

Studying The E-learning Induced Academic Stress and Its Relationship with Academic Self-efficacy in the Students of the Yazd Branch of Payame Noor University

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Purpose: Covid-19 pandemic increased the use of e-learning and the ensuing academic stress. This research aims to study the relationship between e-learning induced academic stress and academic self-efficacy in the Yazd branch of Payame Noor University in Iran.

Methodology: This is a descriptive-correlational study. The study population was the Yazd branch of Payame Noore University students in the 2020-21 academic year. Cochran's formula gave us a sample size of 319 people. Due to the Covid-19 pandemic and the unavailability of some of the sample members, we used voluntary sampling. Our research tools were the academic stress scale (Pooladi Reyshahri, 1995) and the academic self-efficacy scale (Owen and Froman, 1988). We sent the scale to the subjects electronically. The scales' alpha Cronbach reliabilities were 0.90 and 0.84, respectively. We analyzed the data using the T-test, correlation, and regression in SPSS version 21.

Findings: Our findings showed that e-learning induced academic stress, and its subscales (academic conditions and economic environment stresses) were significantly below average in the students. Students' academic stress and academic self-efficacy were significantly and inversely related. Academic stress could significantly explain self-efficacy ($P < .001$).

Conclusion: Our results showed the negative role of academic stress in explaining students' academic self-efficacy. Reducing students' academic stressors through academic workshops can significantly increase academic self-efficacy.

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1. Introduction

The emergence of the novel coronavirus (Covid-19), an acute respiratory system syndrome, in 2019 threatened the health and lives of humans worldwide (Mediavilla et al., 2021). This unknown virus contagion began in Wuhan, China, and engaged all countries in a short time. It caused significant financial damages and loss of lives. The pandemic affected the educational systems. Almost all schools, faculties, and universities in the world were closed. E-learning got much more attention in that period (Azizi & Hoseinnejad Mamarabadi, 2021). E-learning and unequal access to academic opportunities compared to traditional in-person education increased students' academic stress. Learners' participation and support of their fellow students are minimized in e-learning, and learners need to adapt to the e-learning changes (Abolmaali & Alhosseini, 2020). Stress is a situation or event which makes individuals react using various physiological, cognitive, emotional, and behavioral responses (Austin et al., 2022). In Academic stress, there is a feeling of increasing need to learn knowledge and, simultaneously, a perception of lack of time or learning incompetency (Yeo & Lee, 2017). This results from academic learning pressures beyond the available and adaptable resources of the individual. It has a negative impact on the individual's adjustment (Choi et al., 2019). Academic stress reaction means physical and psychological arousal that leads to experiencing stress. Its manifestations are physical issues such as headache, digestive problems, lethargy, lack of motivation, and sleep problems (Fu et al., 2022). Academic stress is a common significant academic issue. Affected people lose the mental ability to quickly analyze a myriad of information. This increases tension, reduces academic performance, and, in turn, brings on academic underachievement (Wolff & Boama, 2018). Academic stress is a significant issue during school years. Learners need to adjust to the stressors in academic situations and achieve the appropriate academic performance by adequately using learning strategies (Zhang et al., 2020).

Academic self-efficacy is an academic stress related factor (Shehadeh et al., 2020). Academic self-efficacy beliefs are part of general self-efficacy. It is related not to the individual's skills but to the beliefs such as studying, researching, asking questions in class, successfully connecting with the lecturer, establishing a friendly rapport with fellow learners, getting high grades, and engaging in class discussions (Holloway-Friesen, 2021). Academic self-efficacy refers to the individual's judgment and evaluation of his ability to organize and perform a series of academic activities (Zhen et al., 2017).

This construct represents the learners' beliefs regarding their abilities to succeed in academic and school matters and self-regulating their studying and learning activities (Celik et al., 2020). Four factors affect academic self-efficacy. They are an individual's confidence in his ability to complete in-class assignments successfully, complete out-of-class assignments, interact with others in academic environments, and manage his, his family, and his academic environment (Shen, 2018). Academic self-efficacy affects an individual's choice of educational activities, exerted attempts, endurance and persistence in completing assignments, and academic performance and achievements. Highly self-efficient students are more confident of their abilities and talents in completing academic assignments than students with low self-efficacy. They get better grades, show more seriousness and perseverance to achieve academic success, adjust better academically, experience less academic agitation, anxiety, and stress, and are more successful in managing various situations (Berger et al., 2019).

Alsulami et al. (2018) results indicated that the average academic stress in students of two universities in Saudi Arabia was below average. Al Rasheed et al. (2017) results say 64% of students had moderate stress. Ahrari et al. (2016) outcomes indicated that 56.7% of students had natural stress. Nikanjam et al. (2016) reported that 57% of students experienced average stress. Akbari et al. (2011) results indicated that 52% of students showed unnatural stress. Fourth-year students were significantly more stressed.

Shehadeh et al. (2020) showed that academic stress is inversely related to academic self-efficacy. Mohammadi et al. (2019) reported that 6.1%, 73.3%, and 20.6% of students have low, medium, and high self-efficacy levels, respectively. Also, 11.5%, 61.8%, and 26.7% of them showed low, medium, and high levels of learning anxiety. Their results indicated that self-efficacy is significantly and inversely related to learning

anxiety. Poorseyed & Khormaei's (2019) outcome showed a significant inverse relationship between academic stress and self-efficacy. Sahraei et al. (2018) reported a significant relationship between academic stress and self-efficacy. Fooladvand et al. (2009) result indicated that self-efficacy is significantly and inversely related to academic stress.

The pandemic seriously challenged all academic centers, including Payame Noor university. Like many other universities, Payame Noor faced shortcomings in e-learning. Students faced additional challenges, including unfamiliarity with e-learning—all these issues exposed e-learning to many opportunities and challenges. Universities and students almost adjusted to the after-pandemic circumstances after a while. However, despite all the adopted measures and solutions, many students are still anxious and worried about virtual education and complain. Students' academic stress could effectively reduce their academic performance. Academic self-efficacy is academic stress related variable. This relationship could be bilateral. There are a few researches on the relationship between stress and self-efficacy. However, all these studies are performed in normal academic circumstances. They can't be generalized to studies in emergency states, such as the closing of in-person institutes and using e-learning. This research tries to study students' academic stress during virtual education and its relationship with academic self-efficacy. Considering all the above and the significance of studying student's academic stress and its relation, or lack of, with self-efficacy during the virtual education period, we aim to explore the e-learning induced academic stress level and its relationship with academic self-efficacy in students of Yazd branch of Payame Noor University.

2. Methodology:

This is a descriptive-correlation study. The study population was the Yazd branch of Payame Noor University students in the 2020-21 academic year. Cochran's formula gave us a sample size of 319 people. Due to the Covid-19 contagion and the unavailability of some of the sample members, we used voluntary sampling. In our sampling method, while promoting our research, we asked the students to participate and fill in the demographic information and answer academic stress scale and academic self-efficacy scale questionnaires. Table 1 presents the frequency and percentage information of Payame Noor university Yazd branch students. Most of them were female (87.46%), married (66.46%), studying educational sciences, and of average computer literacy (48.90%).

Table 1. The Frequency and Percentage Information of Payame Noor University Yazd Branch Students

Variable	Level	Frequency	Percentage
Sex	female	279	87.46
	male	40	12.54
Marital Status	Single	107	33.54
	married	212	66.46
Field of Study	academic sciences	175	54.86
	psychology	93	29.15
	accounting	51	15.99
Computer Literacy Level	very low	9	2.82
	low	23	7.21
	average	156	90.48
	high	94	29.47
	very high	37	11.60

After coordinating with the Yazd branch of Payame Noor university, we promoted our research and recruited samples. We explained the significance and necessity of the study to them and ensured them of ethical compliance of the research. We sent one of the following research tools through the Internet to those who

agreed to participate and asked them to return the filled form to the researcher within a week. They've been told there is no right or wrong answer and that the best answer is the one describing their natural conditions. We used field data gathering and the following academic stress and self-efficacy scale tools. Those scales were presented, filled, and collected online.

Academic Stress Scale: This scale (Poladi Reyshahri, 1995) is designed with 54 items and four subscales of academic conditions, academic environment, graduation, and dormitory environment stress, each with 15, 15, 12, and 12 items, respectively. As students don't use dormitories in virtual education, we just used academic conditions and economic environment stress subscales. Items were scored using the 4-point Likert scale from sometimes (0) to most of the time (3). This makes the maximum and minimum scores in academic conditions and economic environment stress subscales 0 and 45 and the total minimum and full scores 0 and 90, respectively. A higher score means higher stress. We confirmed the tool's validity by correlating the subscale score with the test's total score. The convergent validity of the tool was significantly correlated ($P < 0.05$) with the physical complaint scale in the general health test and anxiety questionnaire. The alpha Cronbach's reliability of academic conditions and economic environment stress subscales were estimated as 0.84 and 0.83, respectively. Amiri et al. (2019) also reported alpha Cronbach's reliabilities of 0.88 and 0.88, respectively, for the mentioned subscales. We calculated 0.93, 0.89, and 0.90 for academic conditions stress, academic environment stress, and a combination of subscales, respectively.

Self-efficacy Scale: Owen & Froman (1998) designed this 32-item scale. Scaled were scored with a 5-point Likert scale from very little (1) to very much (5). This makes this scale's minimum and maximum scores 32 and 160, respectively. A higher score means higher self-efficacy. The convergent validity of the tool with the learner grades was significant ($P < 0.05$). The alpha Cronbach's validity estimation was 0.92 (0.85 in an eight-week re-evaluation). Babajani et al. (2019) reported an alpha Cronbach reliability of 0.91 for the same scale. We estimated a 0.84 alpha Cronbach reliability for the scale.

The gathered data was analyzed using the demographic information and academic stress and self-efficacy stress scales through T-, correlation, and regression tests in SPSS version 21

3. Findings

Table 2 presents T-test results for the e-learning induced academic stress in the Yazd branch of Payame Noor University students. It shows that the students' e-learning induced academic stress, and academic conditions and economic environment stress subscales were significantly below average. ($P < 0.001$)

Table 2. The Results of Studying E-learning Induced Academic Stress in The Yazd Branch Of Payame Noor University

Variable	Average	Standard deviation	t value	Degree of Freedom	Significance
Academic conditions stress	18.07	4.26	-5.32	318	0.001
Academic environment stress	21.91	5.08	-5.94	318	0.001
Academic stress	39.89	8.09	-40.48	318	0.001

Table 3 presents the correlation coefficient results for academic stress due to e-learning in the Yazd branch of Payame Noor University students. The academic stress and its academic conditions and economic environment stress subscales are significantly and inversely related to the academic self-efficacy in the students ($P < 0.001$)

Table 3. The Correlation Coefficients for E-learning Induced Academic Stress in Yazd Branch of Payame Noor University Students.

predictor / criterion variable	Self-efficacy	Significance
Self-efficacy	-0.23	0.001
Academic Environment Stress	-0.25	0.001
Academic Stress	-0.28	0.001

Table 4 presents the regression result for predicting academic self-efficacy based on the academic stress due to e-learning in the Yazd branch of Payame Noor University students. Academic stress significantly explains academic self-efficacy ($P < 0.001$).

Table 4. The Regression Results for Predicting Academic Self-efficacy Based On The E-learning Induced Academic Stress in the Students of Yazd Branch of Payame Noor University.

Variable	R	R ²	Degree Of Freedom 1	Degree of Freedom 2	F- statistic	Significance
Academic Stress	-0.28	0.08	1	317	4.02	0.001

Table 5 shows the regression results for predicting academic self-efficacy based on academic conditions and economic environment stress subscales for students of the Yazd branch of Payame Noor University. The mentioned subscales significantly explained the academic self-efficacy ($P < 0.001$).

Table 5. The regression results for predicting academic self-efficacy based on academic conditions and economic environment stress subscales for students of the Yazd branch of Payame Noor University.

Variable	R	R ²	Degree of Freedom 1	Degree of Freedom 2	F-statistics	Significance
Academic conditions stress	-0.35	0.12	2	316	6.59	0.001
Academic Environment Stress						

4. Conclusion

Studying e-learning academic stress is of prime significance in the Covid-19 pandemic and increased use of e-learning. This variable could be related to students' self-efficacy. This research aims to study the relationship between e-learning induced academic stress and academic self-efficacy in Payame Noor university students in Yazd province, Iran.

Our findings showed that students' academic stress due to virtual learning was significantly below average. The same was true for its sub-scales, namely the academic conditions and academic environment stresses. These findings confirm the results of Alsulami et al. (2018), Al Rasheed et al. (2017), Ahrari et al. (2016), and Nikanjam et al. (2016) that students stress is Ahrari et al. (2016), Nikanjam and et al. (2016) of average or below average stress in students and was at odds with Akbari et al. (2011) results of above average stress in students. We can refer to the difference in research population to justify the discrepancy between our findings and Akbari et al. (2011) findings. We studied humanities students in Payame Noor university while they studied dentistry students. Dentistry students have more practical courses than humanities students, and

it's reasonable that they have higher stress levels. Below average academic stress (and its academic conditions and economic environment stress subscales) can be justified by the high number of students (287 people, 87.97%) with high computer literacy vs. the low number of those with very little or little computer literacy (32 people, 10.03%). We expect people with average or above average computer literacy to experience less academic stress during e-learning. Payame Noor students experienced lower academic stress (and its academic conditions and economic environment stress subscales) since they already had few in-person classes just for troubleshooting and had appropriate computer literacy.

The academic stress and its academic conditions and economic environment stress subscales are significantly and inversely related to the students' academic self-efficacy. This confirmed the findings of Shehadeh et al. (2020), Mohammadi et al. (2019), Poorseyed & Khormaei (2019), Sahraei et al. (2018), and Fooladvand et al. (2009) that academic stress is significantly and inversely related to the academic self-efficacy. Academic stress is among the variables affecting the academic self-efficacy beliefs of the learners. Experiencing high stress decreases academic self-efficacy, and experiencing low stress increases it. This can explain the significant inverse relationship of academic stress and its subscales with academic self-efficacy. An increase in stress and arousal also effectively reduces self-efficacy. Learners evaluating an academic situation as stressing confide less in their abilities and talents to control that situation. They use fewer stress reduction strategies and perceive less academic self-efficacy. Hence academic stress and academic self-efficacy can be significantly and inversely related. This means an increase in academic stress (and its academic conditions and economic environment stress subscales) reduces the student's self-efficacy and a decrease in them increases the students' academic self-efficacy.

The academic stress due to e-learning (and its academic conditions and economic environment stress subscales) explained the academic self-efficacy in students. We found no research in this regard. However, this capability can be justified as academic stress. Its mentioned subscales are inversely related to many positive academic psychological features such as academic self-esteem, motivational beliefs, academic meaning, and academic optimism. They are directly related to many negative academic features, such as academic anxiety and academic failure. As a positive academic feature, academic self-efficacy can be expected to be inversely related to academic stress and its subscales in students. Academic stress can also predict and explain academic self-efficacy. There is another explanation. Students experiencing less academic stress (and its subscales) face fewer issues and challenges in their academic life. They use appropriate countermeasure strategies and solutions, have a realistic approach to academic problems, and overcome academic problems, hardships, and challenges on their own or assisted by others. Therefore academic stress and its subscales can reasonably have an influential role in explaining academic self-efficacy.

This study was limited by its non-random voluntary sampling method due to a lack of access to all people because of the Covid-19 pandemic. We confined our research population to the students of the Yazd branch of Payame Noor University. Using self-report tools is the last on our list of limitations. Due to the mentioned limitations and favorable conditions, we suggest using random sampling methods and studying students of other universities and provinces. Another suggestion is to explore the relationship between other variables, such as academic meaning and optimism, and academic self-efficacy. Our results showed the negative role of academic stress in explaining the students' academic self-efficacy. Reducing academic stressors through academic workshops can increase academic self-efficacy significantly. Our work has many implications for academic experts and planners. They can reduce the academic stress caused by e-learning by enhancing students' e-learning skills. This also increases the students' academic self-efficacy and improves their academic performance.

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