procrastination and academic performance have negative correlations that allow assessing the contribution of academic procrastination to academic performance as an impediment to successful learning. The task of identifying factors contributing to an increase in the effectiveness of educational activities focuses attention on coping strategies.

The concept of coping (coping strategies) was first introduced by Lazarus and Folkman. Nartova-Bochaver (1997) identified three approaches to understanding the phenomenon of coping with stress: psychoanalytic (coping behavior is one of the methods of psychological defense), dispositional (“coping” as a personality trait), transactional or situational approach (coping behavior is a dynamic process where the cognitive and behavioral efforts of the individual are aimed at reducing the impact of stress).

Another area of research is related to the study of activity motivation in the study of achievement motivation, self-regulation, goal-setting, the subject's response to difficulties and failures in the performance of educational, professional and other productive activities (Rasskazova, Gordeeva & Osin, 2013).

Most studies of the links between coping strategies and academic performance used the methodology developed by Lazarus and Folkman in the framework of the situational approach, and assuming the allocation of problem-focused and emotion-focused coping methods (for example, Nizhegorodtseva & Grafkova, 2016; Perchenko, 2016). It seems interesting the study of the links between academic performance and strategies of anticipatory coping, oriented towards the future (proactive coping) in the context of a sharp change in the format of education. Traditional (reactive according to Greenglass, 2002) forms of coping are aimed at eliminating or mitigating the harm already caused by the stressor. Proactive and preventive coping involves a) accumulation of resources; b) understanding and awareness of potential stressors; c) assessment of potential stressors at the initial stage; d) early attempts at coping; e) evaluation of the success of the attempts made (Danilenko, 2019; Starchenkova, 2009; Yaltonsky, 2010).

Summing up, it can be concluded that:

1) A sharp change in the format of training from contact to distance learning led to changes in such external factors affecting academic performance as management of educational activities and the organization of the educational process (redistribution of the study load to the independent work of students, difficulties with material and technical support), which could affect on the academic performance of university students.

2) Among the internal predictors of academic performance, procrastination and coping strategies are distinguished. But the nature of the relationship of these factors with academic performance is not unambiguous and needs additional research:

- The vast majority of studies on the relationship between procrastination and academic performance consider academic procrastination as a type of task procrastination. At the same time, much less attention is paid to studying the links between academic performance and procrastination in making vital decisions and implementing long-term plans.

- conflicting data were obtained when studying differences in the severity of procrastination among students with different academic performance and, conversely, differences in academic performance among students with different levels of procrastination;

- in most studies of the links between coping strategies and academic performance, the methodology for identifying coping strategies was used, developed by Lazarus and Folkman in the framework of the situational approach. But in a pandemic, when the situation is uncontrollable, it seems important to study the peculiarities of coping strategies in students from the standpoint of other approaches, in particular 1) the approach of Carver, Scheier and Weintraub (1989), which takes into account both situational coping strategies and underlying dispositional styles are their basis; 2) theories of proactive coping behavior.

Methodology

Research methods and techniques

Methods - psychological testing, proxseometric method (analysis of academic performance), methods of mathematical statistics (Wilcoxon T criteria, U - Mann-Whitney, r - Spearman) using Statistica 10.

Psychological testing included 1) "General procrastination scale" Lay, adapted by Vindecker and Ostanina; 2) Questionnaire of coping with stress COPE Craver, Scheyer and Weintraub, adapted by Osin, Gordeeva and Rasskazova; 3) The Greenglass et al. Proactive Coping Behavior Questionnaire, adapted by Starchenkova.

Empirical base of research

The empirical base of the study was the Novosibirsk State Technical University. The study of the features of procrastination and coping strategies was carried out in 2017-2018 (sample size 90 people) and in 2019-2020 (sample size 122). The analysis of academic performance was carried out for the fall semester of 2019, when students studied in a contact format and for the spring semester of 2020, when the training was distance. Students who were expelled and transferred to other areas of study for the period 2017-2020 were excluded from the general analysis. The sample size was 151 students of 1-4 courses. The study of procrastination was carried out on the entire sample. The study of coping behavior strategies was carried out on students of 1, 2 courses.

For comparative analysis, the sample was divided on the following grounds: 1) low / high academic performance: two groups were identified - with low academic performance (the total average score for all passed sessions is less than 4) and with high academic performance (the total average score for all passed sessions is 4 and above); 2) the course of study: two groups are identified - students of the 1st and 2nd courses in the amount of 76 people and students of 3, 4 courses in the amount of 75 people.

Results

1. Analysis of the dynamics of academic performance of students in the transition from contact to distance learning.

According to the results of mathematical and statistical analysis using the Wilcoxon T criteria, during the transition from contact to distance learning in the general sample, the indicators of academic performance did not change (T-emp. = 3478, $p = 0,12$). There was no shift in performance indicators in the sample of students with low academic performance (T-emp. = 824, $p = 0,98$). But in the sample of students with high academic performance during the transition from contact to distant education, significant changes occurred in the level of academic performance (T-emp. = 887, $p = 0,02$). An analysis of descriptive statistics (Table 1) shows that the mean practically did not change in the general sample and among students with low and high academic performance.

Table 1. Descriptive statistics on student performance across different learning paths

	Sample size	Mean (M)	Median	Mode	Mode frequency	Min	Max	Stan. dev.
Total sample								
Average score 1	151	4,1	4,1	5,0	19	2,4	5,0	0,7
Average score2	151	4,1	4,4	5,0	26	2,0	5,0	0,8
Overall score	151	4,1	4,1	4,0	5	2,3	5,0	0,6
Low-performing students								
Average score 1	61	3,4	3,4	3,25	7	2,4	4,3	0,4
Average score2	61	3,4	3,4	3,5	4	2,0	4,5	0,7
Total score	61	3,5	3,6	3,7	3	2,3	4,0	0,4
High achievers								
Average score1	90	4,5	4,6	5	19	3,3	5,0	0,4
Average score2	90	4,6	4,7	5	26	3,4	5,0	0,34
Overall score	90	4,5	4,5	several		3,8	5,0	0,31

Note: Average score 1 - average score for a session when learning in a contact format; Average score 2 - the average score for the session when learning in a distance format; Total score - the average score based on the results of all passed sessions

The shift came at the expense of Mode. In the sample of students with high academic performance, the most frequent average score for the session is 5. The frequency of occurrence of this indicator in the contact form of education is 19, when switching to distance learning it increases to 26. Thus, in the group of students with a high level of academic performance, when moving from in contact with the distant form of education, academic performance has become higher.

Analysis of the dynamics of academic performance among senior and junior students showed that the academic performance of junior (1, 2) students did not change during the transition to the distance learning format (T-emp. = 1063, $p = 0,29$). In the groups of junior students with high and low academic performance, no significant changes were revealed, but a tendency to a decrease in the level of academic performance in the group of junior students with low academic performance can be noted (T-emp. = 189, $p = 0,06$). The range of characteristics in the group with high academic performance practically did not change, while in the group with low academic performance the polarization of extreme values increased. In the period of study in the contact form, the minimum average score in the group of students with low academic performance was equal to 3, the maximum - 4.3, during training in the distance format, the minimum score dropped to 2.1, the maximum - increased to 4.5.

The picture is different for senior students. Performance indicators for the sample of senior students as a whole changed (T-emp. = 125, $p = 0,01$). Both students with low academic performance (T-emp. = 141, $p = 0,0001$) and students with high academic performance (T-emp. = 62,5, $p = 0,02$) have indicators of academic performance in the transition from contact to distance learning format has increased.

2. A study of differences in the level of general procrastination and the severity of coping strategies (in particular, proactive ones) among students with high and low academic performance.

The differences were revealed in terms of the level of procrastination. The severity of procrastination in the group with low academic performance is higher than in the group with high academic performance (Table 2).

Table 2. Significant differences in the level of procrastination and the severity of coping strategies among students with high and low academic performance

	M \pm σ (with high academic performance)	M \pm σ (for low academic performance)	U - Mann-Whitney	Significance level, p
Procrastination	50 \pm 12,1	55 \pm 12,1	2213	0,04
Coping strategies				
Humor	9,5 \pm 3,3	11,36 \pm 3,42	518,5	0,04

Using social support for emotional reasons 12,5± 2,4 10,5± 3,22 506,5 0,03

In addition, differences were found in two types of coping - humor and the use of social support for emotional reasons. Low-performing students are more likely to resort to jokes and laughter about a stressful situation, while high-performing students in such a situation are more likely to find emotional, moral support, sympathy and understanding.

No differences were found in proactive coping strategies among students with high and low academic performance.

3. Analysis of the relationship between academic performance and the severity of procrastination and coping strategies among students. The results of the correlation analysis confirm the data obtained in the comparative analysis. Negative interconnections of performance indicators with general procrastination and such coping strategy as "Humor" and positive correlations with "Seeking social support for emotional reasons" were revealed (Table 3).

Table 3. Significant correlations of performance indicators with procrastination and the severity of coping strategies ($p < 0.05$) ($n = 151$ people)

	Average score 1	Average score 2	Total score
Procrastination	- 0,23	- 0,16	- 0,25
Active coping	-	-	0,26
Conversion to religion	0,24	-	0,24
Using social support for emotional reasons	0,31	0,33	0,36
Humor	- 0,23	- 0,27	- 0,26

In addition, positive correlations were found between academic performance indicators with coping strategies such as "Turning to religion" and "Active coping". The more procrastination is expressed and the more often a person resorts to jokes and laughter about a stressful situation, the lower their academic performance. The more often a person in a stressful situation seeks emotional, moral support, sympathy and understanding, turns to the help of God, faith, religion, takes active steps or direct actions aimed at overcoming a stressful situation, the higher his academic performance. No expected correlations with proactive coping strategies were found.

Discussion

1. When analyzing the dynamics of academic performance of students in the transition from contact to distance learning, ambiguous results were obtained. The dynamics were different for students with high and low academic performance, on the one hand, and for senior and junior students, on the other. The fact that in the total sample of 1-4 year students, academic performance indicators increased in the group of students with high academic performance and did not change among students with low academic performance, but at the same time, among senior students, an increase in performance indicators occurred both in the group of good students and in the group of poorly performing students, while junior students with low academic performance showed a tendency to a decrease in academic performance, which does not allow making unambiguous conclusions. The question remains unclear, what is decisive - the level of academic performance or the course of study. It can also be assumed that both factors equally play a role in the process of adaptation to changed learning conditions.

2. The results of the study of differences in the level of general procrastination and the severity of coping strategies among students with high and low academic performance partially confirm the data of other researchers, and partially deny it. Thus, our data on the differences in the level of procrastination among students with different academic performance are consistent with the results of Karlovskaya and Baranova (2008), Ivutina and Shurakova (2013), Rudnova (2017), but contradict the data of Goncharova and Gvozd (2017). Moreover, all of these authors measured the level of academic procrastination. In our work, we studied general procrastination associated with the adoption of vital decisions, the implementation of long-term plans. At the moment, these types of procrastination are distinguished, but there is no data on how they are interrelated. It can be assumed that the relationship between hierarchical and academic procrastination as a form of task procrastination is a consequence of decision-making procrastination. Additional research is required to verify.

The differences obtained in our sample in the severity of coping strategies among students with high and low academic performance also partially coincide with the data of other studies, but partially do not. So, according to Perchenko (2016), students with a high level of academic performance, finding themselves in a stressful situation, more often resort to coping strategies such as “self-control”, “positive reappraisal”, “seeking social support”, “planning a solution to the problem”, students with a low level of academic performance - to “leaving or fleeing from a difficult situation”, “going down comparison”. According to our data, differences were obtained for only two types of coping strategies. Just as in the study by Perchenko (2016), it was revealed that students with high academic performance in a stressful situation resort to using social support, but for emotional reasons, they seek to find emotional.

Another difference that we found is that students with low academic performance are more likely to resort to jokes and laughter about a stressful situation, combined with the data of Rasskazova, Gordeeva and Osin (2013), who investigated the links between coping strategies and the success of educational activities. In their study, it turned out that the use of humor is associated with C grade students with a deterioration in academic performance by the second session. In our study, both in identifying differences and in correlation analysis, similar data were obtained for the entire sample, and not only among students with low academic performance. We also found that focusing on emotions, using emotional social support, is associated with improved academic performance. The rest of the connections did not match. At the same time, the negative links between academic performance and procrastination, and the use of humor and a positive relationship with seeking emotional support were found to be robust regardless of the form of instruction. Active coping correlates only with general academic performance, and the connection with turning to religion does not manifest itself in a poorly controlled situation of changing the learning format.

3. It was unexpected that there were no differences in the use of proactive coping strategies, and correlations of academic performance with proactive coping strategies. Perhaps this is due to the fact that only junior students, whose skills in using strategies of anticipatory, future-oriented coping, were insufficiently formed, took part in the study of the links between coping strategies and academic performance.

Conclusion

Based on the analysis of the research results, the following conclusions can be drawn:

- 1) The learning format affects the academic performance of students. The nature of this influence, along with external factors, is mediated by a number of psychological characteristics of students, in particular, the level of procrastination and the nature of coping behavior strategies chosen by students.
- 2) When switching from contact to distance learning, the success of educational activities, on the one hand, turned out to be related to the level of academic performance, because students with high academic performance improved their academic performance, while students with low academic performance did not change. On the other hand, it turned out that the academic performance indicators of the senior students changed with the change in the learning format, regardless of the level of academic performance, while the lower-grade students showed a tendency to decrease in academic performance. It can be assumed that this is due to motivation, the nature of adaptation to the learning process, with varying degrees of self-organization and the development of volitional processes.

3) Comparative and correlation analyzes show that students with low academic performance have a higher level of general procrastination associated with delay in making vital decisions and implementing long-term plans than students with high academic performance, and a negative relationship between academic performance and procrastination manifests itself in both contact and distance learning formats

4) Since in the correlation analysis and study of differences in the severity of coping strategies among students with different academic performance, contradictory results were previously obtained, based on the clarifying data of comparative and correlation analysis, it can be argued that:

- students with low academic performance are more likely to use humor as a coping strategy. and this tendency to resort to humor gives the person the opportunity to "forgive" himself for failure and not act, which can lead to further deterioration in academic performance;
- high-performing students are more likely to find emotional support, empathy and understanding in a stressful situation, and the use of emotional social support is associated with improved academic performance

5) The lack of differences in the use of proactive coping strategies among students with different academic performance and correlations of academic performance with proactive coping strategies may be related both to the specifics of the sample, which included junior students, and to the situation of a pandemic. Despite the fact that the severity of proactive coping turned out to be at an average level, it can be assumed that junior students are insufficiently able to think through an action plan, focus on long-term goals and achievements, and anticipate possible stressful influences before they occur, which can lead to a decrease in academic performance. conditions of a sharp change in the format of training from contact to distance learning in a situation that cannot be predicted, predicted and controlled.

6) The results of the research can be used in the development of work programs of academic disciplines using distance technologies in a differentiated manner for senior and junior students.

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