

The Effect of Autonomy Support on Academic Stress: the Mediating Role of Self-Regulated Learning and Mastery Goal Orientation

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ABSTRACT

The present study tested the effect of autonomy support on academic stress through self-regulated learning and mastery goal orientation. All male and female students in psychology, educational sciences, and counseling at Payame Noor University in Khuzestan province had a statistical population. Among them, 454 people (386 girls and 68 boys) were selected voluntarily. The research design is correlational. Teachers' Support to Autonomy Questionnaire by Belmont, Skinner, Wellborn and Connell (1988), Academic Stress Questionnaire by Bedewy and Gabriel (2015), Self-regulated learning questionnaire by Iwamoto, Hargis, Bordner, and Chandler (2017), and Mastery goal orientation questionnaire by Midgley and Urdan (2001) were used to collect data. Data were analyzed using Amos software. After modifying the proposed model and eliminating the effect of mastery goal orientation on academic stress, the results of direct hypotheses showed that professors' support for autonomy has a negative effect on academic stress and has a positive effect on self-regulated learning and mastery goal orientation. Self-regulated learning has a negative effect on academic stress. The results of indirect hypotheses showed that teachers' support for autonomy affects academic stress through self-regulated learning.

Keywords

Autonomy support, academic stress, self-regulated learning, mastery goal orientation

Introduction

Academic stress on campus has generally been low in studies (Deb, Strodl and Sun, 2015). Several studies have found significant indicators of academic stress in university students (Steiner-Hofbauer & Holzinger, 2020; Crego, Carrillo-Diaz, Armfield & Romero, 2016). Academically, stress is defined as an individual's psychological state caused by constant social and personal pressure that depletes a person's reserves (Misra, McKean, West & Russo 2000). Academic stress refers to unpleasant psychological conditions caused by teachers' and family members' high educational expectations, pressure on academic achievement, or the educational and examination system (Sarita, 2015). Academic stress usually occurs when education-related demands go beyond the available resources (Wilks, 2008). University educational fields can often cause stress and anxiety due to the competitive environment (Reddy, Menon & Thattil, 2018). Academic stress is found on campus and is specific to each academic stage (Ortega-Torres, Portolés L & ópez, 2020). University students have been shown to experience stress throughout the academic year, particularly in the early years of their degree program and in specific courses such as exams, paper presentations, or oral presentations (Zeidner, 1992). Academic stress has a negative impact on students' academic and psychological performance and is difficult to eliminate (for example, skipping exams or reducing the amount of course material). As a result, it is critical to identify the factors that can reduce academic stress.

Teachers' support for student autonomy is an important educational feature that promotes student motivation and engagement in the classroom (Trigueros et al., 2019). Previous research has found that faculty support promotes students' independence and self-regulated learning (Niemic and Ryan, 2009; Black & Deci, 2000). According to the theory of self-determination, advocacy of autonomy occurs when the teacher (1) considers the student's point of view; (2) provides opportunities for their selection; (3) provides a logical rationale for this need; (4) confirms the student's feelings; and (5) minimizes the use of stress (Deci, Eghrari, Patrick & Leone, 1994). In this regard, teachers' role can create positive attitudes in learners such as personal abilities, entertainment, self-knowledge, intrinsic motivation, transmission, and learning (Choi, Lee, Yoo & Ko, 2019). In other words, the environment that the instructor creates plays an important role in the student's sense of autonomy (Soenens & Vansteenkiste, 2005). Results of the study by Trigueros et al. (2020), Zheng, Jiang & Dou (2020), and Garland (2018) showed that autonomy support could negatively predict academic stress. Benita, Roth, and Deci (2014) have higher levels of enjoyment and less stress in classes that support autonomy.

Teachers' autonomy support and its relationship with self-regulated learning deserve much attention because research shows that educators' autonomy support can help with self-regulated learning (Niemic and Ryan, 2009; Black & Deci,

2000). On the other hand, self-regulation can help cope with academic stress (Haj Ramli, Alavi, Mehri Nejad, and Ahmadi, 2018) and reduce anxiety over time (Black and Deci, 2000). When students find that educators support their independence, this support directly leads to self-regulated self-examination and the use of self-regulated learning strategies (Abdullahi, Rahimi, and Sami Gorgan Rudi, 2016). Autonomy support sometimes indirectly enhances self-regulated learning (Sierens, Vansteenkiste, Goossens, Soenens & Dochy, 2009). Students who perceive a higher level of support for teacher autonomy often seek scientific help (self-regulated learning strategies) (Gonida, Karabenick, Stamovlasis, Metallidou & Greece, 2019; Shih, 2013). This shows that the person closely monitors their progress and can choose effective problem-solving strategies.

Mastery goal orientation and its relationship with academic stress is another topic discussed in this article. Goal orientation theory is one of the most useful theories in the field of academic motivation. The conceptual core of goal orientation theory is what the learner intends to do and progress in homework. Elliot (2010) considers goal orientation as a tool based on which a person evaluates his / her competence. In this regard, Ryan and Pintrich (2011) consider goal orientation as the goals people set for achieving progress and being desirable. Performance goals and mastery goals are the two main goals of progress. Performance goals provide the individual with a measure of excellence. A person with functional goals wants to show or prove his worth to others (Dweck and Leggett, 1988). People with functional goals develop their competence based on normative evaluation, and their attention is focused on showing their ability, compared to others. A performance goal means doing better than others (Elliot, 2010). In other words, in functional goal orientation, a person focuses on external manifestations of competence or ability, and his main goal is to express his abilities in front of others, to be the best in the group, and to avoid undesirable judgments of others, while the person has mastery goals. Will cultivate or improve its competence. People with a masterful goal focus on learning, mastery of the task, acquiring new skills, building and improving their competencies, striving for challenging activities, and gaining insight (Kaplan and Maher, 2007). In mastery goal orientation, the individual seeks to master the task, develop new skills, gain understanding and insight, and develop competence (Ames, 1992). Studies have shown that mastery goal orientation is associated with academic stress. In this regard, the study results of Kim, Lim, and Noh (2016) showed that Korean nursing students with mastery goal orientation experienced less academic stress than those with functional goal orientation.

The relationship between autonomy support and mastery goal orientation is another topic of discussion. So far, studies have shown that the increase of teachers' autonomy support for students increases with the acceptance of mastery goal orientation (Akram, Sultan, and Ijaz, 2014; Black and Deci, 2000). This, in turn, has positive results (such as increasing intrinsic motivation and reducing academic stress) in education (Senko, Holman, & Harakivich, 2011). In this regard, the results of Bieg, Reindl, and Dresel (2017) and Niemiec and Ryan (2009) showed that students who receive autonomy support from their teachers often showed higher mastery goal orientation and intrinsic motivation. Obviously, the higher the degree of support for teachers' autonomy from students, the greater the tendency of students towards mastery goals would be. In other words, when the student feels that his / her professors fully support him/her, he/she tries harder to meet their expectations.

The relationship between self-regulated learning and academic stress is another topic of the present study. The theory of self-regulated learning was proposed by Pintrich and DeGroot (1990). They considered self-efficacy and task evaluation as motivational beliefs and introduced learning strategies (mind review, expansion, organization, critical thinking) and resource management strategies (time and study and effort) as self-regulated learning. Pintrich (1999) defines self-regulated learning as an active and structural processing process by which the learner sets and controls the goals of his or her learning activities, cognition, motivation, and behavior. Zimmerman (1990), as one of the theorists of social cognitive theory, defined self-regulated learning strategies as a type of learning in which students initiate and direct their efforts instead of relying on teachers, parents, or other educators to acquire skills and knowledge. In other words, self-regulated learning refers to the learner's active behavioral, motivational, cognitive, and metacognitive participation in the learning process for further learning. Self-regulated learning helps students reduce academic stress (Haj Ramli, Alavi, Mehrinzadeh, and Ahmadi, 2018) and their anxiety (Black and Deci, 2000). Self-regulated learning strategies such as time management behavior reduce academic stress (Misra & McKean, 2000). Since the findings show that autonomy support can increase self-regulated learning and mastery goal orientation, and considering that these three variables have an effective role in reducing academic stress, the following hypotheses were tested in the present study:

1. Autonomy support has a direct positive effect on academic stress.
2. Autonomy support has a direct positive effect on self-regulated learning.
3. Autonomy support has a direct positive effect on mastery goal orientation.
4. Self-regulated learning has a direct positive effect on academic stress.
5. Mastery goal orientation has a direct positive effect on academic stress.
6. Autonomy support has an indirect positive effect on academic stress through self-regulated learning.

7. Autonomy support has an indirect positive effect on academic stress through mastery goal orientation.

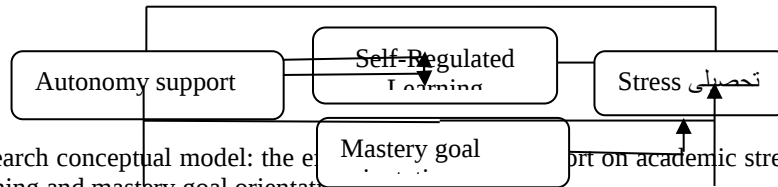


Figure 1. Research conceptual model: the effect of autonomy support on academic stress: the mediating role of self-regulated learning and mastery goal orientation

Society and sample, sampling method

All male and female students in psychology, educational sciences, and counseling at Payame Noor University in Khuzestan province had a statistical population. Due to the prevalence of coronavirus and lack of face-to-face access to students, 454 people (386 girls and 68 boys) were selected voluntarily by designing a WhatsApp link. Voluntary participation was considered as inclusion criteria, and incomplete completion of questionnaires was considered as exclusion criteria.

Data Collection tools

Teachers 'support for students' autonomy: The nine-item Belmont, Skinner, Welborn, and Connell (1988) questionnaire was used to assess autonomy support. The questionnaire is scored on a 5-point scale from strongly agree (1) to strongly disagree (5). The reliability of the questionnaire was 0.85 by the constructors and in the present study its reliability was evaluated and confirmed by Cronbach's alpha 0.87 and its validity was confirmed by confirmatory factor analysis (IFI = 0.97 and RMSEA = 0.067).

Self-regulated learning: To measure self-regulated learning, Iwamoto, Hargis, Bordner & Chandler (2017) short questionnaire with seven items was used. The questionnaire is scored on a 5-point scale from strongly agree (1) to strongly disagree (5). The reliability of the questionnaire was 0.86 by the constructors, and in the present study, its reliability was evaluated and confirmed by Cronbach's alpha 0.87, and its validity was confirmed by confirmatory factor analysis (IFI = 0.91 and RMSEA = 0.062).

Mastery goal orientation: Midgley and Urdan (2001) questionnaire, which has three items, measured mastery goal orientation. The questionnaire is graded on a 5-point scale from "Strongly Disagree" (1) to "Strongly Agree" (5). The reliability of the questionnaire was 0.86 by the constructors, and in the present study, its reliability was evaluated and confirmed by Cronbach's alpha 0.87, and its validity was confirmed by confirmatory factor analysis (IFI = 0.90 and RMSEA = 0.070).

Academic stress: Bedewy & Gabriel questionnaire (2015) which has 12 items and four components of understanding the academic load (3 items), pressure due to teachers' expectations (2 items), pressure due to homework (3 items); And academic self-perception (4 items), was used to measure academic stress. The questionnaire is graded on a 5-point scale from "Strongly Agree" (1) to "Strongly Disagree" (5). The reliability of the questionnaire was 0.88 by the constructors, and in the present study, its reliability was evaluated and confirmed by Cronbach's alpha 0.87, and its validity was confirmed by confirmatory factor analysis (IFI = 0.94 and RMSEA = 0.060).

Results

Table 1 presents descriptive indicators of research variables.

Table 1. Mean, standard deviation, and test for data normality

Variables	Average	Standard deviation	K_S	P
Academic stress	38.45	7.16	0.08	0.13
Professors' support for autonomy	28.37	8.47	0.14	0.21
Self-regulated learning	23.14	4.45	0.33	0.39
mastery goal orientation	11.88	3.38	0.67	0.25

The contents of Table 1 show the average and deviation of academic stress criteria 38.45 (7.16), professors' support for autonomy 28.37 (8.47), self-regulated learning is 14.23 (4.45), and mastery goal orientation is 11.88 (3.38).

Table 2 presents the correlation matrix between the research variables.

Table 2. Correlation matrix between research variables

Variables	1	2	3	4
1- Academic stress	1			
2- Supporting the autonomy of professors	-0.45**	1		
3- Self-regulated learning	-0.60**	0.48**	1	
4- mastery goal orientation	-0.43**	0.45**	0.56**	1

[$p < 0.01^{**}$, $p < 0.05^{*}$]

The contents of Table 2 show that the relationship between all variables is significant.

To evaluate the proposed model of this research, the path analysis method using Amos software and the maximum likelihood method of the model has been used. You can see the findings of this model in Table 3. To determine the adequacy of the proposed model with the data, a combination of fit indicators such as chi-square value (χ^2), normalized chi-square index ($\frac{\chi^2}{df}$), and The Root Mean Square Error of Approximation (RMSEA) were used. The results of data analysis showed that the indices obtained in the proposed model (RMSEA = 0.46 and 99.41 ($\frac{\chi^2}{df} = 99.41$) are not suitable and need structural modification. Goal orientation on academic stress Due to the lack of significance of this relationship, the proposed model was re-analyzed. The results showed that the important indicators (RMSEA = 0.07 and $\frac{\chi^2}{df} = 3.39$) The results related to the goodness of fit indices of the proposed and final model are shown in Table 3.

Table 3. The goodness of fit indicators of the proposed and final model in standard mode

The goodness of fit indicators	χ^2	df	$\frac{\chi^2}{df}$	CFI	IFI	RMSEA
Proposed model	99.41	1	99.41	0.82	0.82	0.46
Final model	3.39	1	3.39	0.99	0.99	0.07

Table 4 presents the direct relationship between the research variables in the proposed and final model.

Table 4. Direct paths of relationships of research variables in the proposed and final model

Direct paths	Proposed model			Final model		
	Standard coefficient (β)	T	P	standard coefficient (β)	T	P
1. The effect of teachers' support for autonomy on academic stress	-0.16	4.19	0.001	-0.20	5.03	0.001
2. The effect of teachers' support for autonomy on self-regulated learning	0.25	11.54	0.001	0.46	11.54	0.001
3. The effect of teachers' support for autonomy on mastery goal orientation	0.18	10.61	0.001	0.44	10.61	0.001
4. The effect of self-regulated learning on academic stress	-0.75	-11.35	0.001	-0.50	-12.22	0.001
5. The effect of mastery goal orientation on academic stress	-0.17	2.06	0.03	-	-	-

The contents of Table 4 showed that in the proposed model, all paths became significant. However, the effect of mastery goal orientation on academic stress was significant. However, because the value of the cryptographic index was greater than 0.08 (RMSEA = 0.46), the proposed model needed to be modified. In order to improve the fit of the proposed model and after eliminating the path of mastery goal orientation on academic stress, the data were re-analyzed. The new analysis, while confirming the suitability of the proposed model, shows that professors' support for

autonomy has a negative effect on academic stress ($t = -0.03$, $\beta = -0.20$); Teachers' support for autonomy has a positive effect on self-regulated learning ($t = 11.54$, $\beta = 0.46$); Teachers' support for autonomy has a positive effect on mastery goal orientation ($t = 10.61$, $\beta = 0.44$); And self-regulated learning has a negative effect on academic stress ($t = -12.22$, $\beta = -0.50$). Based on the findings of Table 4, Hypotheses 1 to 4 are confirmed, and the fifth hypothesis is rejected. In Table 5, the indirect effect of teachers' support for autonomy on academic stress through self-regulated learning was analyzed using the bootstrap method.

Table 5. Testing indirect relationship of teachers' support for autonomy on academic stress through self-regulated learning using bootstrap

Indirect path	Data	Boot	Bias	Standard error	Lower bound	Upper bound
1. The indirect effect of professors' support for autonomy on academic stress through self-regulated learning	0.2040	0.2033	-0.0007	0.0303	0.1478	0.2704

The lower limit of the confidence interval is the indirect effect of teachers' support for autonomy on academic stress through self-regulated learning is 0.1478, and the upper limit is 0.2704 and was placed within this confidence interval. Therefore, teachers' support for autonomy affects academic stress through self-regulated learning. Therefore, based on this analysis, the sixth hypothesis was confirmed.

Discuss

This study aimed at investigating the causal relationship between autonomy support on academic stress through self-regulated learning and mastery goal orientation in Payame Noor students in Khuzestan province in the academic year 1400-99. As the present study results showed, there is a significant direct relationship between autonomy support and mastery goal orientation, academic stress, and self-regulation ($p = 0.001$). The conclusion that autonomy support is a positive predictor of mastery goal orientation is consistent with Akram, Sultan, and Ayaz (2014). Explaining this finding, it can be said that autonomy support by educators and professors (such as providing more opportunities for student participation in the decision-making process to learn them) provides more motivation and opportunity for students to pursue their interest in learning. Move, and this is essential for mastery orientation (Guay, Boggiano & Vallerand, 2001). A student who has a mastery goal does not study to meet the teachers' needs or show himself better than his classmates; he may even perform worse than other classmates. However, when motivation is inherent, the student invests more in learning and higher performance. As a result, he experiences less fear of failure, less fear of doing things poorly, and less feeling of inadequacy.

The current study's findings also revealed that autonomy has a significant positive relationship with self-regulated learning. The more students feel independent of their teachers or educators, the more likely they are to self-regulate their learning, according to the findings of Zheng et al. (2020) and Niemiec and Ryan (2009). Autonomy support, such as respecting students' opinions and providing opportunities for participation in decision-making, leads to self-regulation of students' learning and study habits. When teachers have little control and respect for students' opinions, they can comment on decisions and give a rational reason when giving feedback. On the other hand, students monitor their study processes, make continuous assessments, and use their efforts to achieve learning goals. These activities all contribute to self-regulated learning.

Another finding of this study was that autonomy support reduced perceived negative stress, which is consistent with the findings of Zheng et al. (2020). Students who take advantage of their teachers' autonomy have more control over their studies, feel less coerced, and have more intrinsic motivation (Guay and Vallerand, 1997). When teachers understand their students' feelings and put less pressure on them, students gain more peace and confidence and a better scientific understanding. In addition, students who perceive a higher level of support for teacher autonomy often seek academic help (Shih, 2013). The same search behavior will lead to better scores and performance. Finally, it should be said that the high level of autonomy increases the receipt of scientific help, and this search behavior increases their academic performance and increases their scientific understanding.

Another finding of this study was the link between mastery goal orientation, autonomy, and stress. Because encouraging autonomy promotes the adoption of mastery goals. Mastery goal orientation alleviates the pressure to complete required work and the stress associated with school and university. Here is where mastery goal orientation comes into play. Students who receive more autonomy support are more likely to pursue mastery goals (Madjar, Nave & Hen, 2013). As a result, they feel more capable of completing tasks (Senko et al., 2011) and have lower levels of academic stress (Kim et al., 2016). By having a mastery goal orientation, students place more importance on mastering

the material, rather than competing with other students or impressing their teachers, so they have less pressure to do homework. Students who have a mastery goal orientation hope for more success (Sekreter, 2016). Therefore, they have a higher scientific understanding. They may also find the volume of assignments appropriate because they think it is necessary to understand the material.

Another finding of this study is that self-regulated learning mediates the relationship between autonomy and perceived academic stress. This could be because students, when given the necessary independence and support from their instructors, tend to regulate and control their learning (Niemic and Ryan, 2009), giving them more control over their own learning time and outcome. As a result, their performance improves (Daniela, 2015). Students who advance academically have more self-confidence than their ability and are less concerned about their scientific perception. Finally, university professors may be unfamiliar with the various causes and severity of students' academic stress. Most importantly, faculty may not realize the importance of supporting student autonomy. For example, professors often set deadlines for submitting assignments, and some do not even accept late submissions for whatever reason. They also rarely provide different options for students. These practices increase students' academic stress and do not motivate them to pursue mastery goals. It is suggested that researchers emphasize the importance of autonomy support for university professors to increase mental health.

This study also has limitations that may shed light on future research. This study was conducted only with students' data in Payame Noor, Khuzestan province. Future research could explore different aspects of supporting autonomy. For example, what aspects do students consider important for their emotional health: choices, coaches' views, minimal use of pressures and demands? Researchers can also determine what professors' autonomy professors deprive students of and how they are progressing in this area. Future research could also examine the effects of supporting two other basic needs, the need for competency and the need for self-efficacy.

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