

# The Influence of Teacher Efficacy on Academic Pressure of High School Students

Jinxi Guo

Haikou Middle School, Haikou Hainan 570203, China

Evelina@fus.edu.pa

**Abstract.** Teacher efficacy and academic pressure have an important impact on students and have received more and more attention from the academic area. In this study, 108 high school students were surveyed by stratified sampling, and the effect of teacher efficacy on high school student's academic stress was investigated based on empirical data. The author tries to further propose ways to improve teacher efficacy. The results show that exam pressure, extracurricular pressure, and environmental pressure are not significantly impacted by teacher efficacy, but classroom pressure is. In addition, there was a significant negative correlation between teacher efficacy and classroom pressure, and the stronger the teacher efficacy, the lower the classroom pressure. In terms of classroom pressure and environmental pressure, teacher efficacy has a more significant impact on female students, but a smaller impact on male students. There is no significant effect of teacher efficacy on exam pressure and extracurricular pressure on both male and female students.

**Keywords:** Teacher Efficacy, Academic Stress, High-School Students.

## 1. Introduction

Subsequent paragraphs, however, are indented. Since the 21st century, to promote the progress of the country and enhance the comprehensive strength of the country, China has put forward higher requirements for the quality of the new generation of talent. Students are the main carriers of national talent sources, and education always undertakes the task of cultivating talents. As we all know, teachers assume the role of imparting knowledge to others in the process of education and play an important role in students' studies performance. What's more, teacher efficacy has long been an important factor affecting teacher teaching. At the same time, academic pressure is the main source of students' pressure, which has a huge impact on students' studies performance and has been widely concern by the academic area. Exploring the influence of teacher efficacy on academic pressure will help society to give full play to the role of teacher efficacy and put forward solutions to alleviate academic stress.

Academic stress is distress arising from academic failure or from not even being aware of the possibility of such failure [1]. Moreover, academic pressure is the main source of pressure for most secondary school students [2]. Academic pressure can occur in a wide range of ways, such as excessive homework, peer competition, subject difficulty, and so on.

Teacher efficacy was first proposed by Barifield and Burlingame [3], but there is no consensus on its definition. At present, the definition formed by Guoliang Yu, etc based on Rotter and Bandura's theory is highly recognized in China. Guoliang Yu, etc pointed out that teachers' subjective judgment on whether they can complete teaching tasks and achieve teaching goals in the teaching process is considered as teaching efficacy. Teaching efficacy includes the following two aspects: The first is the teacher's awareness of their teaching, classroom, and student management level, that is, personal teaching efficacy; the second is teachers' subjective judgment about the relationship between teaching and learning and its effect on students' development process, that is, general educational efficacy [4].

At present, research on the factors that affect academic stress has been widely carried out in the academic community. Weidong Fu etc believes that teacher care has a certain impact on reducing students' academic pressure [5]. According to the theory, teacher performance is affected by teacher efficacy, which in turn affects student outcomes [6]. Teacher efficacy, at all levels, is one of the strongest predictors of student achievement [7]. As one of the most important indicators of teacher

efficacy, teacher care has been shown to have a significant negative correlation with academic stress [8]. However, how other factors affect academic stress remains unclear. At the same time, Tingjun Yong believes that there is a significant negative prediction of academic stress and academic achievement among secondary school students [9].

However, the impact of teacher efficacy on academic stress is still under-discussed in existing studies. From the perspective of high school students, there is still a gap in "The influence of teacher efficacy on academic stress: Implications for improving academic achievement". Based on the academic stress scale and teacher efficacy scale, this study will investigate the main causes of academic stress in high school students and the influence of other factors of teacher efficacy on academic stress based on empirical data by using questionnaires, and try to further propose ways to improve teacher efficacy.

## 2. Research Method

### 2.1. Research Design

This study is a quantitative study that uses a stratified sampling questionnaire survey method to distribute questionnaires to high school students aged 16-18.

An online questionnaire was sent to 15 respondents to each of the three senior high school grades for pre-investigation. The effective questionnaire recovery rate of all grades was 100%, and the reliability value was greater than 0.7, which can be used for formal investigation.

The author sent out questionnaires for formal investigation on August 12, 2024, and collected them on August 20, 2024. In the formal investigation, 50 questionnaires were distributed to each of the three grades of senior high school, and 108 valid questionnaires were recovered in total. Among them, 30 valid questionnaires were recovered from senior one, 48 valid questionnaires from senior two, and 30 valid questionnaires from senior three.

### 2.2. Tools

**Teacher Efficacy Scale.** In this study, the Physical Education Teachers' Teaching Efficacy Scale compiled by Yongzhan Ma in 2004 was adopted [10]. The questionnaire had 20 questions and was broken down into four categories: using teaching tactics and skills, managing the classroom, clear textbook presentation, and teacher-student interaction. In the questionnaire, there are five questions for each dimension. The scale adopts the six-point Likert scoring method, "1" means "Completely unable to do"; "6" means "Very well done." All questions are scored positively. The teacher's perception of efficacy increases with the score. The Cronbach's  $\alpha$  of this scale is between 0.89 and 0.95. The individual reliability of 20 measurement questions ranged from 0.68 to 0.90, and the component reliability of the four factors ranged from 0.96 to 0.97.

**Academic Stress Scale.** In this study, the Chinese version of the Academic Stress Scale (ASS), revised by Hongmei Guo, etc in 2023, was adopted [11]. There were four dimensions and eighteen questions in the questionnaire. In the questionnaire, exam stress includes five questions; classroom stress includes five questions; extra-curricular stress includes five questions; environmental stress includes three questions. The questionnaire used a five-point Likert scale (1 = no pressure at all, 2 = little pressure, 3 = sometimes pressure, 4 = considerable pressure, 5 = very pressure). All questions were scored positively. The pressure to perform well academically increases with the score. The Cronbach's  $\alpha$  of each dimension of the academic stress scale for middle school students ranged from 0.703 to 0.872, and the half-point reliability ranged from 0.651 to 0.792.

### 2.3. Sample Description

In this study, 108 high school students from 19 cities and counties, including Haikou, Sanya Shanghai, etc, were distributed questionnaires online. The recovery data indicates that 108 legitimate students took part in the poll. Males made up 42.59% of them, while females made up 57.31%. Women made up a slightly larger portion of the survey participants than males did. Secondly, the

recovered data reflect that among the people participating in the survey, the students in the second grade of high school account for the highest proportion, 44.44%, followed by the first grade and the third grade, 27.78%, respectively. The proportion of students in the first, second, and third years of high school in the survey was relatively balanced.

### 3. Research Results

#### 3.1. Reliability Test of Academic Stress Scale and Teacher Efficacy Scale

The reliability statistics of the collected questionnaire results show that the Cronbach's  $\alpha$  of the academic stress scale is 0.907, and the Cronbach's  $\alpha$  of the teacher efficacy scale is 0.971. In addition, the reliability test results of exam pressure, classroom pressure, extracurricular pressure, and environmental pressure on the academic stress scale were 0.840, 0.873, 0.851, and 0.795. The reliability of this study is higher than that of the original scale. A high-reliability value means that the recovered data is real and reliable. The results are shown in Table 1.

**Table 1.** Reliability test results of academic stress scale and teacher efficacy scale

Scale name	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Academic stress scale	.907	.909	18
Exam pressure	.840		5
Classroom pressure	.873		5
Extracurricular pressure	.851		5
Environmental pressure	.795		3
Teacher efficacy scale	.971	.971	20

#### 3.2. Analysis of Means

In this study, the mean value of students' stress was calculated from the perspective of population and gender, respectively. The results of the study are shown in Table 2 (all results retain two decimal places). First of all, from the mean value of the overall pressure, students' academic pressure level is close to 3. According to the scale score, it reflects that students sometimes feel stressed about academic pressure, and their pressure level is medium. Among the four kinds of pressure sources, students feel high exam pressure and extracurricular pressure. However, classroom pressure and environmental pressure levels are relatively low. Secondly, from the perspective of average gender pressure, female students feel higher academic pressure than male students in general, and in terms of exam pressure and environmental pressure, female students feel higher pressure than male students. In terms of classroom pressure and extracurricular pressure, men perceive pressure slightly higher than female students. The mean value of academic stress did not significantly differ between the two groups overall.

**Table 2.** Results of mean test of academic stress

	academic pressure	exam pressure	classroom pressure	extracurricular pressure	environmental pressure
General Mean	2.91	2.99	2.24	2.71	1.98
N	108	108	108	108	108
Std. Deviation	12.18243	3.18570	4.10896	4.04551	2.42039
Male students mean(46)	2.89	2.96	2.30	2.72	1.77
Female students mean(62)	2.93	3.01	2.21	2.71	2.13

### 3.3. The Correlation Analysis Results of Each Variable

SPSS 27.0 was used to calculate the correlation coefficient between exam pressure, classroom pressure, extracurricular pressure, environmental pressure, and teacher efficacy, and the results are shown in Table 3. First of all, it can be seen from Table 3 that among the four dimensions of academic pressure, exam pressure, extracurricular pressure, and environmental pressure are not significantly related to teacher efficacy. However, the significance coefficient between classroom stress and teacher efficacy was 0.009, and the Pearson correlation value was  $-0.251^{**}$ , showing a significant negative correlation. Secondly, the data in Table 3 also shows that among the four dimensions of academic pressure, exam pressure, classroom pressure, extracurricular pressure, and environmental pressure are all negatively correlated with teacher efficacy.

**Table 3.** The correlation analysis results of each variable

		Correlations				
		exam pressure	classroom pressure	extracurricular pressure	environmental pressure	teacher efficacy
exam pressure	Pearson Correlation	1	.481**	.510**	.355**	-.085
	Sig. (2-tailed)		.000	.000	.000	.381
	N	108	108	108	108	108
classroom pressure	Pearson Correlation	.481**	1	.560**	.411**	-.251**
	Sig. (2-tailed)	.000		.000	.000	.009
	N	108	108	108	108	108
extracurricular pressure	Pearson Correlation	.510**	.560**	1	.435**	-.016
	Sig. (2-tailed)	.000	.000		.000	.869
	N	108	108	108	108	108
environmental pressure	Pearson Correlation	.355**	.411**	.435**	1	-.132
	Sig. (2-tailed)	.000	.000	.000		.173
	N	108	108	108	108	108
teacher efficacy	Pearson Correlation	-.085	-.251**	-.016	-.132	1
	Sig. (2-tailed)	.381	.009	.869	.173	
	N	108	108	108	108	108

\*\* . Correlation is significant at the 0.01 level (2-tailed).

### 3.4. Variable's Binary Regression Analysis Results

**The Results of Binary Regression Analysis of All Variables in General.** The regression coefficients of test pressure, classroom pressure, extracurricular pressure, environmental pressure, and teacher efficacy were calculated, respectively. The results are shown in Table 4. Teacher efficacy was considered the independent variable and exam pressure the dependent variable. According to the calculated ANOVA table, the significance between the two was 0.381, and the global regression model was not significant. Second, it is assumed that teacher efficacy is the independent variable and classroom pressure is the dependent variable. According to the calculated ANOVA table, the significance between the two is 0.009, indicating that the global regression model is significant. Third, extracurricular pressure is the dependent variable, and teacher efficacy is the independent variable. According to the calculated ANOVA table, the significance between the two is 0.869, and the global regression model is not significant. Finally, environmental pressure is taken as the dependent

variable, and teacher efficacy as the independent variable. According to the calculated ANOVA table, the significance between the two is 0.173, and the global regression model is not significant.

In summary, classroom stress is significantly impacted by teacher efficacy, whereas other stress dimensions are not much impacted by it. Moreover, stress in the classroom was negatively correlated with teacher efficacy. The stronger the teacher efficacy, the lower the classroom stress.

**Table 4.** The results of binary regression analysis of all variables in general

Model		Sum of Squares	ANOVAa			
			df	Mean Square	F	Sig.
1 exam pressure	Regression	7.875	1	7.875	.774	.381b
	Residual	1078.035	106	10.170		
	Total	1085.910	107			
2 classroom pressure	Regression	113.409	1	113.409	7.100	.009b
	Residual	1693.129	106	15.973		
	Total	1806.537	107			
3 extracurricular pressure	Regression	.452	1	.452	.027	.869b
	Residual	1750.728	106	16.516		
	Total	1751.181	107			
4 environmental pressure	Regression	10.912	1	10.912	1.878	.173b
	Residual	615.924	106	5.811		
	Total	626.835	107			

a. Dependent Variable. 1exam pressure/2classroom pressure/3extracurricular pressure/4 environmental pressure

b. Predictors: (Constant), teacher efficacy

**The Results of Binary Regression Analysis were Classified by Gender.** This study was classified by gender (46 male samples, 62 female samples), and the regression results of different gender reports were calculated respectively, as shown in the table below. Table 5 indicates that teacher efficacy was the independent variable and classroom stress was the dependent variable. According to the calculated ANOVA table, the significance between women and women is 0.008, and the global regression model is significant. For males, the significance between the two was 0.299, which was not significant in the global regression model. Environmental stress is taken as the dependent variable, and teacher efficacy as the independent variable. According to the calculated ANOVA table, the significance between women and women is 0.021 global regression model significance; The significance between males and females was 0.989, which was not significant in the global regression model.

In summary, in terms of classroom pressure and environmental pressure, teacher efficacy has a more significant impact on female students but a smaller impact on male students. There was no significant effect of teacher efficacy on exam pressure and extracurricular pressure on both male and female students.

**Table 5.** The results of binary regression analysis were classified by gender

Gender	Model		Sum of Squares	df	Mean of Square	F	Sig.
		Regression	21.180	1	21.180	1.104	.299b
Male	2 classroom pressure	Residual	844.218	44	19.187		
		Total	865.398	45			
		Regression	.001	1	.001	.000	.989b
	4 environmental pressure	Residual	265.293	44	6.029		
		Total	265.295	45			
		Regression	104.215	1	104.215	7.518	.008b
Female	2 classroom pressure	Residual	831.747	60	13.862		
		Total	935.962	61			
		Regression	28.249	1	28.249	5.618	.021b
	4 environmental pressure	Residual	301.715	60	5.029		
		Total	329.964	61			

a. Dependent Variable. 2classroom pressure/4 environmental

b. Predictors: (Constant), teacher efficacy

## 4. Discussion

### 4.1. The Influence of Teacher Efficacy on Academic Stress of High School Students

According to the correlation results, teacher efficacy has a significant negative correlation with classroom pressure but has no significant correlation with exam pressure, extracurricular pressure, and environmental pressure. Through regression analysis, it can be concluded that classroom pressure is significantly affected by teacher efficacy, while exam pressure, extracurricular pressure, and environmental pressure are less affected by teacher efficacy. This means that the connection between teachers and the classroom is extremely close, and the classroom is the main place where teachers play a role. Students' academic pressure can be reduced through well-organized classroom management, well-presented teaching materials, productive teacher-student interaction, and effective teaching methodologies and approaches.

### 4.2. A Subsection Sample

Previous studies have pointed out that teachers' positive emotional experience in classroom teaching has a positive promoting effect on their efficacy [12]. This means that in a positive emotional state, teachers' thinking and behavior will be more flexible [13]. Teachers with high teacher efficacy may be better able to understand and cope with students' academic pressure, provide emotional support and encouragement, and help students regulate their emotions, thus reducing the negative impact of academic pressure on students' performance. Therefore, this study encourages teachers to improve their emotional regulation skills and experience positive emotions more often.

Teaching attribution refers to the process in which teachers analyze and summarize their past teaching achievements and form causal explanations. Previous studies have shown that if teachers attribute positively, they can enhance self-confidence, improve motivation, and enhance teaching efficacy. Otherwise, the teaching efficacy will be reduced [14]. Therefore, this study encourages teachers to make reasonable and comprehensive attributions to their past teaching achievements and actively improve their shortcomings, to enhance teacher efficacy.

Teachers' comprehensive and profound knowledge of teaching will enhance the clarity of their presentation and increase their confidence in teaching [15]. Therefore, this study encourages teachers

to make full use of various educational resources and support networks around them, try new teaching methods and strategies, and constantly enrich their subject knowledge and improve their academic level. For example, improve teaching technology, curriculum design, etc., to provide students with more effective learning support and education environment, and to alleviate the negative impact of academic pressure on students.

The diversity of students is often influenced by many aspects such as family, gender, intelligence level, and so on. Therefore, this study encourages teachers to recognize students' differences, respond to students' different needs equally and patiently, and help students show their talents. And positive teaching methods and encouraging words, stimulate students' learning motivation and interest in learning, and establish a harmonious teacher-student relationship with students, to enhance teacher efficacy.

## 5. Conclusion

It can be inferred from the study of the experimental data that whereas exam pressure, extracurricular pressure, and environmental pressure are not significantly impacted by teacher efficacy, classroom stress is. Furthermore, there is a strong inverse relationship between classroom stress and teacher efficacy. The stronger teacher efficacy, the less classroom stress.

According to the results of regression analysis by gender, in terms of classroom pressure and environmental pressure, teacher efficacy has a more significant impact on female students but a smaller impact on male students. There was no significant effect of teacher efficacy on exam pressure and extracurricular pressure on both male and female students.

There are also some shortcomings in this study. First of all, although the participants in this study come from many cities, the sample size was not large enough, which cannot fully represent the national high school students. In the future, a wider variety of samples can be obtained in order to investigate the mechanism by which teacher efficacy affects high school students' academic pressure. Secondly, there might be a social acceptance effect because this study's entire set of data was gathered using questionnaire surveys. In the future, more objective methods can be adopted to verify and supplement the results of the questionnaire survey.

## References

- [1] Tyrrell J, Sources of stress among psychology undergraduates. *Ir J Psychol* 13 (2), 184–92 (1992).
- [2] Junjie Jiang, Xu Wang, Jing Yu, etc, The effect of teachers' caring behavior on middle school students' academic stress: the mediating role of sleep quality and the moderating role of sense of meaning in life. *Psychological and behavioral research* 21 (02), 260-265 (2023).
- [3] Chenchen Pan, Ping Fang, Yuan Jiang, Development of teaching efficacy scale for primary and secondary school teachers. *Exploration of psychology* 44 (01), 91-96 (2024).
- [4] Chenchen Pan, Ping Fang, Yuan Jiang, Development of teaching efficacy scale for primary and secondary school teachers. *Exploration of psychology* 44 (01), 91-96 (2024).
- [5] Weidong Fu, Yudi Zhang, In the context of the "Strong Teacher Programme", how can teacher concern relieve students' academic pressure? --An analysis of the chain-mediated effects of self-identification and home-school cooperation. *Teacher education research* 35 (03), 82-90+121 (2023).
- [6] Lisa C. Duffin, Brian F. French, Helen Patrick, The Teachers' Sense of Efficacy Scale: Confirming the factor structure with beginning pre-service teachers. *Teaching and Teacher Education* Volume 28, Issue 6, 827-834 (2012).
- [7] Ross, John, and Catherine Bruce, Professional Development Effects on Teacher Efficacy: Results of Randomized Field Trial. *The Journal of Educational Research* 101 (1), 50-60 (2007).
- [8] Junjie Jiang, Xu Wang, Jing Yu, etc, The effect of teachers' caring behavior on middle school students' academic stress: the mediating role of sleep quality and the moderating role of sense of meaning in life. *Psychological and behavioral research* 21 (02), 260-265 (2023).

- [9] Tingjun Yong, Shengnan Ma, Xing Yang etc, The effect of academic stress on academic achievement: evidence from structural equation models. *Journal of Qinghai Normal University (Natural Science Edition)* 40 (02), 81-87 (2024).
- [10] Yongzhan Ma, The construction of physical education teachers' teaching efficacy scale. *Sports science* (03), 47-51 (2005).
- [11] Hongmei Guo, Lijuan Shi, Peisen Le, A preliminary revision of the academic Stress Scale in Chinese middle school students. *Psychological Journal* 18 (11), 85-87 (2023).
- [12] Shaoying Gong, Kuoteng Zhang, Panpan Zhang, etc, The relationship between classroom emotion and teacher efficacy: the mediating role of emotion regulation. *Educational research and experimentation* (04), 66-70 (2013).
- [13] Shaoying Gong, Kuoteng Zhang, Panpan Zhang, etc, The relationship between classroom emotion and teacher efficacy: the mediating role of emotion regulation. *Educational research and experimentation* (04), 66-70 (2013).
- [14] Yanxia Zhang, Research on teachers' teaching efficacy and its enlightenment to teachers. *Contemporary educational science* (09), 54-55 (2004).
- [15] Yanxia Zhang, Research on teachers' teaching efficacy and its enlightenment to teachers. *Contemporary educational science* (09), 54-55 (2004).