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Title:	**Procrastination and Academic Self-efficacy among Pakistani University Students: Mediating Role of Time Management**
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DOI:	https://doi.org/10.32350/sri.31.09
History:	Received: March 24, 2025, Revised: April 09, 2025, Accepted: May 20, 2025, Published: June 25, 2025
Citation:	Khan, M. J., Siddique, K., & Abbasi, S. (2025). Procrastination and academic self-efficacy among Pakistani university students: Mediating role of time management. *Sociological Research and Innovation*, *3*(1), 180–197. https://doi.org/10.32350/sri.31.09
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Conflict of Interest:	Author(s) declared no conflict of interest

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A publication of
Department of Sociology, School of Social Sciences and Humanities
University of Management and Technology Lahore, Pakistan

Procrastination and Academic Self-efficacy among Pakistani University Students: Mediating Role of Time Management

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Abstract

The current study aimed to investigate the mediating effect of time management on the relationship between procrastination and academic self-efficacy among university students. The data was collected from the students of different universities of Islamabad and Rawalpindi ($N = 181$) through a survey approach, using convenience sampling technique. General Procrastination Scale (GPS), General Academic Self-efficacy Scale (GASES), and Time Management Scale (TMS) were used to measure procrastination, academic self-efficacy, and time management skills among university students. Findings showed a significant negative correlation between procrastination and academic self-efficacy ($r = -.43, p < .01$), and a significant negative correlation between procrastination and time management ($r = -.51, p < .01$). Time management positively correlated with academic self-efficacy ($r = .47, p < .01$). Regression analysis revealed that procrastination significantly predicted academic self-efficacy ($\beta = -.38, p < .001$). However, the total effect reduced when time management was added as a mediator (indirect effect $= -.19, p < .05$), confirming partial mediation. Gender differences in procrastination, time management, and academic self-efficacy were not significant ($p > .05$). No significant differences were found across education levels for procrastination ($p = .47$) or time management ($p = .52$). However, postgraduate students reported significantly higher academic self-efficacy than undergraduates ($p = .03$). The findings highlighted the importance to improve time management in order to reduce procrastination and strengthen self-efficacy. These insights are especially relevant for Pakistani higher education institutions, where interventions, such as personalized counseling and academic support structures can be tailored to foster more effective learning environments.

Keywords: academic self-efficacy, procrastination, time management, university students

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Introduction

Procrastination is a pervasive issue among university students, often resulting in delays in completing academic tasks, such as homework, projects, presentations, and test preparation (Morelli, 2008). It is the willful delay of decisions or tasks, despite the knowledge that procrastination may lead towards negative consequences, creating a gap between desired outcomes and actual achievements (Steel, 2007). This gap occurs due to the regular postponement of tasks, which not only impedes academic success but also disrupts the overall accomplishment of goals (Rothblum et al., 1986). Procrastination is commonly understood as a behavioral traitor tendency (Shah, 2000), driven by internal forces, such as indecision, a lack of willpower, and the absence of motivation to initiate tasks. When students continually avoid tasks, they often spiral into failure and emotional distress, making it increasingly difficult to regain focus and productivity (Milgram et al., 1993).

Several factors contribute to procrastination among university students. These include poor time management skills, a lack of commitment and focus, stress, overconfidence, and social issues (Evans, 1989). More specifically, students often struggle with managing their time effectively, leading to procrastination in the completion of their assignments and preparation for exams. Time management is an essential skill that involves planning, organizing, and controlling to achieve specific objectives (Macan, 1994). Understanding how students manage their time and how this influences procrastination is crucial. This is because effective time management can mitigate procrastination by improving self-regulation and productivity (Hernández-Linares et al., 2023).

Academic self-efficacy, or the conviction that one may complete academic assignments and overcome academic obstacles, is a crucial component that impacts procrastination (Bandura, 1997). Students with a higher level of academic self-efficacy are more likely to take initiative and show perseverance in the face of difficulties, which lowers the risk of procrastinating. On the other hand, students who have low academic self-efficacy could find it difficult to start assignments and finish them, which could lead to procrastination (Ormrod, 2006).

Despite these well-established associations, limited research has examined how the interplay between time management and academic self-

efficacy influences procrastination among university students in Pakistan. Given the cultural, educational, and systemic differences in Pakistani higher education, such as limited academic counseling, large class sizes, and examination-focused pedagogy, understanding the psychological underpinnings of procrastination in this context is vital.

Grounded in Bandura's Social Cognitive Theory (SCT), this study investigated how self-efficacy and time management jointly predict procrastination behaviors among students. SCT posits that procrastination results from low self-efficacy, fear of failure, task aversion, and poor self-regulation (Schunk & Hanson, 1989). These components affect how students set goals, monitor their progress, and structure their learning environments. Interventions aimed at enhancing self-efficacy and time regulation strategies, such as self-monitoring, goal setting, and environmental control have been shown to reduce procrastination (Artino, 2012).

Therefore, this study aimed to bridge a significant gap in literature by exploring the interrelated effects of academic self-efficacy and time management on procrastination in a Pakistani university context. By doing so, it identified practical strategies to enhance academic performance and psychological well-being among students in local higher education institutions.

Literature Review

Several previous researches found a connection between academic procrastination and self-efficacy. Academic procrastination would be lower among students who have higher levels of self-efficacy, or vice versa, according to the study (Kandemir, 2014). Similarly, according to the study conducted by Michinov et al. (2010), academic procrastination is inversely correlated with self-efficacy. There is a negative correlation between self-efficacy and procrastination (Goher, 2022). These findings align with SCT (Bandura, 1997), which posits that individuals with higher self-efficacy are more likely to engage in goal-directed behaviors and persist in the face of academic challenges. Extending this perspective, Wäschle et al. (2013) found that academic self-efficacy interventions may reduce procrastination, suggesting that self-efficacy is not only a predictor but also a modifiable factor.

In addition to self-efficacy, time management has also been identified

as a critical factor in academic performance. For first-year college students, time management is an essential ability that helps them overcome academic obstacles in addition to self-efficacy (Chesnut & Cullen, 2014). Additionally, Wolters et al. (2017) showed that students' dedication to academic success is positively correlated with their time management abilities and self-efficacy, highlighting the interdependence of these two variables. These findings suggest that time management may serve as a behavioral bridge through which self-efficacy influences academic outcomes. For instance, van Eerde (2003) discovered that, in contrast to a control group, a commercial time management course considerably decreased procrastination. Similarly, Renn et al. (2011) observed a slight decrease in procrastination-related behaviors after time management training. While the effects were modest, these studies illustrate the potential of focused time management programs to reduce students' procrastination, particularly when aligned with self-regulatory strategies.

The current study investigated university students' psychological construct of academic self-efficacy, with an emphasis on the mediating function of time management. Unlike earlier studies that considered time management as an independent predictor, this study explored how it may serve as a mechanism linking self-efficacy and procrastination. This approach reflects SCT's emphasis on the interaction of cognitive, behavioral, and motivational factors in academic behavior. The connection between procrastination and students' academic achievement remained the subject of numerous researches (Tuckman, 1998). Ashraf et al. (2023), for instance, determined the effects of perfectionism and self-efficacy on university students' academic procrastination in Pakistan. Likewise, Shah et al. (2024) concentrated on dental undergraduates in Karachi, Pakistan, rather than college students in general. The current study sought to close this gap by examining the connections among college students' academic self-efficacy, time management, and procrastination.

Furthermore, Afzal and Jami (2018) looked at the frequency and causes of academic procrastination among college students. They characterized it as a consistent propensity to put off tasks that are essential to achieving objectives. Despite the growing research interest, discrepancies remain in how procrastination manifests across academic disciplines and contexts, which is another dimension this study aimed to investigate, contributing both contextually and theoretically to the existing body of knowledge.

Figure 1
Conceptual Framework
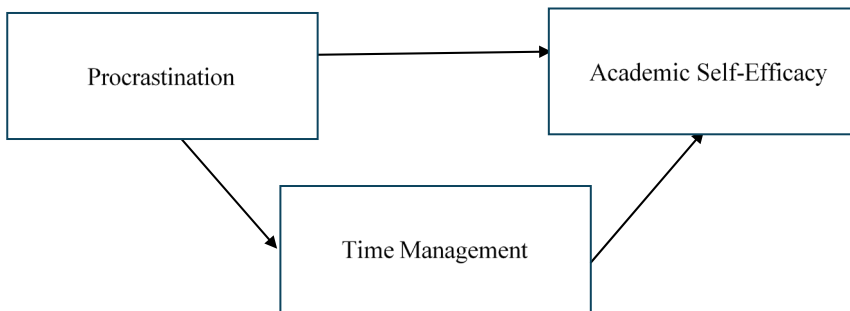
Research Objectives

The current study aimed to address the following research objectives:

1. To examine the relationship between procrastination and academic self-efficacy among university students.

2. To explore the relationship between procrastination and time management skills among university students.

3. To assess the relationship between academic self-efficacy and time management among university students.

4. To investigate the mediating role of time management in the relationship between academic self-efficacy and procrastination.

5. To examine differences in procrastination, academic self-efficacy, and time management across   demographic variables, such as gender and level of education.

Research Hypotheses

1. Procrastination is negatively associated with academic self-efficacy among university students.

2. Procrastination is negatively associated with time management among university students.

3. Academic self-efficacy is positively associated with time management among university students.

4. Academic self-efficacy is negatively predicted by procrastination among university students.

5. Time management mediates the relationship between academic self-efficacy and procrastination among university students.

6. There are significant differences in procrastination, academic self-efficacy, and time management across demographic factors, such as gender and education level.

Methodology

Research Design and Sample

The study used a quantitative, correlational method to examine the relationship between time management, academic self-efficacy, and procrastination among university students in Pakistan. Furthermore, the study employed convenience sampling, which, while practical, introduces potential selection bias and limits the generalizability of the findings. A total of 181 students (n = 90 males; n = 91 females), aged 18 to 30 years, were recruited from universities in Islamabad and Rawalpindi. These cities were selected for their accessibility and diverse student population, representing various academic disciplines and educational backgrounds. Participants hailed from different marital statuses and socioeconomic backgrounds to ensure a broader perspective. However, those who were not enrolled in university, those with disabilities, and international students were excluded.

Instruments

Demographics Form

A demographics form was used to collect basic participant information, such as age, gender, and education. It helps researchers categorize people and understand how different groups respond, providing important context to analyze study results.

General Procrastination Scale (GPS)

Lay ([1986](#)) originally developed a 20-item procrastination scale, which has been reduced to nine items (Sirois et al., [2019](#)). Moreover, its alpha reliability was .89, the GPS demonstrates solid psychometric properties. This makes it a valid tool to identify procrastination tendencies within student populations (Sirois et al., [2019](#)).

Time Management Scale (TMS)

Britton and Tesser ([1991](#)) developed the Time Management Scale (TMS). This is a 17-item scale designed to assess students' time management abilities, whose alpha reliability was 0.79.

General Academic Self-Efficacy Scale (GASES)

The General Academic Self-Efficacy Scale (GASES), a brief 5-item self-report instrument is intended to assess students' academic self-efficacy, with good internal consistency and reliability coefficient of .81 (Nielsen et al., [2017](#)).

All instruments were administered in English, as participants were proficient due to English being the medium of instruction. Pilot testing ensured clarity and cultural relevance and participants were screened for language competency.

Procedure

The current study was approved by Board of Ethics, IIUI. A total of 181 students were recruited from the universities of Islamabad and Rawalpindi studying a variety of disciplines using convenience sampling. Participants gave their informed consent after being informed of the goals, procedures, and rights of the study. Both online and in-person data collection methods were used to guarantee confidentiality, voluntary involvement, and constant adherence to ethical guidelines.

Results

The current study used a correlational research design to investigate the relationship between procrastination and academic self-efficacy, with time management serving as a mediating variable.

Table 1

Frequencies and Percentages of Demographic Variables (N=181)

Variables	Category	f	%
Gender	Male	90	49.7
	Female	91	50.3
Education	Undergraduate	129	71.3
	Graduate	33	18.2
	Post Graduate	19	10.5

Table 1 presents the frequency and percentage distribution of demographic variables among the respondents. Results revealed that sample comprised 91 females (50.3%) and 90 males (49.7%). The educational background of the respondents revealed that 71.3% (*n*=129) were undergraduates, 18.2% (*n*=33) had completed their graduation, and 10.5%(*n*=19) were postgraduates.

Table 2

Descriptive Statistics and Psychometric Properties of General Procrastination Scale (GPS), Time Management Scale (TMS), General Academic Self-efficacy Scale (GASES) (N = 181)

Variables	*k*	α	*M* (*SD*)	Range		Skewness	Kurtosis
				Actual	Potential		
GPS	9	.84	28.93(4.36)	9-35	9-45	-.00	.25
TMS	17	.71	49.55(9.50)	17-80	17-85	-.14	-.07
GASES	5	.80	19.17(4.24)	5-25	5-25	-.85	.53

Note. GPS =general procrastination scale, TMS= time management scale, GASES=general academic self-efficacy scale

Table 2 presents the psychometric properties and descriptive statistics of the scales utilized in this study. Excellent internal consistency was demonstrated by the GASES and GPS of 0.8, although TMS exhibited satisfactory consistency of 0.7. A normal distribution was suggested by skewness and kurtosis, while descriptive statistics showed central tendency and variability.

Table 3

Correlation between Procrastination, Time Management and Academic Self Efficacy (N=181)

Variable	1	2	3
1. Procrastination	-	-.21	-.28**
2. Time Management		-	.22
3. Academic Self-efficacy			-

Note. *p <.05. **p <.01.

Table 3 presents Pearson correlation coefficient for the three variables. The results indicate a significant negative correlation between procrastination and academic self-efficacy (*r* = -0.28, *p* <.01).

Procrastination and time management are significantly correlated negatively (r=-0.21, p<.05). Additionally, time managements have a positive correlation with academic self-efficacy (r = 0.22, p< .01).

Table 4

Simple Linear Regression Showing Procrastination as Predictor of Academic Self-efficacy

Variable	B	SEB	β	t	p
Constant	11.18	2.03		5.48	.001
Procrastination	.27	.07	-.28	3.96	.001

Note. R =.28, R^2 =.08

Table 4 shows that procrastination significantly predicted academic self-efficacy among university students. The R^2 value of 0.08 indicates that procrastination explained 8.1% of the variance in academic self-efficacy. The regression model was statistically significant, F = 15.69, p < 0.001. Additionally, academic self-efficacy was shown to be significantly correlated negatively with procrastination (β = -0.28, p < 0.001).

Table 5

Mediating Effect of Time Management in Relationship between Procrastination and Academic Self Efficacy

| Model	R^2	β	p	t	95% BaCl
Constant		41.03	0.00	8.19	31.14(50.91)
Procrastination	0.02	-0.167	0.02	-2.26	-0.04(-0.72)
Procrastination	0.12	-0.24	0.00	-3.48	-0.10(-0.37)
Time Management		0.02	0.00	3.11	0.03(0.15)

Note. BaCI=Biased corrected confidence interval. For step1: F =5.11, For step 2: F=13.08

Table 5 shows that time management mediates the relationship between academic self-efficacy and procrastination, bootstrapping with 5000 resamples was conducted using the PROCESS macro (Model 4) by Hayes. Model 1 revealed that procrastination negatively predicted academic self-efficacy (β = -0.16, t = -2.26, p = 0.02). The model explained 2.8% of the variance in academic self-efficacy (R^2 = 0.02), with a 95% bias-corrected confidence interval of [-0.72, -0.04], confirming statistical significance. Model 2 showed that procrastination negatively impacted academic self-

efficacy (β = -0.24, t = -3.48, p = 0.00), while time management positively affected it (β = 0.22, t = 3.11, p = 0.00). This model explained 12.82% of the variance (R^2 = 0.12). Confidence intervals were [0.03, 0.15] for time management and [-0.40, -0.07] for procrastination. A comparative analysis of the two models revealed that the total effect of procrastination on academic self-efficacy decreased with time management as a mediator, indicating partial mediation (β = -0.24 vs. β = -0.27). The indirect effect was significant (β = 0.03, 95% BaCI [0.0005, 0.09]), confirming mediation.

Figure 2

Mediating Effect of Time Management in Relationship between Procrastination and Academic Self Efficacy
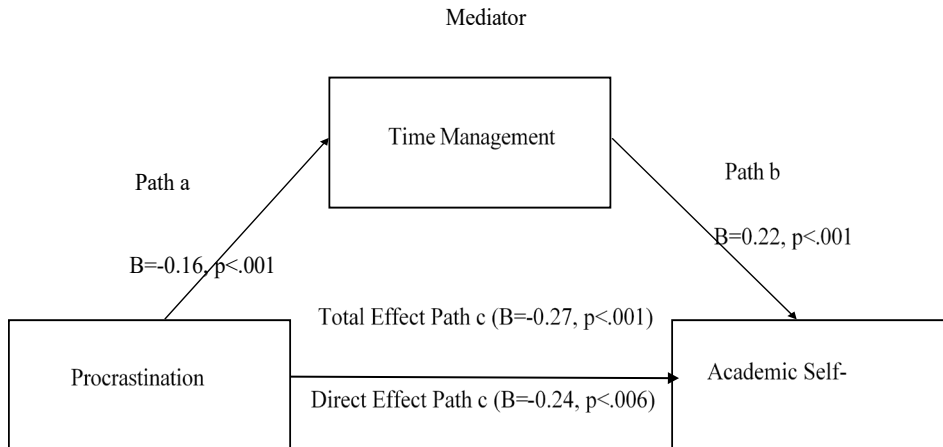
Table 6

Mean, Standard Deviation, and t–values along Gender on Procrastination, Time Management, and Academic Self-efficacy (N = 181)

Variables	Male (n=90) M (SD)	Female (n=91) M (SD)	t	p	95% Confidence Interval Lower	Upper
Procrastination	29.06 (4.74)	28.81 (3.97)	.37	.71	-1.04	1.52
Time Management	49.89 (9.39)	49.22 (9.64)	.47	.63	-2.12	3.46
Academic Self Efficacy	19.20 (4.39)	19.13 (4.11)	.10	.91	-1.18	1.13

Table 6 shows mean differences based on gender across study variables. These results indicate that gender does not have a significant difference on procrastination, time management and academic self-efficacy.

Table 7

One-way Analysis on Education for Procrastination, Time Management, and Academic Self-efficacy (N = 181)

Variables	Undergraduate (n=129)	Graduate (n =33)	Post Graduate (n =19)	F	p
	M (SD)	M (SD)	M (SD)		
Procrastination	28.84 (4.47)	29.42 (4.10)	28.74 (4.18)	.25	.77
Time Management	49.46 (9.03)	49.85(10.92)	49.68(10.48)	.02	.97
Academic Self-efficacy	18.62 (4.40)	20.61 (3.30)	20.87 (3.87)	3.84	.02

The one-way ANOVA showed no significant differences in time management ($F = 0.02$, $p = 0.97$) and procrastination ($F = 0.25$, $p = 0.77$) across education levels. However, academic self-efficacy differed significantly ($F=3.84$, $p=0.02$), with post graduates reporting the highest mean ($M=20.87$, $SD=3.87$), followed by undergraduates ($M=18.62$, $SD=4.41$) and graduates ($M = 20.61$, $SD = 3.31$).

Discussion

Procrastination and academic self-efficacy were shown to be strongly negatively correlated in the current study (see Table 3), which is consistent with other studies that linked procrastination to lower student performance (Cerino, 2014). Similarly, academic procrastination, time management, and academic self-efficacy were found to be negatively correlated by Ariani and Susilo (2018). According to other researches, students who are more adept at time management typically put things off less (Ocak & Boyraz, 2016). Table 3 indicates that procrastination and time management have a substantial negative correlation, whereas academic self-efficacy and time management have a positive link. Effective time management techniques can boost academic achievement and motivation (Alyami et al., 2021). Research indicates procrastination can be decreased with assertiveness, training, and time management (Ocak & Boyraz, 2016). However, possible confounders, such as mental health, academic load, or motivation were not

controlled and may influence these relationships.

According to the research conducted by Sirois et al. (2023), procrastination is more common among students who have low self-efficacy. Additionally, research indicates that the relationship between procrastination and academic success is influenced by individuals' talents. Although, current research indicated that procrastination may have a negative impact on high-achieving students' performance, Ferrari (1991) discovered that more capable students tended to put things off more often (De Paola & Scoppa, 2015). The findings demonstrated that procrastination's effect on academic self-efficacy diminished when time management was taken into account as a mediator (see Table 5).

Prior studies emphasized the crucial role of time management in determining how procrastination and self-efficacy are related. One study found that strong time management abilities can lessen this effect by increasing desire and enhancing work organization (Liu et al., 2020). Bootstrapping with 5,000 samples and reporting confidence intervals would further validate the mediation. Procrastination, self-efficacy, and time management were not significantly impacted by gender. According to a previous survey, 28.5% of students procrastinate considerably. Gender differences in procrastination were not statistically significant (Uma et al., 2020). There was no discernible difference in procrastination or time management between graduates, undergraduates, and postgraduates based on educational attainment. On the other hand, postgraduates' academic self-efficacy differed significantly from that of graduates and undergraduates. This may be influenced by academic exposure, cultural values, or family expectations in Pakistani society. While SCT supports the findings, alternative frameworks, like Self- Regulated Learning Theory could offer a broader explanation. Individual behavior is probably more influenced by factors, for instance motivation, socioeconomic situation, and cultural and societal standards than by factors, such as gender or educational attainment.

Conclusion

This study examined the connection between procrastination, academic self-efficacy, and time management among Pakistani university students. Procrastination and self-efficacy were found to be negatively correlated, indicating that increased procrastination was associated with poorer self-efficacy. Although, there were no discernible variations in procrastination

or time management between educational levels, postgraduate students' self-efficacy was higher. These factors were unaffected by gender. It was discovered that the association between procrastination and self-efficacy was mediated by time management. These findings support the relevance of SCT, suggesting that interventions aimed at improving students' time management and self-regulation may help reduce procrastination. Future research, according to the report, ought to adopt a longitudinal approach and employ a bigger, more varied sample. Such efforts could inform the design of contextually-relevant academic interventions to improve performance and well-being in Pakistani higher education settings.

Limitations, Suggestions, and Implications

The study sample was drawn from universities in Islamabad and Rawalpindi, which limited its generalizability to other areas and cultural contexts. A more varied sample should be used in future research to increase external validity. Stratified sampling techniques could improve representativeness across academic programs, institutions, and demographics. Precision and generalizability may have suffered as a result of the limited sample size, which may have made it more difficult to identify significant effects. It is advised to use stratified sampling and increase the sample size. Additionally, the use of self-report instruments may have introduced social desirability bias and the short version of the GASES might not have captured the full depth of the construct. The results imply that interventions to enhance student performance can be informed by knowledge of the relationship among procrastination, time management, and self-efficacy. To cut down on procrastination, educational institutions should incorporate time management techniques, provide counseling, and foster a positive environment. Future studies could also consider moderating factors, such as academic major, personality traits, or motivation for a more nuanced understanding.

Conflict of Interest

The authors of the manuscript have no financial or non-financial conflict of interest in the subject matter or materials discussed in this manuscript.

Data Availability Statement

The data associated with this study will be provided by the corresponding author upon reasonable request.

Funding Details

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