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Examining the Model of Academic Self-Efficacy Based on the Teacher-Student Relationship in High School Students

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ABSTRACT: The aim of this study is to examine the model of academic self-efficacy based on the teacher-student relationship in high school students. The research method is mixed method (qualitative and quantitative). The statistical population of the study in the qualitative section is the university's professors, school's principals and education experts. The statistical population in the quantitative section is high school male students in Hormozgan province. In the qualitative section, 100 people are selected using non-random sampling method and in the quantitative section, 384 students are selected via cluster sampling. The research instruments are Morgan-Jenks (1999) self-efficacy questionnaire and the teacher-student relationship questionnaire developed in qualitative and quantitative phases of research. The results of qualitative and quantitative study indicate that emotional ability, perceived freedom in the classroom, perceived support, communication skills, class management ability, teacher personality and class motivation are components of the teacher-student relationship questionnaire. The results of the model study also indicate that the teacher-student relationship is a significant predictor of students' academic self-efficacy.

Keywords: Academic self-efficacy. Teacher-student relationship, high school students

Introduction

The teacher can influence students' perceptions of their adequacy and control, along with constructive communication with students and the application of cognitive skills and strategies through management and common classroom structures. The most common way teachers deal with motivational issues is the way they deal with other educational issues. That is, they first consider these issues for the entire class and then adapt it to the students one by one. It is noticeable that students need education to learn. It is essential to increase students' intrinsic motivation to learn, so that their perception of control is not impaired. Also, in order to continue this important work, they should have the opportunity to choose their educational goals and master them (Saeid & Eslaminejad, 2017). In fact, teachers need to be aware of how to give students the opportunity to choose and master over goals in order to maintain their ability to function properly. If the student makes the wrong choice, he/she will fail. It is possible that the student has the opportunity to control his / her learning but loses the necessary adequacy with a wrong performance. Teachers can provide educational support of students in terms of content dimensions and working methods, and students, like teachers, can choose both content and work methods.

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Communicating effectively with the student is one of the main factors in shaping students' sense of efficiency. The student's sense of self-efficacy is the core of growth in various cognitive and non-cognitive dimensions (Bandura & Hall, 2018).

Individuals' beliefs about their abilities and talents have positive effects on their actions and behaviors, so that according to Bandura (1991), no factors in explaining human behaviors, activities and control can be found to be more effective than self-efficacy. Given that persons' individual differences lead to their different perceptions of situations and abilities, so in dealing with academic challenges, different people respond to these educational barriers in different ways. Accordingly, students with a high sense of self-efficacy, have characteristics such as perseverance in performing tasks, high level of performance and commensurate with abilities; they constantly search for new successes, challenge problems, deal effectively with events and situations, are able to solve problems and apply analytical thinking, choose more challenging tasks and higher goals, commitment and resistance to achieve goals (Ahmad & Safaria, 2013). Accordingly, self-efficacy is one of the influential factors in the academic context that should be considered. According to Bandura, one of the main foundations of creating self-efficacy is efficient models and verbal and non-verbal persuasions of the model. Therefore, in school and classroom, teacher is the main model and effective teacher-student relationship is the highway of self-efficacy. Gage, Scott, Hirn, and MacSuga-Gage (2018) believe that no one other than the teacher can have a greater impact on what is happening in schools. The teacher can turn education into a process of pleasure and success, or a fruitless process. The relationship that the teacher establishes with the students is about the cognitive contents and affective domains that both of them can affect each other. Teacher-student relationships are broadly based on student motivation (Roorda, Koomen, Spilt, & Oort, 2011; Saranjam, 2020; Wubbels, Brekelmans, & Mainhard, 2016). Effective teacher-student relationships lead to student involvement in the education process, which in turn creates interest in students, maintains it, and improves their academic life. The results of studies indicate that different methods of teacher-student interaction have been associated with various conflicts (Claessens et al., 2017).

Students create this relationship and interaction in a variety of ways. The type of teacher-student relationship may include types of belonging, disregard, and rejection that may have detrimental effects on students' academic performance. Teacher's feedback to the student is an important performance in teaching which includes four functional, motivational, attributional and strategic (Carvalho, Santos, Conboy, & Martins, 2014). The school is an organized system that, like any other system, is involved in various conflicts such as conflicts between school staff; students-staff and students-students and this conflict is inevitable (Zurlo, Vallone, Dell'Aquila, & Marocco, 2020). These interactions and conflicts

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in the process of education, classroom management, methods of controlling and behaviors of teachers towards students are the cause of many problems in systems (Sanli, 2019).

Unfavorable conditions in the educational environment are the source of many physical and mental problems in teachers and students, and their effects can lead to academic failure and reduced motivation for achievement. The type of teacher behavior is under the ideology of teacher control, which is known as a factor of conflict in teachers' behavior. This is an issue that has received less attention from researchers in the field of psychological studies and education, while many experts believe that teacher's success in teaching-learning process largely depends on the type of interaction. Therefore, this study is conducted to investigate the relationship between teacher-student relationship and motivation for achievement and self-efficacy in students. Therefore, the results of this study can take basic steps to strengthen and explain the components of academic self-efficacy. Using the results of the present study can lead to more knowledge about the relationship between these variables and show effective approaches to increase the efficiency and development of schools. According to many experts, the success of the teacher in the teaching-learning process largely depends on the type of interaction and the challenges that occur between the characteristics of the learner and the teacher. A review of the research literature shows that the wide range of teacher-student relationship has been studied in general and less attention has been paid to predicting academic self-efficacy. Examining the teacher's role in different dimensions as an important efficient model for students is an issue that has been followed in the present study and tries to answer the question by qualitative and quantitative study that improve self-efficacy in the students.

Material and Methods

The present study is a mixed (quantitative-qualitative) research. In the quantitative part of the research, in terms of purpose, it is a descriptive correlational research. In the qualitative part, the research method is content analysis. The statistical population of this study consists of two groups: the first group are specialists and experts (university professors, school principals and education staff). The second group is high school students in Hormozgan province. From the first group (experts), 100 people are selected using non-random sampling method, and their selection criteria are as follows: 1- Their availability 2- At least 10 years of teaching experience. To test the model in the second group, the sample size is determined based on 40 cases per each observed variable. According to the ten observed variables, (7 components of effective factors and 3 components of self-efficacy), the sample size is 400 people. After determining the sample size, the satisfaction of experts and students with a commitment to the confidentiality of their information is obtained. Experts are also promised to provide the final results

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of the research. Finally, after removing incomplete questionnaires and screening data, 384 questionnaires are analyzed. The sampling method in quantitative section is a multi-stage cluster sampling, in which 5 schools are selected first, then two classes are selected from each school. Finally the questionnaires are distributed among all class members. To collect data, two questionnaires of academic self-efficacy and a researcher-made questionnaire of factors which are related to the teacher-student relationship, are used.

Academic self-efficacy questionnaire: The Jinks and Morgan (1999) Self-Efficacy Questionnaire is used to measure self-efficacy. This four-point Likert-type questionnaire has 30 questions with a four-choice answers; I agree, to some extent I agree, to some extent I disagree, I strongly disagree. It has three subscales: talent, effort and texture. The overall reliability coefficient for this questionnaire is .82, and the alpha coefficient for the sub scales of talent, texture and effort are reported as .78, .70 and .66, respectively. The effort subscale has 4 items, the talent subscale has 13 items and the texture subscale has 13 items (Ellsworth & Lagacé-Séguin, 2009). KarimZade and Mohseni (2006) have obtained reliability coefficients for overall academic self-efficacy of .76, for the talent component .66, for the effort component .65 and for the texture component .60. Also in the present study, reliability coefficients for the overall scale are .74, for the talent component .70, the effort component .72 and the texture component .69. Factor analysis with a relative chi-square (2.17) and RMSEA index equal to (.04) confirm three-factor model of the scale in the present study.

Researcher-made questionnaire of factors related to teacher-student relationship: In this study, a researcher-made questionnaire is used to assess the factors related to the teacher-student relationship. This questionnaire is developed based on the results of interviews and their open coding as well as the final model obtained in the qualitative stage. To assess the validity of the questionnaire, face and content validity on experts' opinions as well as construct validity based on exploratory and confirmatory factor analysis are performed. The reliability of the questionnaire is measured by Cronbach's alpha by performing the questionnaire on 100 specialists. The results of the initial analysis exposed that the value calculated for the KMO test is .867, which show that sampling of this study is sufficient, and this value is suitable for factor analysis. Also, the value of Bartlett sphericity test is equal to 1768.857 ($p < .01$). The results of factor analysis reveal seven factors which value greater than 1, and explain 68.58%of total variance (Table 1). After identifying the primary factors in the questionnaire, confirmatory factor analysis is performed to evaluate the validity of the structure. The results obtained from the fit indices in Table 2 indicate the confirmation of the seven factor model of the questionnaire.

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Table 1. Exploratory factor analysis of the researcher-made questionnaire of factors related to the teacher-student relationship

Factors	Eigenvalue	Explained total variance	Commutative Explained total variance
1	7.215	28.85	28.85
2	4.92	10.27	39.12
3	3.74	7.58	46.7
4	2.87	6.40	53.10
5	1.89	5.62	58.72
6	1.52	5.12	63.84
7	1.34	4.74	68.58

Table 2. Fitness indices of confirmatory factor analysis of the questionnaire of factors affecting teacher-student relations

Fitness index	$\chi^2/_{df}$	GFI	TLI	AGFI	CFI	NFI	RMSEA
Value	1.79	.98	.97	.97	.96	.97	.02

Results

Table 3 shows the mean and standard deviation of the sample group scores in the research variables. Table 4 presents the correlations of the variables studied in the research. Figure 1 also shows the final research model with standard path coefficients. Table 5 shows the results of fitting the initial and the final models.

Table 3. Mean and standard deviation of sample group scores in research variables

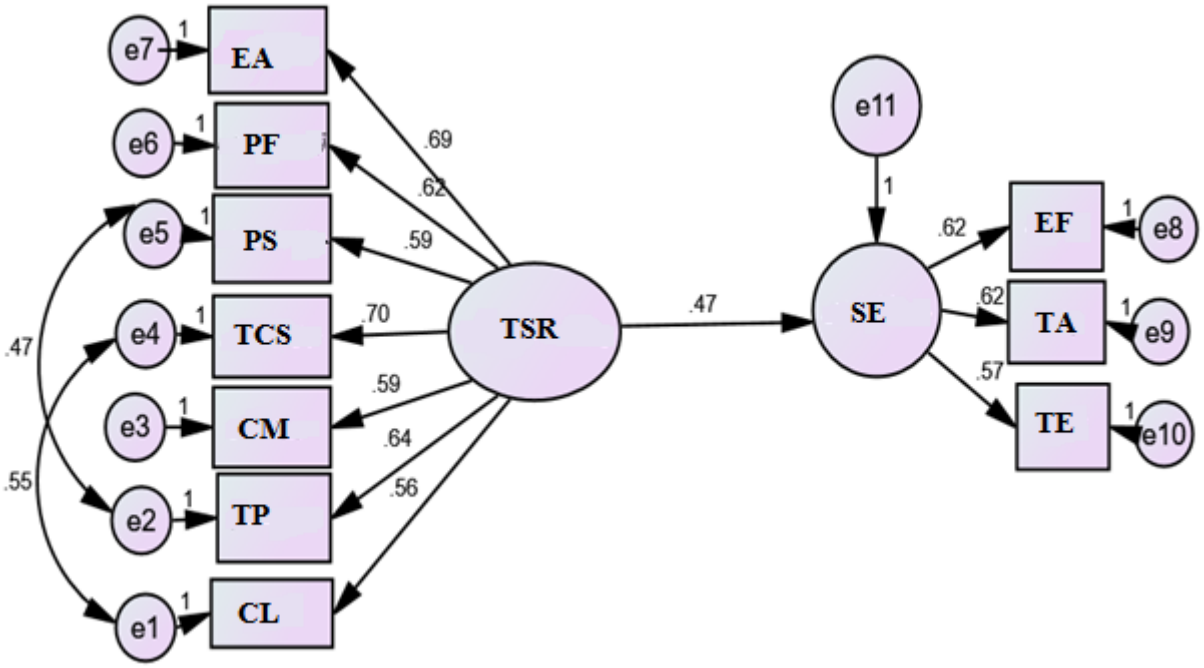
Variable	Mean	SD	Min.	Max.
Emotional ability	22.37	2.97	14	37
Perceived freedom	19.47	4.80	11	34
Perceived support	18.29	4.19	12	36
Teacher communication skills	21.87	5.56	10	42
Class management	22	4.06	12	32
Teacher personality	25.64	4.26	10	42
Class motivation	20.47	5.94	14	38
Effort	37.92	7.24	17	59
Talent	36.28	7.50	15	64
Texture	8.50	2.29	4	14

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Table 4. Correlation matrix of research variables

Variable	1	2	3	4	5	6	7	8	9	10
1- Emotional ability	1									
2- Perceived freedom	.46**	1								
3- Perceived support	.48**	.57**	1							
4- Teacher communication skills	.44*	.52**	.57**	1						
5- Class management	.55**	.67**	.65**	.59**	1					
6- Teacher personality	.65**	.58**	.47**	.57**	.69**	1				
7- Class motivation	.59**	.46**	.56**	.57**	.49**	.62**	1			
8- Effort	.27*	.37*	.39*	.43*	.24*	.33*	.59**	1		
9- Talent	.39*	.33*	.31*	.25*	.32*	.44*	.41*	.52**	1	
10- Texture	.34*	.30*	.22*	.24*	.26*	.42*	.44*	.59**	.65**	1

*p <. .05, ** p < .01



EA: Emotional ability, **PF**: Perceived freedom, **PS**: Perceived support, TCS: Teacher communication skills, **CM**: Class management, **TP**: Teacher personality, **CM**: Class motivation, **TSR**: Teacher-student relationship, **SE**: Self-efficacy, **EF**: Effort, **TA**: Talent, **TE**: texture

Figure 1. Final research model with standard path coefficients

Table 5. Fitness indexes of the proposed and the final models

Fitness index	$\chi^2/_{df}$	GFI	AGFI	IFI	TLI	CFI	NFI	RMSEA
Proposed model	12.59	.82	.76	.77	.73	.78	.76	.10
Final model	1.99	.94	.92	.94	.93	.94	.91	.052

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According to Table 5 in the final model, the $\chi^2/_{df}$ or relative chi-square is 1.997, GFI equal to .94, adjusted good fit index (AGFI) equal to .92, incremental fitness index (IFI) equal to .94, Tucker-Lewis index (TLI) equal to .93, normalized fitness index (NFI) equal to .91 and root mean square error index (RMSEA) equal to .052.

Discussion

The results of the present study revealed that based on the views of experts, components such as emotional ability, perceived freedom in the classroom, support, teacher communication skills, classroom management ability, teacher personality and classroom motivation play an important role in forming effective student-teacher communication. The results confirmed the existence of seven factors in the researcher-made questionnaire; Based on structural equation modeling, it is shown that these factors are significant predictors of students' academic self-efficacy. The results obtained on the hypothesis that there is a relationship between teacher-student interaction and student self-efficacy are consistent with previous findings (Hughes & Chen, 2011; Xu & Qi, 2019). The findings of this study also confirm previous findings that have shown the teacher-student relationship effect in the early years of childhood. Richmond, Mccroskey, and Mottet (2015) indicated the teacher-student interaction as a significant indicator of learners' self-efficacy in kindergarten and primary school. One possible explanation is that positive interaction between teacher and students creates a classroom which is conducive in teaching and learning and avoids many of the negative issues that interfere with improving students' sense of self-efficacy.

In addition, when the teacher-student relationship is positive and constructive, it meets the adolescent competency needs (Pelletier & Sharp, 2009). The social competence helps them use interaction in the service of problem solving and. Thus, it has a higher sense of academic and social self-efficacy in school. This process, in turn, leads students to evaluate the school as a safe and secure environment and to consider educational events and factors as sources of enhanced sense of self-efficacy. Therefore, based on the findings, it can be said that students in classes with a sense of support, have higher self-confidence and a more positive attitude towards academic ability.

The present study is in line with the ecological approach and interpersonal behavior model. It enhances our understanding of the student-teacher context as a growth factor in self-efficacy. Also, it is being in line with the findings of Wang and Holcombe (2010), which state that when adolescents feel the classroom and school environment as a supportive learning environment, they experience a higher sense of self-efficacy. The theme of teacher support and care has been confirmed in several studies. This concept is based on Bowlby (1979) theory of attachment and the unique role of the teacher in the supporting students emotionally as a safe base for the student security. Pianta, Hamre, and Stuhlman (2003) considerd intimacy as an indicator of the security of this relationship, although students differ in establishment of a secure relationship with the teacher, and therefore the signs of this attachment should be vary. The theme of classroom structuring or classroom management contrasts with the lack of classroom structure. The way the teacher acts is effective in creating this structure; as the teacher's

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support for the class structure in the theory of self-determination (Deci & Ryan, 2008) has been mentioned as one of the three effective dimensions in the student-teacher relationship. The teacher can provide the appropriate structure for this communication environment by providing clear and coordinated strategies, and by being available to answer student questions.

However, one of the important goals of education is to increase the sense of self-efficacy in education and later in students' profession to make a self-sufficient society. Increasing number of students who feel low self-efficacy in academic activities is a serious problem for educational professionals, decision makers and educational planners. This will have implications for teachers to improve the quality of their relationships with adolescents in the best possible way. According to the results of the present study, the sincerer and supportive teachers provide a communicative classroom, the more likely students will feel more self-productive and successful in academic matters. High school students in particular need more support and positive communication. The present study, like to the research conducted by survey method, has some limitations that should be considered in generalizability of results. The use of self-report questionnaires and performing study in high school students are the most important limitations that should be addressed in future research.

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