Research Paper

Evaluating the Structural Equation Model for Explaining Students' Academic Motivation Based on Emotion Regulation With the Mediating Role of Academic Self-efficacy

Najme Sadat Haji Vosoogh[1,2], **Jahanshir Tavakolizadeh**[1,2*], **Majid Pakdaman**[1]

1. Department of Psychology, Faculty of Sciences, Qaenat Branch, Islamic Azad University, Qaenat, Iran.
2. Department of Psychology, School of Medicine, Gonabad University of Medical Science, Gonabad, Iran.

Use your device to scan and read the article online

Citation Haji Vosoogh N, Tavakolizadeh J, Pakdaman M. Evaluating the Structural Equation Model for Explaining Students' Academic Motivation Based on Emotion Regulation With The Mediating Role of Academic Self-efficacy. Journal of Research & Health. 2022; 12(3):203-214. http://dx.doi.org/10.32598/JRH.12.3.1839.3

http://dx.doi.org/10.32598/JRH.12.3.1839.3

ABSTRACT

Background: Students' academic motivation is one of the essential factors for academic achievement and the growth of societies, which emphasizes the importance of examining academic motivation correlations. Therefore, this research aims to evaluate the structural equation model for explaining students' academic motivation based on emotion regulation with the mediating role of academic self-efficacy.

Methods: This quantitative-correlational research was conducted using structural equations. The research population included all high school students (3057 people) in the seventh, eighth, and ninth grades in Gonabad Town, Iran in the academic year of 2019-2020. In this population, 1646 were girls and 1411 were boys. A total of 250 people were considered a sample group by the multistage cluster random sampling method based on the principles of structural equations modeling. After obtaining the informed consent letters, all participants completed the situational motivation scale (SIMS) developed by Sinclair & McInroy (1992), the Morgan-Jinks student efficacy scale (MJSES), the cognitive emotion regulation questionnaires of Garnowski et al. (2002), revised adult attachment scale (1990) developed by Collins and Reed, and the classroom environments questionnaire (Fraser, 1995). Next, the data were collected and analyzed through Pearson correlation methods and structural equations using the SPSS software, version 19, and AMOS software, version 20.

Results: Academic self-efficacy (0.20) and emotion regulation (0.37) directly and significantly affected academic motivation. In addition, emotion regulation (0.53) had a direct and significant effect on academic self-efficacy. There was an indirect relationship between emotional regulation (0.24) and mediated academic self-efficacy on academic motivation ($P<0.01$).

Conclusion: The emotional regulation model is a favorable fit for students' academic motivation with the mediating role of academic self-efficacy. Therefore, the awareness of teachers, parents, principals and other educational experts can improve students' academic motivation.

Keywords: Academic motivation, Academic self-efficacy, Emotion regulation

Article info:
Received: 31 Jan 2022
Accepted: 10 Apr 2022
Publish: 01 May 2022

*** Corresponding Author:**
Jahanshir Tavakolizadeh
Address: *Department of Psychology, Faculty of Sciences, Qaenat Branch, Islamic Azad University, Qaenat, Iran.*
E-mail: *drtavakolizadehj@gmail.com*

1. Introduction

Learning is the reason for all the excellent human progress in today's world [1], and through learning, humans acquire most of their abilities, develop intellectually, and realize their mental abilities. Academic motivation is one of the effective conditions for learning among learners. The learner's motivation is one of the fundamental causes of problems, such as academic failure, in the education system. Different definitions, such as academic motivation, deal with learning motivation in educational applications of motivation [1]. On the other hand, reduced academic motivation and academic failure are critical problems of the education system in countries that waste many resources [2]. Academic motivation is a crucial psychological structure in teaching and learning, which is a particular type of motivation that helps learners engage in activities to facilitate educational achievement goals [3]. Academic motivation refers to internal processes that motivate people to engage in activities and persist in attaining specific academic goals. Motivation is the foundation of learning and one of the essential factors in determining the success or failure of a student in school [4].

According to the self-determination theory, academic motivation involves three key constructs: internal motivation, external motivation, and amotivation. Internal motivation internally and spontaneously moves people to perform a specific task regardless of external rewards. However, in external motivation, people are forced to perform a task because of external rewards and reinforcements. Lastly, amotivation refers to unmotivated people who receive no motivation and avoid doing their activities [5]. As a result, students with academic motivation develop the essential mobility to complete a task, reach a goal, or acquire a specific level of competence in their work, allowing them to achieve the necessary learning and academic success [6].

Two types of factors influence students' academic motivation---external and internal. Economic and social position are examples of external (environmental) factors, while personality traits such as metacognitive skills, flexibility, identity, and emotion regulation skills are examples of internal (personality) factors [7]. Internal emotional regulation factors include all external and internal processes for monitoring, evaluating, and correcting emotional reactions that occur consciously or unconsciously [8]. Emotional regulation refers to the processes by which emotions are experienced and expressed [9]. Emotion regulation skills include strategies activated before arousing emotion to prevent intense emotions and cause the interpretation of the situation to reduce the emotional response associated with the situation (reevaluation or reappraisal strategies), and strategies activated after the onset of emotion that cannot prevent the development of intense emotions (inhibition or suppression) [10]. Mousavi et al. (2020) investigated female high school students in the second district of Tehran and showed that adaptive emotions are negatively related to positive internal motivation, external motivation, and amotivation; meanwhile, maladaptive emotions are positively related to positive internal motivation, external motivation, and amotivation [11]. Singh and Singh (2013) indicated that problems in emotional regulation reduce academic motivation and consequently minimize academic achievement in students [12].

The results of a study titled "The Relationship Between Perfectionism, Anxiety, and Emotion Regulation With Academic Involvement of Piranshahr Payam-e Noor University Students" showed that students use adaptive strategies of perfectionism and cognitive emotion regulation when their academic engagement increases. These strategies can increase students' adaptation to the university environment and increase their academic motivation and achievement [12].

Another study titled "The Relationship Between Academic Motivation and Self-Regulated Learning Strategies With Academic Achievement of the Islamic Azad University of Shoushtar" showed a significant relationship between academic motivation and students' self-regulated learning strategies with academic achievement [11].

Academic motivation does not shape learners' behavior but influences their behavior through intermediary processes [13]. Experts believe that motivation is essential in explaining learners' undesirable behaviors, but its effect is direct and through its consequences such as self-efficacy and perseverance [13]. Self-efficacy is an essential concept in Albert Bandura's social learning theory, which means perceiving one's ability to perform an activity, create a consequence, and handle and control a situation. According to this theory, regardless of skills, individuals act according to their judgment of efficiency and effectiveness for various activities, effectively coping with difficult situations and achieving desired goals.

According to this theory, all psychological and behavioral processes are based on a sense of self-efficacy and personal mastery [14], and academic self-efficacy is one of the most critical dimensions of self-efficacy. Academic self-efficacy is the capability to understand one's abili-

ties to perform the tasks necessary to achieve educational goals; that is, confidence in performing academic tasks such as reading books, answering questions in the classroom, and preparing for exams [15]. Researchers believe that students with high academic self-efficacy are more confident in doing their assignments than their peers with lower academic self-efficacy. Higher levels of academic self-efficacy lead to higher grades and stability in completing assignments. Thus, academic self-efficacy helps students make correct decisions in stressful situations that promotes academic achievement and motivation [16]. In a study titled "The Relationship Between Teaching Emotion Regulation on Self-Efficacy and Academic Motivation," students found that emotion regulation can affect self-efficacy and increase emotional regulation. Self-efficacy is a cognitive mechanism that controls students' particular educational-individual challenges and leads to a better confrontation with problems [17].

Various studies have revealed that self-efficacy improves motivation, resilience, and perseverance in the face of difficulties; also, a greater sense of academic self-efficacy will lead to greater academic motivation [17].

Motivation is a famous concept that scientists have considered one of the most critical factors for success in higher education. Identifying the concept of motivation, its different types, and its effect on the learners' learning process helps teachers to use better methods in designing and implementing their educational programs. Students' academic motivation and interest are the most critical challenges in educational environments, which significantly affect the output of educational systems [18]. The role of emotional regulation and academic self-efficacy are essential and undeniable in academic motivation promotion. Some researchers believe that motivated students do not engage in abnormal behaviors in environments because of their innate tendency to seek and conquer challenges as personal goals and interests, as well as essential and valuable goals in their learning process [17]. Given that self-efficacy refers to the nature of one's beliefs and cognitive and emotional evaluations, people with emotional skills know, regulate, understand, and deal with their emotions well to be successful and efficient in various fields. Therefore, ignoring cognitive emotion regulation skills can lead to significant problems among students [6]. Research on these variables shows the importance of emotional regulation and academic motivation as internal variables in students' education. Considering the lack of studies on the simultaneous relationship of the three variables (emotional regulation, academic self-efficacy, and academic motivation) mentioned in the target population in Iran, a research gap is recognized in this area. This study aims to determine the role of emotional regulation on academic motivation among students based on emotion regulation and examine the mediating role of academic self-efficacy in this regard.

2. Methods

This quantitative-correlational research was conducted using structural equations. The research population included all high school students (3057 people) in the seventh, eighth, and ninth grades in Gonabad Town, Iran in the academic year of 2019-2020, of whom 1646 were girls and 1411 were boys. A total of 250 people were considered a sample group by the multistage cluster random sampling method based on the principles of structural equations modeling. The reason for selecting this number of samples, according to experts, is that the minimum sample size for modeling structural equations is as much as 100 to 150 people, while some studies suggest more than 200 people [19]. On the other hand, it is suggested to consider 10 to 20 people for the sample size for each obvious variable [20]. Therefore, 200 students were selected, and the sample size was increased to 250 to reduce the sampling error and the ability to correct the results for the entire statistical population. In the multistage cluster random sampling method, 3 girls' and 3 boys' schools were randomly selected from 25 girls' and boys' secondary schools in Gonabad (6 schools). In the next step, 3 flutes were selected in each school referring to the selected schools, and then 42 samples were randomly selected in each class based on the list of students. The inclusion criteria included studying in the seventh, eighth, and ninth grades of high school students, willingness to participate in the research with written consent, the age range of 12 to 15 years, and no history of physical problems, mental disorders, and learning disabilities based on health records. The exclusion criteria were non-cooperation and incomplete completion of questionnaires. The questionnaires were completed in schools before the COVID-19 outbreak, and the incomplete questionnaires were followed up because of lockdown, which was resolved by the school principal.

Research tools

Situational Motivation Scale

The Situational Motivation Scale (SIMS) was developed by Sinclair & McInroy (1992) in Australia. The short form of this questionnaire was made by Bahrani (1993) in Shiraz City, Iran, with 49 phrases arranged based on the Likert scale from completely disagree (1) to completely agree (5), containing 11 factors. In this ques-

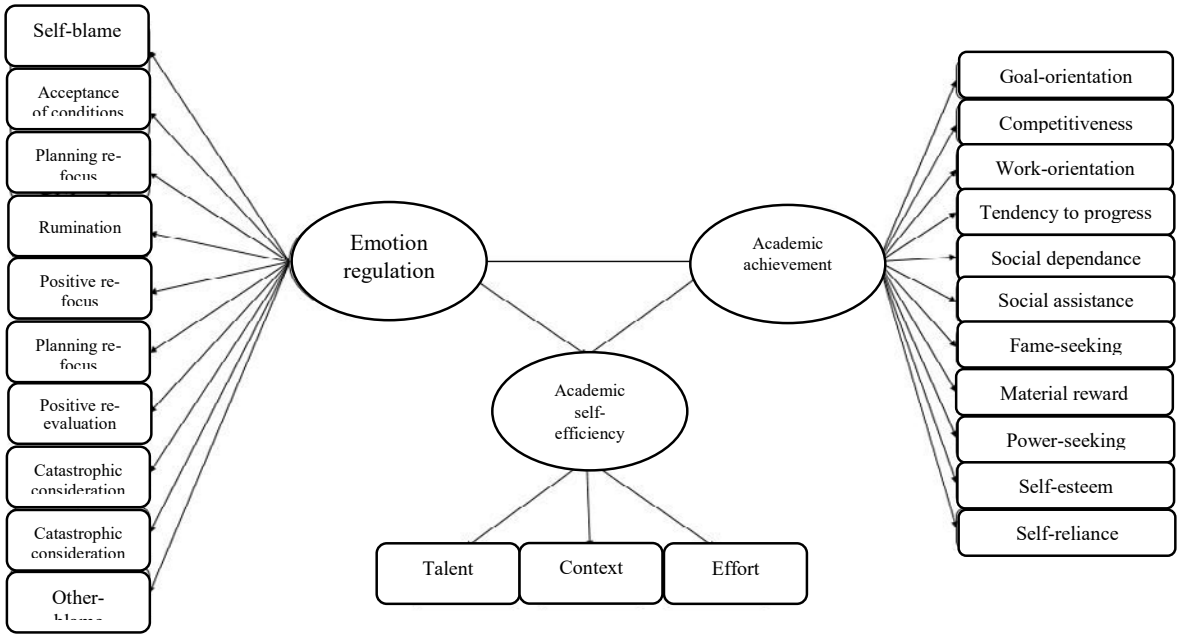

Figure 1. Conceptual model of the role of emotional regulation in students' academic motivation with the mediating role of academic self-efficacy

tionnaire, 5, 4, 3, 4, 5, 4, 4, 5, 4, 6, and 5 items measure goal-orientation, competitiveness, the tendency to work and carry out assignment, the tendency to progress, social dependence, social assistance, fame-seeking, power-seeking, self-esteem, and self-reliance, respectively. The minimum score for each subject is 49 and the maximum is 96. A lower score indicates a decrease in motivation, while closeness to the maximum score indicates an increase in motivational knowledge. The scoring in items 3, 7, 18, 23, 31, 39, and 44 is inverse, and the reliability of the questionnaire was obtained at 0.95 via retesting [21]. The reliability of this questionnaire was evaluated by the Cronbach α method, which was 0.91 for the total academic motivation and 0.68, 0.71, 0.62, 0.73, 0.68, 0.57, 0.63, 0.72, 0.62, 0.73, and 0.70 for goal-orientation, competitiveness, the tendency to work and carry out assignment, the tendency to progress, social dependence, social assistance, fame-seeking, power-seeking, self-esteem, and self-reliance, respectively.

Cognitive Emotion Regulation Questionnaire

The cognitive emotion regulation questionnaire (CERQ) was developed by Garnefski, Kraaij & Spinhoven (2002), and the Persian version of the emotion regulation questionnaire was developed by Hassani (2010) in Iran. This questionnaire evaluates a person's thoughts after a negative experience or traumatic events with a 36-item self-report reporting tool. The cognitive emotion regulation questionnaire has 9 subscales: self-blame, acceptance of conditions, rumination, positive refocusing, refocus on planning, positive reevaluation, giving a comment, catastrophic consideration, and other-blaming. The scores range from never (1) to always (5). Each subscale contains 4 items, and the total score of each subscale is obtained by adding the score of the items. Therefore, the subscale score range is between 4 and 20, and the total score is from 36 to 180 with no inverse scoring [22]. The Persian version of the cognitive emotion regulation questionnaire was validated in Iran by 0.76 to 0.92 via internal consistency methods and 0.51 to 0.77 via retesting [23]. The Cronbach α method was used to evaluate the reliability of the questionnaire. It was obtained at 0.81 for the whole questionnaire and 0.67, 0.57, 0.70, 0.80, 0.81, 0.77, 0.68, 0.63, and 0.55 for self-blame, acceptance of conditions, rumination, positive refocusing, refocus on planning, positive reevaluation, giving a comment, catastrophic consideration, and other-blaming, respectively.

Morgan-Jinks Student Efficacy Scale

The Morgan-Jinks student efficacy scale (MJSES) was developed by Morgan et al. (1999). This scale has 30 questions and three subscales: effort, context, and aptitude. The items on this scale are on the 4-point Likert scale from completely disagree (1) to strongly agree (4). The internal consistency of the scale was obtained at 0.82 using the Cronbach α method, and the Cronbach α coefficients of the three subscales were

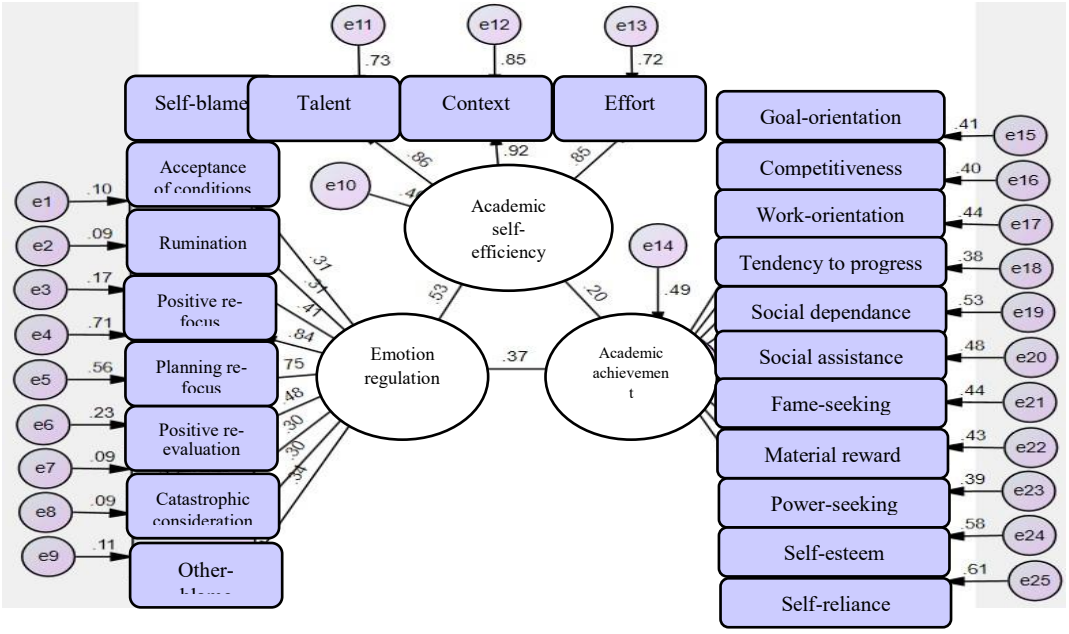

Figure 2. Model of the effect of emotional regulation on academic motivation with the mediating role of academic self-efficacy

0.78, 0.66, and 0.70, respectively [24]. Karimzadeh et al. (2006) reported the validity of this scale through favorable factor analysis in Iran. Scale reliability coefficients were obtained through the Cronbach α method for overall self-efficacy (0.76), talent (0.66), effort (0.65), and context (0.60) [25]. The Cronbach α method was used to evaluate the reliability of the questionnaire and was obtained at 0.75 for the total score of the questionnaire and 0.65, 0.66, and 0.74 for each of the subscales (effort, context, and aptitude), respectively.

In this study, the data collection was conducted through library and field methods. Given the measurement instrument in the questionnaire, the researcher provided sample questionnaires to individuals and performed the research by the survey method. Initially, the code of research ethics (IR.IAU.QAENAT.REC.09.24.2.129) was received from the Research Ethics Committee of the Islamic Azad University, Ghayenat Branch. Research questionnaires were distributed among members after obtaining the informed consent letter, identifying the individuals, and determining the number of samples. Questionnaires were administered to the sample and no time limit was applied for completing them. The data were collected and imported into the software after completing the questionnaires. Demographic characteristics and descriptive statistical indices (mean, standard deviation, lowest and highest score, frequency, and percentage) were used to describe the research information, and skewness and kurtosis indices were used to test the assumption of close data distribution. All the statistical analysis was done using the SPSS software, version 19, and AMOS software, version 20.

3. Results

In this study, there were 250 students aging from 12 to 15 years, of whom 112(44.8%) were boys, and 138 (55.2%) were girls. Meanwhile, 86 people (34.4%), 64 people (25.6%), and 100 people (40%) were studying in the seventh, eighth, and ninth grades, respectively. The mean and the standard deviation of the research variables are provided in Table 1.

According to Table 1, the skewness and kurtosis indicators are between -2 and 2, indicating that the variable score distribution does not deviate too much from the normal distribution [26]. The correlation matrix of the research variables is presented after reviewing the descriptive findings.

There is a positive and significant relationship between academic motivation with emotional regulation and academic self-efficacy. Emotional regulation has a positive and significant relationship with academic self-efficacy, and all correlations have been significant at P<0.01. The structural equations are presented after examining the correlation between the research variables in the continuation of the modeling findings. Initially, the overall status of the data was examined, the univariate outlier data was

Table 1. Descriptive indicators and normality of research variables

Indicators	Variables	Min	Max	Mean±SD	Skewness	Kurtosis
Academic Motivation	Goal-orientation	14	25	22.00±2.22	-0.969	1.269
	Competitiveness	7	20	16.53±3.31	-1.089	0.517
	Tendency to work	6	15	12.39±2.19	-0.804	-0.015
	Tendency to progress	8	20	17.19±2.66	-0.899	0.007
	Social dependence	8	25	21.31±2.81	-0.903	1.229
	Social assistance	10	20	16.72±2.58	-0.460	-0.667
	Fame-seeking	9	20	17.78±1.94	-01.014	1.299
	Material reward	14	25	21.91±2.39	-0.953	0.578
	Power-seeking	10	20	17.37±2.32	-0.782	-0.085
	Self-esteem	12	30	25.20±3.77	-0.767	-0.008
	Self-reliance	13	25	21.61±2.81	-1.054	0.702
	Total academic motivation	130	245	223.11±26.91	-1.708	1.548
Emotional Regulation	Self-blame	6	20	15.60±3.33	-0.437	-0.737
	Acceptance of conditions	7	20	15.35±3.11	-0.294	-0.868
	Rumination	7	20	15.77±3.18	-0.474	-0.457
	Positive refocusing	4	20	16.14±3.40	-0.873	0.134
	Planning Re-focus	5	20	15.37±3.28	-1.196	0.940
	Positive re-evaluation	4	20	15.01±4.09	-0.775	-0.343
	Getting a comment	4	20	15.50±3.74	-0.722	-0.066
	Catastrophic consideration	5	20	15.50±3.63	-0.904	0.219
	Other blame	6	20	15.63±3.27	-0.568	-0.384
	Total emotional regulation	72	177	148.64±25.14	-1.034	0.837
Academic Self-efficiency	Effort	19	38	32.85±3.54	-0.572	0.911
	Context	20	40	31.31±4.88	0.306	-0.759
	Talent	17	39	31.69±14.23	-0.542	0.002
	Total academic self-efficiency	56	116	101.30±14.23	-1.249	1.360

JRH

checked using a box plot, and the results showed no data outage. The data normality was examined by skewness and kurtosis scores, and the results showed that the data were normal. The following measures were used to estimate the model: the maximum likelihood, Root Mean Square Error of Approximation (RMSEA), standardized root mean square residual (SRMR), Comparative Fit Index (CFI), Normed Fit Index (NFI), the Goodness Of Fit Index (GFI), and adjusted goodness of fit index (AGFI). Experts have proposed numerous fits for fitness indicators. For example, a value equal to or less than 0.05 for RMSEA, a value equal to or greater than 0.96 for CFI, and a value equal to or less than 0.07 for the standard root of the variance is a sufficient fit for a model [27].

Table 2. Correlation matrix of research variables

Variables	1	2	3
1. Academic motivation	1		
2. Academic self-efficacy	0.399*	1	
3. Emotional regulation	0.502*	0.655*	1

*All correlations are significant at the level of P<0.01.

Table 3. Fit indicators for the final research model

AGFI	GFI	IFI	CFI	NFI	RMSEA	X^2/df	P	df	X^2
0.89	0.90	0.92	0.92	0.92	0.080	2.276	0.001	52	118.36

On the other hand, the indicators of CFI, GFI, and AGFI greater than 0.9, and RMSEA less than 0.05 relies on a perfect fit while the value of less than 0.1 indicates a good fit [28] (Table 2). The fitness indicators of the final research model are provided in Table 3.

According to Table 3, most of the fit indicators are good, and the model fits the data. The following table provides the direct, indirect, and total effects of each variable (Table 4).

According to Table 4, emotional regulation directly affects academic motivation (0.37) and academic self-efficacy (0.53). Moreover, academic self-efficacy directly and significantly affects academic motivation (0.20) and indirectly affects emotional regulation (0.24). Also, academic self-efficacy significantly affects academic motivation and the variable of academic self-efficacy has a mediating role. The bootstrap method has been used to evaluate the significance of this effect, indicating that the upper and lower bounds were positive without zero in this range, and this relationship is significant. Finally, the standardized path coefficients of the research model can be observed in Figure 2 after examining the significance of the paths.

4. Discussion

This research aimed to evaluate the structural equation model of explaining academic motivation in students based on emotional regulation while considering the mediating role of academic self-efficacy. According to the results, emotional regulation positively, directly, and significantly affects academic motivation and self-efficacy. In addition, there was a positive, direct, and significant relationship between academic self-efficacy and motivation. Furthermore, emotional regulation indirectly, positively, and significantly affects academic motivation because of academic self-efficacy. These were consistent with the results of similar studies [12, 29-34].

There was also a negative and significant correlation between emotion regulation disorder and academic motivation among students, which was in line with the present research [12]. Similar to this research, a study indicated that cognitive emotion regulation strategies effectively

Table 4. Estimation of direct, indirect, and the total effects for the structural model

Paths	Direct effects		Indirect effects			Total effects	
To academic motivation	Effect	Significance	Effect	Upper bound	Lower bound	Effect	Significance
Academic self-efficacy	0.20	0.002	0.24	0.131	0.456	0.54	0.001
Emotional regulation	0.37	0.001	---	---	---	0.37	0.001
To academic self-efficacy							
Emotional regulation	0.53	0.001	---		---	0.53	0.001

improve academic motivation and performance [29]. In addition, evidence revealed that children's emotion regulation abilities predict their academic motivation, which is consistent with the results of the present research [30].

The set of feelings and volumes of emotion that students experience personally and interpersonally affect their cognitive-mental powers, academic performance, and motivation. Therefore, proper emotional management, regulation, and strategies can improve students' academic motivation. A study on the role of emotional self-regulation in predicting self-efficacy, motivation, and academic achievement indicated a positive and significant relationship between these two variables; the positive increase in students' cognitive-emotional management led to increased and improved self-efficacy and motivation for students' academic performance, which is consistent with the results of this study [31]. In addition, a study found that teaching emotional regulation, and the possibility of correction, experimentation, and error in cognitive control, monitoring, and awareness over challenging emotions and situations provides opportunities to improve students' self-efficacy and enhance their learning and level of progress in academic performance [32].

As a behavioral and cognitive ability, emotion regulation can stabilize people's relationship with the environment by coordinating the mental, biological, and motivational processes, equipping them with efficient responses to situations, and improving their sense of efficiency. Emotion regulation can increase people's sense of control, strengthen their belief in influencing situations, and enhance their sense of effectiveness. According to the results, a positive and significant relationship was observed between academic self-efficacy and academic motivation, which is in line with the results of the present study [33]. Another study stated a positive and significant relationship between self-efficacy with academic motivation and social adjustment [34].

Based on another research, self-efficacy significantly affected the academic motivation of undergraduate students [35]. Students are more motivated and energized when they believe they have high ability, trust in this ability, and have high self-efficacy in different fields of study. The results showed that the relationship between emotions was consistent with positive internal motivation, external motivation, and negative amotivation. Moreover, maladaptive emotions were positively related to internal motivation, positive external motivation, and lack of motivation [11]. On the other hand, a study found a significant relationship between academic motivation and students' self-regulated learning strategies with academic achievement [36].

In a study titled "Problems in Emotion Regulation as an Obstacle to Motivation and Academic Achievement in Students," the results showed that problems in emotional regulation reduce academic motivation and subsequently minimize academic achievement in students [12]. In addition, another study found that inefficient emotion regulation strategies were associated with psychotic disorders such as psychosis and neuroticism. These mental disorders can affect learners' motivation and academic achievement and make them face the problem of academic failure. Previous studies have illustrated that emotional regulation increases academic self-efficacy in students.

As a behavioral and cognitive ability, emotion regulation can stabilize people's relationship with the environment by coordinating mental, biological, and motivational processes, equipping them with efficient responses to situations, and improving their sense of efficiency. Emotion regulation can increase people's sense of control, strengthen their belief in influencing situations, and enhance their sense of effectiveness. Negative emotional regulation creates fear and tension in students, leading to fear of success and decreased motivation. The slightest failure to learn the concepts creates the attitude of low ability and talent to learn and understand in the student (the relationship between emotion regulation and self-efficacy beliefs), which leads to a decline in academic performance and inefficiency and a vicious cycle in students. Therefore, students' possibilities of emotional regulation and cognitive strategies of emotion regulation cause them to believe in themselves and act with more energy and motivation on academic issues. Students' academic motivation improves by adding the variable of academic self-efficacy in their emotional regulation process.

5. Conclusion

Students' emotional regulation leads to self-confidence to act with more energy and motivation on academic issues. Students' academic motivation improves by adding the variable of academic self-efficacy in their emotional regulation process. Conversely, negative emotional regulation creates stress and anxiety in students, which leads to fear of success and decreases motivation levels. The slightest failure to learn the concepts creates the attitude of low ability and talent to learn and understand in the student (low academic self-efficacy), which leads to a decline in academic performance and inefficiency

and a vicious cycle in students. The model of emotional regulation on students' academic motivation has a good fit for mediating academic self-efficacy. Therefore, the awareness of these variables by teachers, parents, principals, and other specialists in the field of education can improve students' academic motivation. As one of the limitations of the present study, most of the findings were obtained through a questionnaire and self-report; thus, it is not clear how much they are related to actual behaviors in everyday life.

Another important limitation of this study was the coincidence of this study with the COVID-19 outbreak, which caused a lockdown in most schools and the lack of access to students. However, the questionnaires were completed in schools before the outbreak; in addition, the follow-up process on incomplete questionnaires was difficult. An essential limitation of this research was related to the spatial and temporal location of the study. This research was conducted on 12 to 15 year-old students in Gonabad Town, Iran in the academic year of 2019-2020, and the findings cannot be generalized to other students in other cities. Precautionary measures should be taken for generalization. Another limitation of this research was related to the research method. This study examined the causal relationships as well as the correlations between the variables, but obtaining these findings using other research methods such as psychological interventions can be considered.

Students' mismatch in culture and socio-economic class can be another limitation of this study. Based on these limitations, it is recommended to conduct the same research on other students in other geographical areas to compare the results. Because of using the correlational method in this study, it is suggested to examine the relationship between these variables via other methods. Researchers are advised to investigate the role of emotion regulation, academic self-efficacy, and academic motivation along with other variables, including academic achievement, academic adjustment, academic retention, resilience, happiness, and academic vitality. Using other variables leads to a coherent knowledge about the mentioned variables and the relationships of this structure with other structures with more capabilities in the relevant planning. Programs such as lectures and special education sessions can effectively improve students' academic motivation considering the prominent role of emotion regulation and academic self-efficacy in academic motivation.

It is recommended to use this model to design a psychological intervention model to improve academic motivation in students. It is possible to provide training to improve students' academic motivation based on the findings of this model. The principles of academic motivation, academic self-efficacy, and emotional regulation are suggested to be addressed in educational, social, and communication media and viewed as a national movement to make necessary changes in the public, especially students.

Ethical Considerations

Compliance with ethical guidelines

This research wasapproved by the Ethics and Research Committee of Ghayenat Azad University (Code: 129/2/24/09). Also, a written consent was obtained from all the participants.

Funding

This research did not receive any grant from funding agencies in the public, commercial, or non-profit sectors.

Authors' contributions

Conceptualization and supervision: Najmeh Sadat Haji Vosough, Jahanshir Tavakolizadeh, Majid Pakdaman; Sampling and data analysis: Najmeh Sadat Haji Vosough; Investigation, Writing–original draft, and Writing–review & editing: Najmeh Sadat Haji Vosough, Jahanshir Tavakolizadeh.

Conflict of interest

The authors declared no conflict of interest.

Acknowledgments

The researchers would like to express their appreciation to Dr. Tavakolizadeh as the supervisor, Dr. Pakdaman as the advisor, and all the school principals, staff, and students who assisted in conducting this research and completing the questionnaires.

References

[1] Clarke N. Developing emotional intelligence abilities through team based learning. Human Resource Development Quarterly. 2010; 21(2):119-38. [DOI:10.1002/hrdq.20036]

[2] Esmaeilpour-Bandboni M, Naderi Shad S, Kobrai F, Gholami-Chaboki B. [Students' viewpoints about academic failure and some related factors in Guilan University of medical sciences (Persian)]. Journal of Research in Medical Education. 2017; 9(3):72-65. [DOI:10.29252/rme.9.3.73]

[3] Sivrikaya AH. The Relationship between academic motivation and academic achievement of the students. Asian Journal of Education and Training. 2019; 5(2):309-15. [DOI:10.20448/journal.522.2019.52.309.315]

[4] Areepattamannil S. Academic self-concept, academic motivation, academic engagement, and academic achievement: A mixed methods study of Indian adolescents in Canada and India. [PhD Dissertation]. Kingston: Queen's University; 2011. [Link]

[5] Deci EL, Ryan RM. Motivation, personality, and development within embedded social contexts: An overview of self-determination theory. In: The Oxford handbook of human motivation. Ryan RM, editor. Oxford: Oxford University Press; 2012. [DOI:10.1093/oxfordhb/9780195399820.013.0006] [PMCID]

[6] Lynch AD, Lerner RM, Leventhal T. Adolescent academic achievement and school engagement: An examination of the role of school-wide peer culture. Journal of Youth and Adolescence. 2013; 42(1):6-19. [DOI:10.1007/s10964-012-9833-0] [PMID]

[7] Matsushima R, Ozaki H. Relationships between identity and academic motivation. Psychological Reports. 2015; 117(1):217-29. [DOI:10.2466/07.10.PR0.117c16z7] [PMID]

[8] Grezellschak S, Lincoln TM, Westermann S. Cognitive emotion regulation in patients with schizophrenia: Evidence for effective reappraisal and distraction. Psychiatry Research. 2015; 229(1-2):434-9. [DOI:10.1016/j.psychres.2015.05.103] [PMID]

[9] Szczygieł D, Buczny J, Bazińska R. Emotion regulation and emotional information processing: The moderating effect of emotional awareness. Personality and Individual Differences. 2012; 52(3):433-7. [DOI:10.1016/j.paid.2011.11.005]

[10] English T, Lee IA, John OP, Gross JJ. Emotion regulation strategy selection in daily life: The role of social context and goals. Motivation and Emotion. 2017; 41(2):230-42. [DOI:10.1007/s11031-016-9597-z] [PMID] [PMCID]

[11] Mousavi A, Dargaj F, Abu al-Moali al-Husseini, K. [The scientific pattern of how cognitive emotion regulation and socioeconomic status will affect educational motivation (Persian)]. Journal of Psychological Science. 2020; 19(92):999-1010. [Link]

[12] Singh P, Singh N. Difficulties in emotion regulation: A barrier to academic motivation and performance. Journal of the Indian Academy of Applied Psychology. 2013; 39(2):289-97. [Link]

[13] Przybylski AK, Murayama K, DeHaan CR, Gladwell V. Motivational, emotional, and behavioral correlates of fear of missing out. Computers in Human Behavior. 2013; 29(4):1841-8. [DOI:10.1016/j.chb.2013.02.014]

[14] Amini SH, Samani S. [Causal modeling of student social support, academic skills and academic self-efficacy (Persian)]. Biannual Journal of Applied Counseling. 2021; 11(1):1-20. [Link]

[15] Yin H, Han J, Perron BE. Why are Chinese university teachers (not) confident in their competence to teach? The relationships between faculty-perceived stress and self-efficacy. International Journal of Educational Research. 2020; 100(2020):101529. [DOI:10.1016/j.ijer.2019.101529]

[16] Honicke T, Broadbent J. The influence of academic self-efficacy on academic performance: A systematic review. Educational Research Review. 2016; (17):63-84. [DOI:10.1016/j.edurev.2015.11.002]

[17] Trautner M, Schwinger M. Integrating the concepts self-efficacy and motivation regulation: How do self-efficacy beliefs for motivation regulation influence self-regulatory success? Learning and Individual Differences. 2020; 80:101890. [DOI:10.1016/j.lindif.2020.101890]

[18] Akhavisamarein Z, Akbari M, Ahmadi S. [The Pattern of structural relationships of academic motivation based on Psychological needs by the role of academic procrastination intervening in undergraduate students (Persian)]. Research in Medical Education. 2021; 13(1):46-56. [DOI:10.52547/rme.13.1.46]

[19] Kline RB. Principles and practice of structural equation modeling. New York: Guilford Press;. 2015. [Link]

[20] Byrne BM. Structural equation modeling with mplus: Basic concepts, applications, and programming. New York: Routledge; 2013. [DOI:10.4324/9780203807644]

[21] Bahrani M. [The study of validity and reliability of harter's scale of educational motivation (Persian)]. Quarterly Journal of Psychological Studies. 2009; 5(1):51-72. [DOI:10.22051/PSY.2009.1591]

[22] Garnefski N, Kraaij V, Spinhoven P. Manual for the use of the cognitive emotion regulation questionnaire. APA PsycTests; 2002. [DOI:10.1037/t03801-000]

[23] Samani S, Sadeghi L. [Psychometric Properties of the cognitive emotion regulation questionnaire (Persian)]. Psychological Methods and Models. 2010; 1(1):51-62.

[24] Jinks J, Morgan V. Children's perceived academic self-efficacy: An inventory scale. The Clearing House. 1999; 72(4):24-30. [DOI:10.1080/00098659909599398]

[25] Mazaheri Z, Sadeghi A. [Development and evaluating the reliability and validity of the students' academic self-efficacy questionnaire (Persian)]. Journal of New Educational Approaches. 2015; 10(2):61-80. [Link]

[26] Miles J, Shevlin M. Applying regression and correlation: A guide for students and researchers. New York: Sage; 2001. [Link]

[27] Joreskog KG, Sorbom D. Lisrel 8: User's reference guide. Baltimore: Scientific Software International; 2003. [Link]

[28] Berkler SJ. Applications of covariance structure modeling in psychology: Cause for concern. Psychological Bulletin.1990; 107:60-73. [DOI:10.1037/0033-2909.107.2.260] [PMID]

[29] Cetin B. Academic motivation and self-regulated learning in predicting academic achievement in college. Journal

of International Education Research. 2015; 11(2):95-106. [DOI:10.19030/jier.v11i2.9190]

[30] Chase M. examining the relationships between parental meta-emotion philosophy, emotion regulation, and academic motivation [MA Thesis]. Halifax: Mount Saint Vincent University; 2018. [Link]

[31] Duchatelet D, Donche V. Fostering self-efficacy and self-regulation in higher education: A matter of autonomy support or academic motivation? Higher Education Research & Development. 2019; 38(4):733-47. [DOI:10.1080/07294360.2019.1581143]

[32] Can S. The effects of science student teachers' academic achievements, their grade levels, gender and type of education they are exposed to on their 4mat learning styles (case of Muğla University, Turkey). Procedia- Social and Behavioral Sciences. 2019; 1(1):1853-7. [DOI:10.1016/j.sbspro.2009.01.327]

[33] Nemati S, Badri R, shahrif H. [The relationships between hope, self-efficacy and resiliency with educational motivation in students with physical disabilities (Persian)]. Journal of Exeptional Children. 2019; 19 (3):61-70. [Link]

[34] Ghaderi E, Yarmohammadian A. [Relationship between self-efficacy and academic motivation and social adjustment in third year middle school students in Isfahan (Persian)]. Paper presented at: National Conference University-Driven Development. 8 December 2016; Torbat Heydariyeh: Iran. [Link]

[35] Husain UK. Relationship between self-efficacy and academic motivation. Paper presented at: The International Conference on Economics, Education and Humanities (ICEEH'14). 10-12 December 2014; Bali: Indonesia. [Link]

[36] Shafei S. [The relationship between academic motivation and self-regulated learning strategies with academic achievement of students of Islamic Azad University, Shushtar Branch Persian)]. Paper presented at: Fifth National Conference on New Research in Iranian Curriculum Planning. 12 October 2019: Tehran; Iran. [Link]

[37] Mutlu AK. Academic self-efficacy and academic procrastination: Exploring the mediating role of academic motivation in Turkish university students. Universal Journal of Educational Research. 2018; 6(10):2087-93. [DOI:10.13189/ujer.2018.061005]

This Page Intentionally Left Blank