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# Examining the Relationship Between Academic Self-Efficacy and Exam Anxiety Among Students of Zanjan University

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## ABSTRACT

The aim of the present study was to examine the relationship between the academic self-efficacy of students at Zanjan University and their exam anxiety. The research was conducted using a descriptive-correlational method. The sample consisted of 155 students enrolled at Zanjan University in the second semester of the academic year 1399-1400, all of whom were aged between 20 and 37 years and were selected through simple random sampling. Data were collected using the standard Academic Self-Efficacy Scale (CASES) and the Sarason Exam Anxiety Scale, and were analyzed using Pearson correlation tests. The results of the statistical test indicated that there is a significant negative relationship between the academic self-efficacy scores of students and their exam anxiety scores ($r = -0.282$, $p < 0.01$). Therefore, it can be concluded that exam anxiety may be associated with a lack of organizational skills, poor study planning, and failure in designing learning strategies among students. Students with high exam anxiety perceive their skills to be lower than their actual capabilities both during exams and while studying; thus, by enhancing their beliefs in academic self-efficacy, both their confidence in their abilities and their understanding of what they know and how they should learn can improve, enabling them to overcome the stress and anxiety that arise during exams.

## Introduction

One of the most extensive areas of research in recent decades has been anxiety and its related domains (Janaabadi et al., 2016). Anxiety is a fundamental emotion that is considered the most common and vital response to stressful events (Sung et al., 2016). Almost everyone experiences feelings of anxiety at some stages of their lives, which affects their performance and the extent to which they achieve their goals in various ways. Anxiety is a complex state consisting of various cognitive, emotional, behavioral, and physiological reactions. The degree to which anxiety interferes with performance varies among individuals (Javanbakht and Hadian, 2014); it can be said that anxiety, at times, leads to productivity and creativity, while at other times, it becomes pathological (Sheidaei Aghdam and Fatemi Pour, 2017). Anxiety is the main variable for understanding the role of emotion in performance and is characterized by feelings of tension, worrying thoughts, and negative physiological reactions (Embse et al., 2017). The Diagnostic and Statistical Manual of Mental Disorders (DSM) states that anxiety includes muscle tension and hypervigilance in preparation for future danger, as well as avoidant or cautious behaviors (Clark et al., 2018). In summary, anxiety is a psychological state that almost all humans experience to varying degrees throughout their lives, but when it increases and reaches a level that causes distress and conflict, it is considered a disorder (Keshavarz Afshar et al., 2016) .

Adaptation to university life largely depends on students' ability to adjust to the learning environment, which requires greater independence in completing required courses and preparing for exams. For a large number of students, the pressure to perform well alongside the very important nature of exams may lead to excessive test anxiety, resulting in burnout during their studies, especially in the first year (Vanstone and Hicks, 2019). Test anxiety is a type of anxiety defined as excessive fear and perception of poor performance, leading to negative self-evaluation before, during, or after testing situations, particularly in academic domains (Herzer et al., 2014). In other words, test anxiety is a state of distress experienced when an individual perceives the evaluation situation as a threat; that is, test-takers may anticipate failure or feel at risk in situations where their performance may be perceived as poor. Although everyone experiences occasional anxiety during evaluations, test anxiety is attributed to a stable personality predisposed to evaluative situations (Crişan et al., 2014). Test anxiety has two components: worry and physiological arousal. The worry component is the cognitive aspect of test anxiety, which includes rumination, negative expectations about potential failure outcomes, and harmful self-evaluations. The arousal component is the physiological aspect of test anxiety, indicating stimulation or excitement; for example, an increased heart rate, feelings of panic, or gastrointestinal issues signal arousal (Arens et al., 2017). Previous studies have shown that 15 to 22 percent of students experience very high test anxiety. Excessive test anxiety increases the risk of anxiety disorders and depression (Wei et al., 2020). Given the aforementioned points, on one hand, test anxiety may be associated with a lack of organizational skills, poor study planning, and failure to design students' learning, and students with high test anxiety perceive their skills as lower than their actual capabilities both during exams and while studying; on the other hand, enhancing self-regulated learning skills and self-efficacy leads to valuable outcomes in the learning process, and utilizing these skills in learners increases both their belief in their abilities and their understanding of what they know and how they should learn, thereby enabling them to overcome the stress and anxiety that arise during exams (Diyanat et al., 2017).

One of the important concepts presented in Albert Bandura's social learning theory (1977) is self-efficacy. Self-efficacy refers to an individual's belief in their capacity to improve their learning and behavior to the required level. Self-efficacy beliefs influence an individual's decision-making regarding task performance, the cost of effort, and persistence in the face of challenges (Kula and Taşdemir, 2014). Bandura introduces the concept of self-efficacy as part of a self-regulatory system that acts as a motivator (stimulus) and sustainer for a specific behavior. This concept is related to an individual's judgment of their ability to perform a specific task or adapt to certain conditions

(Tavakolizadeh et al, 2015). According to Bandura, self-efficacy is derived from four main sources of information: performance accomplishments, vicarious experiences, verbal persuasion, and physiological states. Since performance accomplishments are directly related to an individual's experiences, they are considered the most reliable source among these (Shen, 2018). Self-efficacy, defined as "an individual's judgment of their ability to successfully organize the necessary events to achieve set goals," has the power to influence individuals' preferences in a specific domain and their behaviors (Yeşilyurt et al, 2016). Self-efficacy determines the level of motivation of individuals by controlling the amount of effort and the duration of resistance against obstacles. When facing difficulties, individuals who doubt their abilities reduce their efforts and quickly resort to lower-level solutions, while those with strong beliefs in their abilities to overcome challenges exert more effort. The higher an individual's self-efficacy, the faster they recover from doubts arising from failures and increase their level and duration of effort (Farahmarzi et al, 1395).

Academic self-efficacy is a type of self-efficacy related to academic tasks and performance and is described as the confidence an individual has in achieving academic success (Li et al, 2020). In other words, academic self-efficacy is the individual's perception of their likelihood of success in a specific task or domain. Academic self-efficacy in students can enhance feelings of readiness for university and facilitate a successful transition from one educational level to the next, leading to academic progress (Zander et al, 2018). Academic self-efficacy beliefs, defined as beliefs about coping with academic tasks, are an important variable for explaining academic procrastination; that is, when students believe they can solve difficult problems, the tendency to procrastinate decreases (Kandemir, 2014).

Many studies have examined academic self-efficacy and test anxiety and their effects. Deyant and colleagues (1396) concluded in their research that self-regulation and academic self-efficacy predict test anxiety both directly and indirectly through academic procrastination. Khalaila (2014) found the following results in his research: First, there is a direct relationship between academic self-concept and academic achievement. Second, test anxiety and intrinsic motivation are significant mediators in the relationship between academic self-concept and academic achievement. Third, intrinsic motivation significantly moderates the negative effect of test anxiety on academic achievement. Arens and colleagues (2017) concluded in their research that there are negative relationships between academic achievement and test anxiety in the domains of mathematics and verbal skills, but there are also relatively positive relationships between the domains. This pattern of relationships emerged for both the worry component and the emotionality component, with stronger relationships found for the worry component. These findings indicate that the processes of comparing achievement dimensions work in shaping the aspects of domain-specific test anxiety. Domain-specific academic self-concept aspects were found to mediate the relationships between academic achievement and test anxiety across all domains, and as a result, the mediation for the worry component was stronger than for the emotionality component. Additionally, there were no differences between girls and boys regarding the direct and indirect relationships between the constructs. Putwain and colleagues (2015) concluded in their research that when students perceive stressors as challenges, the value of achievement and academic self-efficacy is higher; whereas when students perceive stressors as threats, the value of achievement and academic self-efficacy is lower. Honicke and Broadbent (2015) found a moderate significant relationship between academic self-efficacy and academic performance in their meta-analysis. Additionally, several mediating and moderating factors of this relationship, including effort regulation, deep processing strategies, and goal orientations, were identified. Kostagiolas and colleagues (2019) concluded in their research that there is a significant correlation between the variables of study satisfaction, academic self-efficacy, and academic performance. Ozer and Akgun (2015) found in their

research that there is a positive relationship between irrational beliefs and students' academic motivation, and a negative relationship between irrational beliefs and students' academic self-efficacy.

Given the adverse consequences of test anxiety briefly mentioned, it seems that one effective way to reduce this anxiety to a normal level is to foster positive beliefs in academic self-efficacy and enhance academic self-efficacy skills; as increasing academic self-efficacy can potentially…

## Research Methodology

Research Method: The present study was conducted using a descriptive-correlational method, which is one of the types of quantitative studies.

Statistical Population: The statistical population of the present research consisted of all students enrolled at Zanjan University in the second semester of the academic year 1399-1400.

Sample and Sampling Method: The sample of the present research consisted of 155 students enrolled at Zanjan University in the second semester of the academic year 1399-1400, who were selected using simple random sampling.

Data Collection Tools: In the present research, two tools were used for data collection:

1) Standard Academic Self-Efficacy Questionnaire (CASES): This questionnaire was developed by Owen and Froman (1988) to measure the academic self-efficacy of students. This questionnaire is unidimensional and contains 32 items that assess students' confidence regarding note-taking, asking questions, paying attention in class, using computers, etc., using a five-point Likert scale (very low, low, moderate, high, and very high). Each item has a value between 1 and 5 (very low = 1, low = 2, moderate = 3, high = 4, and very high = 5). The respondent's score on this questionnaire is obtained by summing the scores of the items. The score range is between 32 and 160, with higher scores indicating greater academic self-efficacy. Scores below 53 indicate low academic self-efficacy, scores between 53 and 106 indicate moderate academic self-efficacy, and scores above 106 indicate high academic self-efficacy.

To examine the psychometric properties of the standard academic self-efficacy questionnaire, it was administered to 320 students, and the internal consistency for the entire test was found to be 0.91, 0.90 for females, and 0.91 for males, indicating that this tool has good internal consistency. Additionally, the construct validity of this questionnaire was examined using exploratory factor analysis and confirmatory factor analysis.

2) Sarason's Test Anxiety Scale: This scale was developed by Sarason (1980) to measure test anxiety. This scale is unidimensional and contains 25 items, where the respondent indicates the agreement or disagreement of the statement presented in each item as true or false. The scoring for items 2, 11, 19, 21, and 24 is reversed. The respondent's score on this scale is obtained by summing the scores of the items. The score range is between 0 and 25, with higher scores indicating greater test anxiety. Scores below 8 indicate mild test anxiety, scores between 8 and 12 indicate moderate test anxiety, and scores above 12 indicate severe test anxiety.

The internal consistency reliability coefficient of this scale, using the split-half method, was 0.91, and the test-retest reliability after 6 weeks was reported as 0.82. The content and face validity were confirmed by Najarian (1388).

Data Analysis Method: In the present research, the data obtained from the questionnaires were entered into SPSS-27 software and analyzed. Pearson correlation test was used for data analysis.

## Findings

In the present study, a sample of 155 individuals was used, all of whom were students aged between 20 and 37 years. The analysis of the research data includes descriptive information and hypothesis testing.

First, the descriptive information, including the minimum and maximum values, mean, standard deviation, and skewness for the variables of academic self-efficacy and exam anxiety, is presented in Table 1.

**Table 1 - Descriptive information for the research variables**

| skewness | average | average | Max | Min | Variables |
|---|---|---|---|---|---|
| 0/45 | 17/50 | 103/77 | 144 | 77 | Academic self-efficacy |
| 0/26 | 4/32 | 11/32 | 20 | 2 | Test anxiety |

Since the skewness value for the research variables was between -1 and +1, the distribution of these

variables did not deviate significantly from a normal distribution. Therefore, Pearson correlation test was used to test the hypothesis, and its results are presented in Table 2.

**Table 2 - Correlation of Academic Self-Efficacy with Exam Anxiety**

| test anxiety | academic self-efficacy | Variables |
|---|---|---|
| -0/282** | _ | Academic self-efficacy |
| _ | -0/282** | Test anxiety |

As can be inferred from Table 2, the variable of academic self-efficacy has a significant negative correlation with exam anxiety ($r = -0.282$, $p < 0.01$).

Discussion and Conclusion

The present study aimed to investigate the relationship between the academic self-efficacy of students at Zanjan University and their exam anxiety. To this end, Pearson correlation tests were conducted between the scores of academic self-efficacy and exam anxiety scores of 155 students enrolled at Zanjan University in the second semester of the academic year 1399-1400. The findings from this statistical method indicated that there is a significant negative relationship between the academic self-efficacy scores of students and their exam anxiety scores. Therefore, it can be concluded that exam anxiety may be associated with a lack of organizational skills, poor study planning, and failure in designing students' learning. Students with high exam anxiety perceive their skills to be lower than their actual capabilities both during exams and while studying; thus, by strengthening their beliefs in academic self-efficacy, both their belief in their abilities and their understanding of what they know and how they should learn will increase, enabling them to overcome the stress and anxiety that arise during exams. The findings of the present study are consistent with the research of Deyant and colleagues (1396), who concluded that self-regulation and self-efficacy predict exam anxiety both directly and indirectly through academic procrastination. The findings of the present study are also consistent with Khalaila (2014), who found that, firstly, there is a direct relationship between academic self-concept and academic achievement. Secondly, exam anxiety and intrinsic motivation were significant mediators in the relationship between academic self-concept and academic achievement. Thirdly, intrinsic motivation significantly moderates the negative effect of exam anxiety on academic achievement. The findings of the present study align with Putwain and colleagues (2015), who concluded that when students perceive stressors as challenges, the value of achievement and academic self-efficacy is higher; whereas when students view stressors as threats, the value of achievement and academic self-efficacy is lower .

The present study had a major limitation: the sample included students from various educational levels (associate, bachelor's, master's, and doctoral), and students in higher levels may have somewhat adapted to the conditions, leading to incomplete information; therefore, it is better for future studies to focus on a single educational level. In conclusion ,

given the importance and impact of strengthening academic self-efficacy in reducing students' exam anxiety, it is recommended that instructors prioritize the enhancement of students' academic self-

efficacy. Additionally, it is suggested that the university evaluation system be reformed to strengthen students' academic self-efficacy.

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