Original Research

A Causal Model of Motivational Beliefs with the Mediating Role of Academic Hope on Academic Self-Efficacy in High School Students

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Abstract: The purpose of this study was to explain the causal model between motivational beliefs and self-efficacy with the mediating role of academic hope in high school students. The research method was descriptive and correlational. The sample size was 558 (248 girls and 310 boys) from high school students (tenth, eleventh and twelfth grade) in Shiraz, Iran in 2019. They were selected through multistage cluster sampling method. The tools used in this research included Pintrich and De Groot self-regulation learning strategies scale (1990), Sohrabi and Samani academic hope scale (2011), and Gink and Morgan student self-efficacy scale (1999). LISREL software was used for statistical calculations. Data analysis used path analysis test that showed that academic hope plays a significant mediating role in the relationship between Motivational beliefs and academic self-efficacy. Also, the fitting indices of the model in the present study showed that the proposed model has a well fit.
Keywords:Motivational Beliefs, Academic Hope, Academic Self-efficacy.

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Introduction

Today, the process of teaching and learning is one of the most important educational issues, and its progress is a sign of the development of the educational system. Therefore, it is important to know what factors keep students interested in their homework and help them pursue educational goals (C Richard Snyder et al., 2002). Just as it has been shown during the last recent years, cognitive and motivational variables play a major role in determining the success and failure of people in different areas of life, including education. It is important to note that these variables affect each other, and sometimes with the decreases and increases of a variable, the effect of another variable also changes. According to the researches done, one of the most important variables involved in the individual's social and educational success, is self-efficacy. Self-efficacy relates to people's beliefs about their ability to learn and behave at a certain level (Bandura, 1997).

Self-efficacy beliefs affect the choice of homework, effort, endurance, refusal, and progress of individuals (Bandura, 1997). On the other hand, this structure, as a cognitive-motivational factor, has a prominent role in creating individual and gender differences in the range of academic performance (Bandura, Barbaranelli, Caprara, & Pastorelli, 2001). Elias (2008) considers academic self-efficacy as the student's confidence in his ability to challenge academic tasks. As is evident, self-efficacy affects motivation as well as learning, and in particular, education and areas of work (Elias, 2008). Among the variables that affect academic self-efficacy, one can point out academic hope and motivational beliefs. In scientific resources, hope means waiting for a person to succeed in achieving a goal (Dowling & Rickwood, 2016). Charles R Snyder and Rand (2003) consider hope as a cognitive-motivational construct based on the perceived capacity to generate paths or passages toward desirable goals as well as perceived motivation to move in these passages. Also, an important variable

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associated with self- efficacy is motivational beliefs. Motivational beliefs are one of the main components of self-regulation model (Zimmerman & Pons, 1986). According to Pintrich and De Groot (1990), motivational beliefs refer to individual beliefs that guide and direct students' academic activities. In other words, it can be said that motivational beliefs are personal and individual reasons for students to perform or avoid an assignment or academic activity.

According to Bruce, Dennis, and Dennis (2007), motivational strategies for learning are one of the main components affecting learning, and in case of paying attention to this component, learning environments will be more attractive and livelier for learners. What follows out is that these variables are involved in the learning process and have a significant impact on the student's educational process. So, investigating their relationship is also significant. Self-efficacy is a concept that, given its components (effort, texture, and talent), has an irrefutable influence on individual success, and in particular, academic achievement. Therefore, the need to examine the effect of other variables that can affect the reduction or increase of self-efficacy is obvious. In this regard, self-efficacy seems to be dependent on self-regulation through motivational beliefs. Motivational beliefs are especially important in high school since they coincide with the psychological changes of puberty and participation in the selection of university. On the other hand, academic hope is another motivational variable that has been less addressed and it seems to affect self-efficacy if it comes with the factors of agency and pathway.

Accordingly, the purpose of this study is to investigate the effect of motivational beliefs on self-efficacy in situations where hope as a mediating variable is added to the equation. It also emphasizes the importance of paying attention to a variable such as hope in academic conditions to increase the effectiveness of motivational beliefs on students' self-efficacy. Some research on these three variables is as follows:

The results of Winter (2015) research on 464 high school students indicated a positive and significant relationship between hope and self-regulating components (motivational beliefs and learning strategies). It was also found that hope and motivation could predict students' self-regulation. In their study on 12-17-year-old students in Spain, Fernandez-Rio, Cecchini, Méndez-Gimenez, Mendez-Alonso, and Prieto (2017) found that self-efficacy and self-regulation components (motivational beliefs and learning strategies) had a positive and significant relationship. Motivational beliefs are the personal and individual reasons for students to accomplish or avoid their homework or academic activity (Pintrich & De Groot, 1990). Hope is defined as a cognitive complex based on a cross-criterion derived from success (i) direct targeting (agent), and (ii) planning ways to reach the goal (path) (Shegefti & Samani, 2011). Self-efficacy means an individual's perception of his ability to learn, solve problems and achieve academic achievement (Linnenbrink & Pintrich, 2003).

Research Hypothesis: Academic hope plays a meaningful mediating role in the relationship between motivational beliefs and academic self-efficacy in high school students.

Material and Methods

The present research is a descriptive correlation study in which the hypothesized relationships among the variables of the research are investigated in the framework of the path analysis method. In this research, motivational beliefs as an independent variable, academic hope (agency and path) as a mediating variable and academic self-efficacy (talent, texture, and effort) as a dependent variable, play roles.

The statistical population of this study includes all high school students in Shiraz who were studying in the academic year of 2019. The sampling method is a step cluster sampling. Thus, from each of the four districts of Shiraz, a girls' high school and a boys' high school, and each high school, one class is selected randomly in each grade. All the students in the class were asked to participate in the research (248 girls and 310 boys). The tools used in this research are as follows:

Pintrich and De Grout's Self-Regulation Learning Strategies (1990): The self-regulatory learning strategies scale was developed by Pintrich and Grout. The questionnaire is composed of 47 phrases in two sections: motivational beliefs and self-regulation learning strategies. The motivational beliefs section covers 25 phrases of scale including self-efficacy, goal orientation (targeting), internal evaluation, and test anxiety. The reliability coefficients of self-efficacy subscales, internal evaluation, and test anxiety, using cognitive and metacognitive strategies are 89%, 87%, and 75% respectively, using Cronbach's alpha.

Sohrabi and Samani's Academic Hope Scale (2011). Sohrabi and Samani's Academic Hope Scale consists of 9 items and two dimensions of pathway thinking and agent. The internal validity of the agent is evaluated using

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Cronbach's alpha. Alpha coefficients of pathway and activity type are 0.73 and 0.75 respectively.
Jink and Morgan's Student Self -Efficacy Scale (1999): This scale has 30 questions and three sub-scales of talent, effort, and texture. The designer of the scale reports its internal consistency using Cronbach's alpha method which is 82%. Also, the Cronbach's alpha coefficient of the three sub-scales of talent, effort, and texture is reported to be 0.78, 0.66 and 0.7, respectively (Jamali, Noroozi, & Tahmasebi, 2013).

Results

The descriptive indexes including mean and standard deviation and correlation matrix of research variables were presented in tables 1 and 2.

Table1. Descriptive findings related to research variables

Variable	Number	Average	SD	Variance	Minimum	Maximum
Motivational Beliefs	439	3.63	0.375	0.141	2.48	4.68
Academic Hope	439	4.03	0.442	0.196	3.00	5.00
Pathway	439	3.93	0.539	0.291	2.75	5.00
Agent	439	4.13	0.498	0.249	3.00	5.00
Self -Efficacy	439	3.06	0.252	0.064	2.31	3.66
Talent	439	3.06	0.317	0.101	1.92	3.92
Texture	439	3.07	0.293	0.086	2.38	3.69
Effort	439	3.04	0.391	0.153	2.25	3.75

Table2. Correlation matrix of research variables

Variable	1	2	3	4	5	6	7	8
1.Motivational Beliefs	1							
2.Academic Hope	** 0.371	1						
3. Pathway	** 0.272	** 0.864	1					
4. Agent	** 0.365	** 0.839	** 0.452	1				
5. Self- Efficacy	** 0.316	** 0.483	** 0.403	** 0.422	1			
6. Talent	** 0.247	** 0.435	** 0.416	** 0.322	** 0.761	1		
7. Texture	** 0.292	** 0.299	** 0.221	** 0.290	** 0.676	** 0.316	1	
8. Effort	** 0.193	** 0.360	** 0.278	** 0.338	** 0.813	** 0.427	** 0.305	1

**P≤0.01 *P≤0.05

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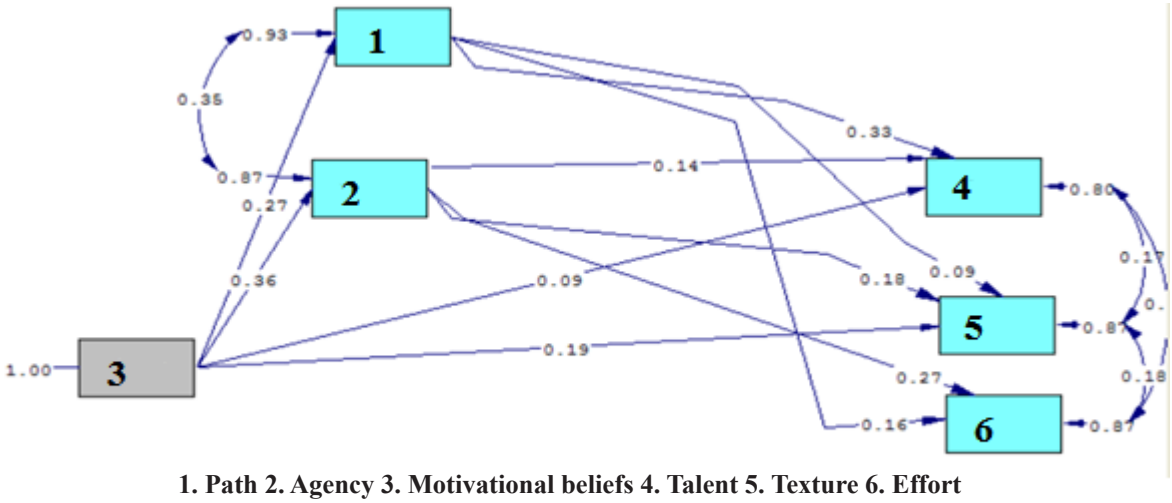
To investigate the single-variable outlier data, the standard Z scores are calculated and the results show that the scores of no variables are two standard deviations above or below the mean. Also, the Mahalanobis distance is calculated with a significant level for the observed variable, so as to investigate multivariate outlier data. The results show that the significance of none of them is less than 0.01. Therefore, the existence of single-variable and multi-variable outliers for the research variables is negative. In addition, one of the statistical assumptions is the normality of data for which Jarc Bra's test and Dagostino's test are used. Regarding the fact that the significance level for all variables is higher than 0.05, therefore, it is concluded that the variables of the research are normal.



1. Path 2. Agency 3. Motivational beliefs 4. Talent 5. Texture 6. Effort

Figure 1. The standard coefficients of the model of relationships between the variables of motivational beliefs and talent, texture, and effort with the mediating role of pathway and agency in students

The direct relationships of variables after the removal of non-meaningful paths are presented in Figure 1, which shows that the standard coefficients of motivational beliefs to the subscales of academic hope including pathway and agency, respectively ($\beta = 0.27$, $P \leq 0.1$) and ($\beta = 0.36$, $P \leq 0.1$) is positive and significant. Also, according to Figure 1, among the subscales of academic hope and self-efficacy, the standard coefficients of pathway to talent ($\beta = 0.33$, $P \leq 0.1$), pathway to effort ($\beta = 0.16$, $P \leq 0.1$) agent to talent ($\beta = 0.14$, $P \leq 0.1$), agent to texture ($\beta = 0.18$, $P \leq 0.1$) and agent to effort ($\beta = 0.27$, $P \leq 0.1$) are positive and significant.

On the other hand, the results indicate that the standard coefficients of motivational beliefs to the subscales of self-efficacy (talent and texture) are positive and meaningful respectively ($\beta = 0.19$, $P \leq 0.1$) and ($\beta = 0.09$, $P \leq 0.1$). In the next step, Bootstrap analysis is used to determine the significance of academic hope as a mediating variable. As seen in the table 3, the mediating role of academic hope variable is significant in the relationship between motivational beliefs and academic self-efficacy.

Finally, investigating model fitting indicators, in accordance with table 4, indicates the fit of the research model. Based on the findings of Table 4 and the final model presented, it can be concluded that academic hope plays a significant mediating role in the relationship between motivational beliefs and academic self-efficacy in high school students.

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Table3. Multiple mediating test indicating indirect relationships of motivational beliefs to talent, texture and effort using Bootstrap method.

Path	Indicator					
	Data	Boot	Bias	Error	Lower Limit	Upper Limit
Motivational beliefs to talent through pathway and agent	0.116	0.115	-0.0005	0.021	0.077	0.164
Motivated beliefs to talent through pathway	0.074	0.075	0.0002	0.017	0.044	0.112
Motivational beliefs to talent through agent	0.041	0.041	0.0006	0.015	0.013	0.074
Motivational beliefs to texture through pathway and agent	0.068	0.069	0.00001	.0016	0.039	0.104
Motivational beliefs to texture through pathway	0.018	0.018	0.000	0.011	-0.002	0.043
Motivational beliefs to texture through agent	0.050	0.050	0.0001	0.017	0.021	0.088
Motivational beliefs to effort through pathway and agent	0.136	0.135	0.0010	0.024	0.094	0.189
Motivational Beliefs to effort Through Pathway	0.042	0.042	0.0002	0.017	0.013	0.082
Motivational beliefs to effort through agent	0.094	0.093	0.0012	0.023	0.052	0.144

Table 4. Fit indices of the proposed research model

Indicators	X^2	Sig.	DF	X^2/DF	GFI	AGFI	NFI	CFI	IFI	RMSEA
Values	1.68	0.19	1	1.68	1	0.97	1	1	1	0.04

Discussion

Our results indicated academic hope plays a significant mediating role in the relationship between motivational beliefs and academic self-efficacy. Also, results indicated the proposed model has the good fitting indices. Generally the results revealed the role of motivational variables in self-efficacy. The results are in line with Winter (2015) study which indicated a positive and significant relationship between hope and self-regulation components (motivational beliefs and learning strategies). These findings are also aligned with the results of the research by Ferrari, Stevens, Legler, and Jason (2012), Sieben (2013), (Vohs & Schmeichel, 2002). A key premise of social cognitive theory is that individuals tend to control events that affect their lives and consider themselves to be effective factors. Perceived self-efficacy is a pivotal process that affects a person's effectiveness. In the center of the concept of influence and agency, self-regulation and its components are among the motivational beliefs, a process by which individuals activate and continue their behavior, cognition, and emotions regularly and organized to achieve their goals. Also, the results are consistent with the results of the previous studies (Ekholm, Zumbrunn, & Conklin, 2015; Kim, Wang, Ahn, & Bong, 2015; KIRMIZI, 2015; Zimmerman, Schunk, & DiBenedetto, 2017). The variables of hope and self-efficacy with positive energy, sense of usefulness, and planning in personal and educational life are semantically related. Hope makes a student believe that he can control the results of his or her academic challenges. In other words, students who have higher academic hope are more hopeful in the future, they plan to achieve their goals, which makes them busy with challenging activities to explore their talents, and make more efforts to achieve their goals. Academic hope accelerates the actions of individuals in learning tasks, causes greater involvement and passion for learners to accomplish tasks and homework, increases their energy and commitment, and makes them enjoy scheduling and supervising their homework.

In the explanation of the main finding of this research and the mediating role of academic hope, it can be referred to as the concept of hope. Hope is a positive motivational state that is based on a sense of firmness and progression. It results from the interaction of an individual with the environment. In other words, hope is the capacity to imagine the ability to create paths towards the desired goals and think of having a motive for mov-

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ing on these paths. Snyder believes that people with high hope also emphasize goals with positive emotional states and believe that they can learn from past successes and failures to achieve future goals. Academic hope will empower students to focus on success to overcome problems and can increase their success in academic goals (C Richard Snyder et al., 2002). This issue is particularly important for students, especially high school students who are on the verge of entering the university. Then, the agency dimension of academic hope is itself an important motivational component for moving the person on the pathways considered for achieving the goal. Having strategic thinking and thinking of multiple pathways also increases the perception of control and helps as a good motivational source for the individual. In recent studies, the focus of new motivational theories is on the perception of control, and hope and its components can provide the basis for this perception. Academic hope as a positive and activating excitement can create an optimistic attitude toward future events, and can later lead to self-efficacy, positive learning behaviors, and an increased tendency toward school activities. In fact, hope due to its bilateral relationships and proximity with both self-efficacy and motivational beliefs can play a significant role between these two variables. Therefore, by increasing the positive impact of motivational beliefs on self-efficacy components, hope is considered as a mediating step for achieving academic self-efficacy.

Concerning the limitations of the present research, it should be noted that the participants of this study were high school students in Shiraz; therefore, the generalization of the results to other age and educational groups should be done with caution. Based on the results of this study, it is suggested to design and implement intervention programs that focus on education and promotion of positive academic excitements to create a purposeful school environment for students in which they enjoy and enthusiastically follow their educational activities. It is also recommended that future researchers propose training ways to increase hope in schools and study the effects of such training on other motivational variables.

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Declaration of Conflicting Interests

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