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Academic Procrastination of High School Students as a Product of Low Self-Esteem: A Mediation Role of General Self-Efficacy

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Abstract: Academic procrastination is a common behavior among high school students. This study aims to evaluate the direct and indirect effects of self-esteem on academic procrastination among high school students based on their general self-efficacy. This study used the Rosenberg Self-Esteem Scale, General Self-Efficacy Scale, and Middle School Student Academic Procrastination Scale as the main measurement tools. 216 high school students in Hefei were selected as the research subjects, and descriptive statistics, reliability and validity analysis, correlation analysis, multiple linear regression analysis, and mediation effect analysis were conducted using SPSS 21.0. The following research conclusion is drawn: First, there is a significant positive correlation between self-esteem and general self-efficacy. Second, there is a significant negative correlation between self-esteem and academic procrastination. Third, general self-efficacy mediates the relationship between self-esteem and academic procrastination.

Keywords: Self-Esteem, General Self-Efficacy, Academic Procrastination, High School Student.

1. Introduction

The relationship among self esteem, common self-efficacy and learning delay was studied in this article. In order to verify this study, we have carried out a questionnaire, analyzed the description, analyzed the relation, evaluated the mediativity-effectiveness test with the help of SPSS 21.0 and Process plugin. In particular, higher self-esteem is associated with greater overall self-efficacy, resulting in a decrease in academic procrastination.

1.1. Self-esteem and General Self-Efficacy

Psychologist James was among the earliest to interpret self esteem, and he defined it with a formula called self esteem = success/ambition. This suggests that one's self esteem is the ratio of one's achievements to one's aspirations. This may cause a drop in self esteem when there is a material gap between what one actually achieves and what one wants. But if there is a strong connection, it will grow [1]. Similarly, Rosenberg defines self esteem as one's self assessment of oneself, which opens the way to measure self esteem. He later developed the SES (SES) [2], which has become an important instrument for assessing self esteem.

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The second variable to be investigated in this paper is the common sense of self efficacy, which was coined by psychologist Bandura. It was defined as an individual's own evaluation or prediction of his or her capacity to adjust his behaviour and keep faith in himself when he meets problems around him [3]. Over the course of his studies, many scholars regard self-efficacy as a consistent feature of an individual's specific field of competence, called General Self-Efficacy (GSE)[4]. Schwarzer and Jerusalem's General Self Efficacy Scale (GSES) (GSES), widely adopted across several nations, is believed to reflect the self-confidence of an individual in his/her ability to cope with various challenges and challenges [5]. Wang used GSES as a tool to teach high-school pupils in China and achieved good results [6].

Farid suggested a strong connection between self-esteem and self-concept, stating they can be used interchangeably, and observed disparities in self-esteem based on gender among middle school students [7]. Zhang found notable variations in self-esteem levels among high school students of various sexes, noting a detrimental relationship between self-esteem, academic self-concept, and test anxiety [8].

Burk's study shows that GSE can promote self esteem but can lead to negative outcomes [9]. Frank's study found a link between high school students' positive self-esteem and overall self-efficacy [10]. In his research, Bonsaksen used self-esteem and common self-efficacy as a measure of health of psychology, stressing that boys who had a better total feeling of self esteem had more tendency to have a stronger feeling of self esteem [11].

1.2. Self-esteem and Academic Procrastination

Many instruments have been used to evaluate procrastination. For example, the General Procrastination Scale, the Student Procrastination Assessment Scale of Solomon and Rohrmann, and the Choi and Moran Scale. Despite this, Tuckman's Scale remains the most popular way to recognize academic procrastinators. McCloskey's study shows that the Academic Procrastination Scale (APS) could be used as a useful and reliable tool in learning[12].

In his study, Choi [13] emphasized that not all procrastination behaviour are harmful and can lead in unfavourable outcomes. He classified procrastination as passive and activated. Defined as a person who cannot complete a task on time because of his or her lack of resolution and negative feelings, a passive procrastinator is in contrast to an active procrastinator, whose characteristic is a positive type of procrastination. The study found that despite similar delays in both active and passive procrastinators, they were more likely to have a better grasp of time, self-efficacy, and academic achievement than non-procrastinators. This research suggests that procrastination has more than just negative consequences. Classifying procrastination as an adaptation delay, which is equivalent to passive procrastination, he does not regard it as an expression of active procrastination. Instead, he defines adaptive latency as proactive latency – a deliberate stalling strategy. Others have shown that those who are more likely to be more successful at learning [14]. Despite this, Ziegler notes that there is a negative correlation between secondary school pupils' academic performance and their learning delays, which suggests that procrastination impedes pupils' learning outcomes [15]. Nembhard and Kim's work has shown that procrastination in pupils is related to their academic performance, with women showing fewer delays and better grades than men [16].

Peixoto [17]found that academic achievement affects the self-esteem of lower grade students, but for higher grade students, their self-esteem level affects their academic achievement. A research by Sarı [18] indicated that self-esteem was negatively correlated with the anxiety from tests; the higher the self-esteem, the lower the test anxiety, and the lower likelihood of learning burnout. The phenomenon is seen by many as a result of the poor ability of the pupils to maintain or modify their self-esteem. Additionally, girls have higher levels of exam anxiety than boys.

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1.3. General self-efficacy and academic procrastination

In Zhang [19], there is a strong connection between academic procrastination and overall self-efficacy in middle school students, with general self-efficacy serving as a predictor for their tendency to procrastinate academically. The study by Qian [20] suggests that high general self-efficacy can help students use active procrastination skills in the face of academic pressure and encourage them to take active action to improve their performance. Kandemir [21] determined in their study that academic self-efficacy has the ability to elucidate or impact academic procrastination across 11 dimensions.There is a general negative correlation between academic procrastination and an increase in self-efficacy, with a negative influence on the former.

Zhang's [22]study showed that self-regulation and self-efficacy are mediators in the relationship between self-esteem and academic procrastination. Jahangir & Batool's [23] study further implied that academic self-efficacy is a mediator of this connection, with 18% of academic procrastination variance being indirectly affected by self-esteem through academic self-effecacy.Despite the wealth of research done by researchers on the relationship between self-esteem, general self-efficacy, and academic procrastination, there is little evidence to investigate the relationship among the three factors. Therefore, this paper tries to investigate the relationship between the self-esteem of senior middle school students and the effect of common self-efficacy on learning delay.

2. Method

The Rosenberg Self-Esteem Scale assesses adolescent self-esteem using a combination of positive and negative statements across 10 items [24].The scale is unidimensional, with each question requiring a response on a 4-point Likert scale, where responses are scored as follows: “Strongly agree” = 4 points, “agree” = 3 points, “disagree” = 2 points, and “strongly disagree” = 1 point. Noteworthy is the fact that questions 6, 8, 11, 12, and 13 are reverse-scored, while questions 1, 2, 3, 4, 5, 7, 9, and 10 are scored in the positive direction.Scores ranging from 10 to 40 are the overall score, with higher scores signifying greater self-esteem. The dependability and efficacy of this scale have been thoroughly verified in literature studies [25,26].

The General Self-Efficacy Scale consists of ten items that measure a person's ability to cope with everyday problems and cope with stressful situations. Examples of this kind of self-efficacy are: "I can solve problems when I'm in trouble", "no barriers are out of my reach", "I have the ability to concentrate and achieve my goals", and "I'm calm when I'm in trouble." The scale uses a four-point scoring system, in which "strongly disagree" gets one point, "disagree" gets two points, "agree" gets three points, and "strongly agree" receiving 4 points. No reverse scoring is available, and the overall score is between 10 and 40. The high level of confidence, coherence and effectiveness of this measure has been confirmed by several scientific studies [27,28].

The Academic Procrastination Scale for Middle School Students (SAT)[29] has been developed to evaluate the propensity of middle-school students to postpone or evade their assignments, as demonstrated by phrases such as "if my teacher does not review my work, I will not be able to do it on time", "I put off decision-making till I had no other choice", "I always procrastinated about assignments or learning", "I had a reason to waste time just because I was too small," and "I had an excuse for not doing my assignments on time." This scale used a score of five marks, with "full agreement" given 5, "relative agreement" 4, "uncertain 3", "not too much consensus" 2 and "total disagreement" 1. The overall score is between 22 and 110.

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2.1. Reliability and validity

Reliability, which is a measure of the reliability, stability and reliability of measuring devices (such as scales, questionnaires), shall be used in measuring procedures. In other words, Cronbach's alpha factor is generally used to measure the confidence of the measured data, which is what confidence means. Cronbach's alpha factor of 0.7 to 0.8 represents a satisfactory degree of confidence, whereas a score of 0.8 to 0.9 indicates a high degree of confidence; if it exceeds 0.9, then that would be regarded as excellent, as shown in the following chart.

Table 1: Reliability Test of the Scale.

Dimension	Number of items	Sample size	Cronbach alpha coefficient
Self-esteem	10	216	0.891
Self-efficacy	10	216	0.955
Academic procrastination	22	216	0.932

Two commonly used measures to evaluate the effectiveness of a survey are the Kaiser-Meyer-Olkin and Bartlett's sphericity. A higher KMO suggests a stronger correlation between the variables and is between 0 and 1. In addition, if the Bartlett sphericity test P is less than 0.05, the data is considered valid, as evidenced by a KMO of 0.947 (Table 3) for general self-efficacy, 0.908 for self-esteem (Table 2), and for academic procrastination 0.938 (Table 4). Bartlett's sphericity test also yielded a p-value of 0.000, which is below 0.05. To conclude, the survey is very valid.

Table 2: Validity Test of Self-Esteem Scale.

KMO and Bartlett's test		
KMO value		0.908
Bartlett’s sphericity test	Approximate chi square	1480.692
	df	45
	P-value	0.000

Table 3: Validity Test of General Self-Efficacy Scale.

KMO and Bartlett's test		
KMO value		0.947
Bartlett sphericity test	Approximate chi square	2070.276
	df	45
	P-value	0.000

Table 4: Validity Test of Academic Procrastination Scale.

KMO and Bartlett's test		
KMO value		0.938
Bartlett sphericity test	Approximate chi square	2738.829
	df	231
	P-value	0.000

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Utilizing SPSS 21.0, descriptive statistics can be analyzed, reliability and validity can be assessed, correlation analysis can be conducted, multiple linear regression can be applied, and mediation effect analysis can be done through process analysis - all with a significance level of α=0.05.

2.2. Descriptive statistics

This study's sample size was 216 participants, with 103 male(47.69%)and 113 female(52.31%). The gender distribution indicates that girls are slightly more numerous than boys. Of the total sample, 67 were in their first year of high school, making up 31.02%.In the sample, 61 students are in their second year of high school, making up 28.24%. Of these, 88 are in their third year, which accounts for 40.74%. The highest proportion is in the third year, at 40.74%, followed by first and second year, with 31.02% and 28.24% respectively. See Table 5.

Table 5: Basic Information of Participants.

	Option	Frequency	Percentage (%)	Cumulative percentage (%)
Gender	Male	103	47.69	47.69
	Female	113	52.31	100.00
Grade	Grade 10	67	31.02	31.02
	Grade 11	61	28.24	59.26
	Grade 12	88	40.74	100.00

2.3. Correlation analysis

The study utilized the Pearson correlation coefficient to examine the connection between variables, revealing that self-esteem and general self-efficacy are highly correlated ($p<0.01$); specifically, a correlation coefficient of 0.765 indicates that increased self-esteem is associated with heightened general self-efficacy. A strong association was found between self-esteem and academic procrastination, indicated by a correlation coefficient of -0.718 and a significant negative correlation ($p<0.01$). This suggests that as self-esteem levels increase, academic procrastination decreases. Similarly, a significant negative correlation ($p<0.01$) was observed between general self-efficacy and academic procrastination, with a correlation coefficient of -0.744. This implies that higher levels of general self-efficacy lead to lower levels of academic procrastination. See Table 6.

Table 6: Correlation analysis between Self-esteem, General Self-efficacy, and Academic Procrastination.

	Mean	Standard deviation (SD)	Self-esteem	Self efficacy	Academic procrastination
Self-esteem	3.395	0.571	1		
General self- efficacy	2.976	0.615	0.765**	1	
Academic procrastination	2.528	0.699	-0.718**	-0.744**	1

2.4. Linear Regression analysis

An analysis of linear regression was conducted to assess the influence of self-esteem on academic procrastination. The outcomes were as follows: $R^2=0.516$, indicating that 51.6% of the total variation

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in academic procrastination can be attributed to self-esteem variables; F(1, 214)=228.265, p=0.000 **, thus demonstrating a significant overall effect from this study.A statistically significant effect of self-esteem on academic procrastination is indicated by the -0.718 standardized coefficient, which implies that for every unit rise in self-esteem, a 0.879 unit decrease in procrastination will be seen. Table 7 further confirms this result(p<0.01).

Table 7: Linear Regression Analysis Results of Self-Esteem and Academic Procrastination.

Linear regression analysis (*n*=216)							
	Non standardized coefficient		Standardization coefficient	*t*	*p*	Collinearity diagnosis	
	B	Standard Error	*Beta*			VIF	Tolerance
Constant	5.513	0.200	-	27.515	0.000**	-	-
Self-esteem	-0.879	0.058	-0.718	-15.108	0.000**	1.000	1.000
R^2	0.516						
Adjust R^2	0.514						
F	*F* (1,214)=228.265,*p*=0.000						
Note: Dependent variable=academic procrastination							
* *p*<0.05 ** *p*<0.01							

The effects of self-esteem on general self-efficacy were analyzed in this research using linear regression. The findings show that the self-esteem factor can account for 58.5% of the variance in general self-efficacy with an R-squared value of 0.585. The F-test results indicated that the regression model is statistically significant (F (1, 214)=301.395, p=0.000 **).In Table 8, it is evident that a one-unit increase in self-esteem results in a corresponding increase of 0.823 units in self-efficacy, as indicated by the regression coefficient of 0.823 and standardized regression coefficient of 0.765. This statistically significant impact of self-esteem on self-efficacy, demonstrated by the standardized coefficient of 0.765 (p<0.01), emphasizes the importance of self-esteem in predicting self-efficacy levels.

Table 8: Linear Regression Analysis Results of Self-Esteem and General Self-Efficacy.

Linear regression analysis (n=216)							
	Non standardized coefficient		Standardization coefficient	t	p	Collinearity diagnosis	
	B	Standard Error	Beta			VIF	Tolerance
Constant	0.180	0.163	-	1.104	0.271	-	-
Self-esteem	0.823	0.047	0.765	17.361	0.000**	1.000	1.000
R^2	0.585						
Adjust R^2	0.583						
F	F (1,214)=301.395,p=0.000						
Note: Dependent variable=self-efficacy							
* p<0.05 ** p<0.01							

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This study investigated how self-esteem and general self-efficacy affect academic procrastination by using linear regression analysis. The results showed that when combined, self-esteem and self-efficacy accounted for 60.8% of the variance in academic procrastination. The F test produced a significant total score, with an F (2 213) of 165.001 and p = 0.000 * * (p < 0.01). A regression coefficient of 0.440 and a standard regression coefficient of -0.359 indicate that for each individual increase in self-esteem, academic procrastination will be reduced by 0.440 units; this is a model based prediction.The regression coefficient for general self-efficacy is -0.534, with a standardized coefficient of -0.470; this implies that for each unit rise in self-efficacy, academic procrastination will decrease by 0.534 units. Both had a statistically significant effect on academic procrastination (p < 0.01), as shown in Table 9.

Table 9: Linear regression results of Self-Esteem, General Self-Efficacy, and Academic Procrastination.

Linear regression analysis (n=216)							
	Non standardized coefficient		Standardization coefficient	t	p	Collinearity diagnosis	
	B	Standard Error	Beta			VIF	Tolerance
Constant	5.610	0.181	-	30.933	0.000**	-	-
Self-esteem	-0.440	0.082	-0.359	-5.394	0.000**	2.408	0.415
Self efficacy	-0.534	0.076	-0.470	-7.053	0.000**	2.408	0.415
R^2	0.608						
Adjust R^2	0.604						
F	F (2,213)=165.001,p=0.000						
Note: Dependent variable=academic procrastination							
* p<0.05 ** p<0.01							

2.5. Analysis of mediation effect

In my research, I examined the mediation effect with Process Macro, in which there is an intermediate variable M between the independent variable X and the dependent variable Y to determine whether X affects Y. The results are outlined below. A notable finding in this case is the significant negative correlation found between self-esteem and academic procrastination, as shown by the overall effect value of -0.8792. Essentially, this demonstrates that as self-esteem increases, the tendency towards academic procrastination decreases.. The 95% CI [-0.9938, -0.7645] not including zero makes this effect statistically significant. The negative value of the direct effect, which is the change from one thing to another, (-0.4395), suggests that, even in the context of general self-efficacy, self-esteem still has a notable negative impact on academic procrastination. The 95% CI [-0.6001, -0.2789] is statistically significant because it excludes zero. The indirect effect of one thing on another, with its negative value (-0.4397), suggests that self-esteem can reduce academic procrastination by enhancing general self-efficacy. Because the 95% CI [-0.599, -0.2726] does not contain zero, this result is statistically significant; see Table 10.

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Table 10: Mediation effect test of General Self-efficacy on Self-esteem and Academic Procrastination.

	Effect	se	LLCI	ULCI
Total effect	-0.8792	0.0582	-0.9938	-0.7645
Direct effect	-0.4395	0.0815	-0.6001	-0.2789
Indirect effects	-0.4397	0.083	-0.599	-0.2726

3. Discussion

This research explores the relationship between self-esteem and academic procrastination, as highlighted in a literature review. Moreover, it examines how general self-efficacy mediates this relationship.

The results reveal a notable correlation between self-esteem and general self-efficacy (see Table 8). These findings are consistent with previous studies [30], which suggest that higher self-esteem strengthens and strengthens self-esteem, thereby helping to perform specific tasks, and vice versa. Furthermore, a strong inverse relationship has been observed between self-esteem and procrastination, as shown in table 7. The findings support earlier research that suggests that higher self-esteem can reduce academic fatigue and reduce the propensity to postpone learning.

The findings also suggest that general self-efficacy is a mediator between self-esteem and academic procrastination (see Table 10), suggesting that individuals with high self-esteem are more likely to exhibit high general self-efficacy, thus reducing academic procrastination. In contrast to Hen and Gorohit's [31] assertion that self-esteem is a mediator between general self-efficacy and trait procrastination, Hajloo's [32] findings are in agreement. However, recent research further supports the idea that people with low self-esteem are more likely to procrastinate[33]. Procrastination and avoidance are not just an excuse for bad performance and poor performance, thereby protecting self-esteem. Self-confidence has influence not only on academic procrastination but also on general self-efficacy, but also on academic procrastination.

4. Limitation and Suggestions

This study, as a first step, requires further validation in different populations. Furthermore, the present study has confined its research to two individual factors - self-esteem and general self-efficacy - in predicting academic procrastination. Current research suggests that other individual factors, including perfectionism and neuroticism [34], rational thinking, attention deficit, fear of failure, lack of time management skills, limited ability to solve problems, and working habits [35,36], have a significant impact on procrastination behaviour. In spite of the large number of participants, self-reported measurement techniques were used to rule out social expectations and common methods variance problems. Caution should be exercised when generalizing the results of this study because of its reliance on survey subjects from key classes. In addition, this paper uses cross-sectional research, which makes it difficult to establish a causal relationship. In order to better identify the reasons for academic procrastination, it is necessary to use longitudinal studies.

5. Implications

When students lack confidence in themselves, their overall effectiveness is reduced, resulting in delays in academic tasks. Regular procrastination can harm students' academic success, primarily seen through declining performance and further diminishing their self-worth.School teachers and leaders should pay greater heed to students' self-esteem, aiding them in forming it, and aiding them in resolving the issue of low self-esteem. Qualitative research assists educators in deliberately

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recognizing the most critical elements that cause students to procrastinate academically, and then offering targeted interventions to address the issue. This vicious cycle will not cease.

6. Conclusion

This article explores the problem of Academic Procrastination. Two individual factors, self esteem and common self-efficacy, are selected from a variety of potential ones to analyze their impact on procrastination. This qualitative study is carried out in a horizontal manner. The subjects of the experiment are chosen from the Hefei Middle School, and a scale is published and data collected. Based on SPSS 21.0 and the Process plugin, it is clear that general self-efficacy acts as an intermediary between self-esteem and academic procrastination. In particular, high self-esteem tends to lead to higher general self-efficacy, thus lessening academic procrastination.

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