Understanding Procrastination: Role of Time Management and Task Aversiveness in Shaping Mathematics Achievement

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Abstract

Academic procrastination is the deliberate delay of academic tasks, which is frequently caused by various reasons such as poor time management, disinterest in task or lack of motivation, sincerity, perfectionism or external socio-demographic variables. These behaviors can adversely affect students' academic performance. The present study aims to examine the status of students' time management and task aversiveness in academic procrastination. This study further investigates their role in shaping mathematics achievement. A quantitative research approach with a cross-sectional survey research design was used among 474 secondary level students of Bardiya district. The data were analyzed by using t-tests, ANOVA and multiple linear regressions. The finding reveals that time management and task aversiveness are significant contributors to procrastination. Additionally, regression analysis shows that study hour, aversiveness of task, ethnicity, father education and mother education are major significant factors to determine mathematics achievement score. These results underscore the critical need for collaborative efforts among parents, teachers and policymakers to address the root causes of procrastination and enhance students' academic performance. Developing targeted interventions and support systems can foster better time management and reduce task aversiveness, ultimately leading to improved learning outcomes in mathematics and beyond.

Keywords: Academic procrastination, cross-sectional survey design, secondary level, academic performance

Introduction

Time management is an essential self-regulation strategy that allows students to take control of when and how long they devote to activities required to meet their academic objectives (Wolters & Brady, 2021) whereas task aversiveness is the unwillingness or avoidance of engaging in academic tasks viewed as difficult or uninteresting (Zawodniak et al., 2023). Time management is a multidimensional process that involves setting and prioritizing goals, short-and long-term planning, estimating time demands, monitoring spending and structuring time allocation (Aeon & Aguinis, 2017). Effective time management requires students to dedicate appropriate study, practice and revision time to improve their understanding of mathematical ideas. However, poor time management might result in last-minute cramming and superficial learning (Siagian, 2022). Task aversiveness might be caused by worry about mathematics activities, unfavorable experiences in the past, or a lack of confidence in one's mathematical abilities (Ugwuanyi et al., 2020). This inability to engage with mathematics may lead to procrastination producing a vicious cycle that affects academic success.

Academic procrastination is a widespread issue affecting a substantial number of secondary school students (Bojuwoye, 2019), leading to adverse educational outcomes and personal stress (Maymon & Hall, 2021). Academic procrastination is an intentional delay in the initiation or completion of academic tasks on time (Eisenbeck et al., 2019). This leads to a tendency to engage in other activities and avoid tasks that need to be performed at the assigned time (Svartdal et al., 2020). Additionally, more than 80% of students reported anxiety due to procrastination (He, 2017). These findings highlight the widespread nature of procrastination and its psychological impact on students.

Common forms of procrastination among students include postponing academic work such as writing reports or studying for exams (Hayat et al., 2020), displaying laziness in studying (Hasmayni, 2020), and failing to complete assignments (Fentaw et al., 2022). Setiyowati et al. (2020) found that mathematics has the highest rate of procrastination and claimed that high rates of procrastination are linked to poor academic performance. Frequent procrastination hinders students' ability to achieve learning outcomes (Adam & Hasbullah, 2019; Sæle et al., 2017) leading to poor academic performance in mathematics (Asri et al., 2017). Additionally, a significant relationship exists between academic procrastination and mathematics anxiety among secondary school students (Sunitha, 2013). Research indicates that academic procrastination in mathematics is prevalent among secondary school students, with varying levels (Warniasih et al., 2024). Numerous factors contribute to this behavior, including lack of interest, task difficulty, poor time

management, insufficient knowledge (Asri et al., 2017; Warniasih et al., 2024). Learning styles, particularly visual and kinesthetic, significantly influence academic procrastination in mathematics (Wan Hussin & Mohd Matore, 2023).

Academic procrastination is common among students, leading to missed deadlines, delayed study, and lower grades. It also has negative psychological effects such as depression, low self-esteem, anxiety, guilt, and stress. Insufficient preparation for testing and examination further exacerbates these consequences. Effective interventions are required to mitigate procrastination. To address this issue, schools should expose students to suitable learning styles, potentially reducing procrastination and improving mathematics performance (Wan Hussin & Mohd Matore, 2023). Gumban and Roble (2023) found that providing students with flexible time through non-routine, real-world problems in formative assessments could reduce procrastination. Bhatt (2023) emphasized the need for holistic interventions, suggesting evidence-based strategies to enhance academic engagement and reduce procrastinatory behaviors.

Researchers have investigated the causes and consequences of academic procrastination in recent decades, revealing various internal and external psychological elements that contribute to its development. The internal ones are: (1) personality characteristics such as poor self-image, avoidance, and perfectionism (Patrzek et al., 2012; Pychyl et al., 2002; Wang et al., 2017) (2) competence-related elements such as insufficient knowledge, regulation of low self-esteem, and poor study skills (Asri et al., 2017; Zacks & Hen, 2018), (3) affective factors includes to anxiety, frustration, boredom, fear, shame, guilt, regret, revenge and anger (Deniz et al., 2009; Feyzi Behnagh & Ferrari, 2022; Haghbin et al., 2012; Haycock et al., 1998) (4) cognitive aspect such as fear, lack of internal motivation, and failure of self-regulation (Zarrin et al., 2020), (5) learning history includes behavioral learning and negative learning experience, (6) physical and mental health concerns, (7) perceptions of academic tasks, such as viewing them as adversarial, difficult, or important (Simon et al., 2020), (8) lack of the scale of priorities, (9) inadequate time management skills (Nayak, 2019; Ocak & Boyraz, 2016) and (10) the selection of coping strategies (Asikhia, 2010). External factors includes school-related matters such as the quality of teachers, peer influences, and external conditions of the school (Patrzek et al., 2012) and the style of parenting (Pychyl et al., 2002; Zakeri et al., 2013). Recent research (Sharma & Kulshreshtha, 2023; Tao et al., 2021) also demonstrates that articles on academic procrastination have increased substantially since 1993, indicating a growing interest and improving understanding in this area. Notable contributions from institutions such as The Arctic University of Norway and leading publications in journals like Frontiers in Psychology, particularly from the

USA, underscore the significance of this study. However in the Nepalese context, there are lacks of literature on the contents about academic procrastination.

Research indicates that extended physical distancing, decreased social interaction, and shifts in learning methods have led to reduced student engagement and heightened procrastination behaviors (Jia et al., 2020) as well as increased psychological distress (Maia & Dias, 2020). In response to the pandemic, Nepal adhered to WHO guidelines and maintained physical distance by implementing virtual education which may be contributed to procrastination however it is still under research in Nepal. Post-COVID, student performance in Nepal has declined, particularly from school to university levels, although the cause is still unknown and further research requires.

To address the gap and fulfill the scarcity of literature in Nepalese context, it is necessary to understand the academic procrastination. Hence, this study aims to identify the perceived causes related to time management and task aversiveness in academic procrastination and examine how they affect mathematics achievement. To fulfill the objectives, following research questions are devised.

1. What is the level of time management and task aversiveness related causes in academic procrastination?

2. What is the role of ethnicity, study hour and parents' education in shaping time management and task aversiveness?

3. What is the role of time management and task aversiveness related cause of academic procrastination in shaping mathematics achievement?

Literature Review

Academic procrastination, a prevalent behavior among students, involves delaying academic tasks, often leading to negative consequences on academic performance and psychological well-being. This literature review explores the causes of academic procrastination and its impact on secondary school students' mathematics achievement, drawing insights from various studies.

Factors Contributing to Academic Procrastination

Several studies have identified various factors contributing to academic procrastination. Esmaeili and Monadi (2016) identified five major themes from analyzing interview manuscripts regarding the causes of procrastination among middle school students. These themes include the amount of time spent attending school; the influence of parents, including their use of positive and negative reinforcements; the impact of competition and peer influence; the fear of failure linked to perfectionism; and a preference for immediate rewards over delayed

ones. Asri et al. (2017) highlighted multiple causes, including perceptions of task importance, task difficulty, insufficient knowledge, perfectionism, poor learning management, lack of self-regulation, stress, fatigue, inadequate social support, indiscipline among teachers, and unconducive school culture. These factors collectively contribute to low learning achievement, emphasizing the multifaceted nature of procrastination. Bojuwoye (2019) further elaborated on the causes of procrastination, listing indecision, poor time management, and lack of motivation, fear of failure, poor organizational skills, high stress, inadequate coping strategies, and peer influence. The study ranked these factors in descending order of importance, providing a detailed understanding of the primary drivers of procrastinatory behavior. Bhatt (2023) provided a comprehensive review of the factors influencing academic procrastination. The review categorized these factors into internal and external dimensions, including individual traits, motivational aspects, environmental influences, and situational factors. On the similar manner, He (2017) conducted a study at the University of Bristol, and showed that 97% of students experienced effects of procrastination, with 48% frequently engaging in procrastinatory behaviors. The study identified key reasons for procrastination, including laziness, lack of motivation, stress, excessive internet use, and task difficulty. Li et al. (2024) explored how self-control influences academic procrastination in primary school students; using the temporal decision model and found poor self-control (impulse system) increased procrastination, while stronger self-control (control system) reduced it. The study suggests that helping students focus on positive outcomes and reducing task aversion could effectively minimize procrastination.

Academic Procrastination and Mathematics Achievement

Academic procrastination is a common issue among students, and numerous researches have been conducted to investigate its relationship with various psychological and academic aspects, especially in the context of mathematics. This review synthesizes findings from several key works, highlighting the complexities and dynamics of academic procrastination and its impact on mathematics achievement. Bigno et al. (2024) showed a positive correlation but a non-significant relationship between mathematical attitudes and academic procrastination among college students. However, Gareau et al. (2019) found the academic procrastination of university students is significantly detrimental to their subsequent academic achievement. According to Bashir (2019) there is a considerable negative association between academic procrastination and academic achievement in universities. Furthermore, academic procrastination elements such as time management and task aversiveness were negatively associated with students' academic achievement. Njuguna and Ireri (2022) results provided evidence that there was a negative

correlation between academic procrastination and academic achievement. Similarly, Bakhshayesh et al.(2016) found a significant negative relation between academic procrastination and math performance ($p<0.05$). Fulano et al.(2020) discovered that self-efficacy in mathematics was positively connected to self-regulated learning and negatively related to mathematics procrastination. They also discovered that self-regulated learning and mathematical self-efficacy mediated the effect of past mathematical knowledge on mathematical procrastination.

Previous research has consistently identified low self-efficacy, high task aversion, and lack of motivation as key factors contributing to academic procrastination (Steel & König, 2006; Deci & Ryan, 1985). However, the influence of these factors on mathematics achievement, especially in specific contexts such as Nepal, remains underexplored. Given the absence of studies on the status and reasons for academic procrastination in Nepalese secondary school mathematics, there is a clear need for further investigation. This study seeks to fill this gap by utilizing the Temporal Motivation Theory (TMT) (Steel & König, 2006) which is influenced by four key components: expectancy, value, delay sensitivity, and impulsiveness. Expectancy refers to the likelihood of success, while value is the perceived importance or reward of completing a task. In mathematics, students prioritize tasks with high expectancy or intrinsic enjoyment, while those with low value are more prone to procrastination. Delay sensitivity is the impact of delay on task utility, with tasks with immediate rewards being more motivating. Impulsiveness is the preference for immediate rewards over long-term benefits. By examining these components, TMT helps identify areas for interventions to reduce procrastination and improve mathematics achievement.

Methods and Procedures

This study employed a cross sectional survey design within quantitative research, framed by a post-positivist paradigm. The target population consisted of 8,080 students from public secondary schools in Bardiya district, from which a sample of 480 ninth-grade students was selected using multi-stage cluster sampling which is same sampling as the study of Chapai et al. (2024). Following data cleaning, six cases were removed due to missing data and outliers, resulting in a final sample size of 474. Solvin's formula (Costa et al., 2022) ensured sample representativeness. Informed consent was obtained; participant anonymity was preserved through coded identifiers and a password-protected database.

Variables Information

The sample had a balanced proportion of boys (50.2%) and girls (49.8%). In terms of ethnic groups, Janajati (40.7%) and Brahmin/Chhetri (40.1%) were equally represented, whereas Madhesi (13.3%) and Dalit (5.9%) were underrepresented.

Time Management

Time management represents how students assign and use their time for academic tasks. This domain comprises the items related to time management such as waiting for peer feedback (TMP1), feeling overloaded with non-academic activities (TMP2), and the perception of project work as time-consuming (TMP3), enjoyment of deadline pressure (TMP4), conscious to complete tasks (TMP5).

Task Aversiveness

Task aversiveness comprises the negative feelings of students towards certain academic tasks. This contains concerns about teacher approval (TAP1), difficulty in deciding task content (TAP2), and anxiety about poor academic performance (TAP3), do not like to carry out other people's instructions (TAP4), do not like to complete class assignments (TAP5), assignment task taken as overburdened (TAP6) , couldn't choose among all the topics (TAP7).

Description of Instrument

Procrastination Assessment Scale-Students (PASS)

The data was collected using a survey questionnaire that included the Procrastination Assessment Scale-Students (PASS) and a self-constructed Mathematics Achievement Test. The PASS was separated into two sections: demographic profile and cause for procrastination. 26 items covering four areas in cause for procrastination: time management, task aversiveness, sincerity, and personal Initiatives. However, in this study researcher only took 12 questions related to time management and task aversiveness. These items, based on a scale constructed by Solomon and Rothblum (1984), were revised to meet the study's aims and rated on a five-point Likert scale from never to always procrastinate. The PASS scale was designed for general subjects; hence the items were changed to measure academic procrastination when learning mathematics. The instrument completed reliability and validity testing, including expert evaluations and a pilot test, obtaining a respectable Cronbach alpha of 0.83 (Cohen et al., 2017; Creswell, 2014).

Mathematics Achievement Test

The researchers constructed a Mathematics Achievement Test with 50 multiple-choice questions from the ninth-grade compulsory mathematics curriculum, including arithmetic, algebra, geometry, and statistics. The questions were developed to measure various cognitive levels using Bloom's revised taxonomy (Airasian & Miranda, 2002; Krathwohl, 2002). Expert evaluations were conducted to ensure the test's content validity, following the criteria outlined by Yaghmalef (2003) and Lawshe (1975). The test was highly reliable, with a KR-20 reliability coefficient of

0.91(Mohajan, 2017), supporting its usefulness for assessing ninth-grade students' achievement.

Data Analysis Technique

Data were analyzed using descriptive and inferential statistics. Descriptive statistics, such as mean and standard deviation (SD), were used to describe procrastination and mathematical achievement levels. The level of reason of procrastination was assessed using a one-sample t-test, with a population mean of 3 (Joshi et al., 2022; Joshi et al., 2024). Independent sample t-tests and analysis of variance (ANOVA) were used to identify significant findings based on student demographics such as ethnicity, study hours, parents' educational levels. Furthermore, multiple linear regressions were used to assess the item-specific influence of academic procrastination on mathematical achievement. The data was analyzed using the Statistical Package for the Social Sciences (SPSS-23). Before starting the data analysis, prerequisites for using t-tests, ANOVA, and regression were met, including eliminating outliers and missing cases and verifying normality, linearity, multicollinearity, and homogeneity of variance (Kao & Green, 2008; Khanal et al., 2022).

Results

Status of Reason of Procrastination Related to Time Management and Task Aversiveness

Table 1 shows that level of "reason of procrastination related to Time Management" was significantly high (Mean=3.19, SD=0.67) except two items. In item wise analysis, mean score was highest in the statement TMP5 (Mean=3.49, SD=1.49). In contrast, the score found to be lowest in TMP2 (Mean = 2.98, SD=1.32) and TMP4 (Mean =2.98, SD=1.35).

Table 1

Status of Reason of Procrastination Related to Time Management and Task Aversiveness (n=474)

Statement	Mean	SD	t-value	p-value
Time Management	3.19	0.67	6.25	0.00*
I waited for a classmate to finish tasks to get feedback from my friends (TMP1)	3.35	1.19	6.39	0.00*

I am overloaded with non-academic activities (TMP2)	2.98	1.32	-0.38	0.70
I believed that writing a project work simply takes too much time (TMP3)	3.17	1.16	3.13	0.00*
I enjoyed the difficulty of awaiting the deadline (TMP4)	2.98	1.35	-0.38	0.71
I am conscious to complete my tasks before my friends (TMP5).	3.49	1.07	9.97	0.00*
Task aversiveness	3.17	0.61	5.98	0.00*
I concerned with my teacher if I wouldn't like my work (TAP1)	3.58	1.27	9.93	0.00*
It was difficult for me to decide what to include and what to leave out of my work (TAP2)	3.49	1.11	9.68	0.00*
I always worried on getting a poor mark in mathematics (TAP3)	3.34	1.32	5.55	0.00*
I do not like to carry out other people's instructions (TAP4)	2.95	1.26	-0.84	0.40
I do not like to complete my class assignments (TAP5)	2.70	1.27	-5.04	0.00*
The assignment task made me feel overburdened (TAP6)	2.98	1.35	-0.27	0.79
I couldn't choose among all the topics (TAP7)	3.13	1.22	2.26	0.02*

*P<0.05

Table 1 further shows that reasons for procrastination related to the aversiveness of tasks is significantly high (Mean =3.17, SD =0.61) except two items. In item wise analysis the statement TAP1 is significant item with highest mean value (Mean =3.58, SD =1.27) than other items. Hence, it suggests that concern about teacher disapproval significantly contributes to procrastination. Whereas statement TAP5 has lowest value (Mean=2.70, SD=1.27) indicates disagreement with the statement. However, the significant negative value (t= -5.04, p= 0.00) that a dislike for class assignments is inversely related to procrastination, suggesting it is not a significant reason in this sample.

Mathematics achievement score of the student found to be significantly (Mean=25.59, SD= 4.59, t=38.37, p<0.01) higher than national average mathematics achievement score 35% in secondary level (ERO, 2022).

Table 2 shows that status of causes of procrastination based on sample characteristics. On the basis of students' study hour, time management related cause is found highest in students' whose study hour less than two hours (Mean=3.24, SD=0.68) is higher than two to four hours (Mean=3.21, SD=0.66) and greater or equal to four hours (Mean=2.9, SD=0.57) at home. Furthermore, a one-way ANOVA result shows students' study hour at home is significant having p-value=0.01 with F(2,473) =4.49 affects the cause time management to produce procrastination. Additionally, the results of post-hoc statistics show that the study hour is less than two hours and greater than two to four hour is significant with the study hour greater than four hours.

Similarly, On the basis of ethnicity, time management related cause is found highest in Madheshi ethnical group (Mean=3.25, SD=0.7) as compared to Dalit, Janajati and Brahmin/Chhetri students. Similarly, on the basis of parents' education, time management related cause is found highest in students whose father's education and mothers' education was illiterate (Mean=3.25, SD=0.74) and (Mean=3.24, SD=0.71) than university and school education counterparts. Furthermore, a one-way ANOVA result shows that students' ethnicity, father education, and mother education are all insignificant to the time management related cause. Similarly, On the basis of ethnicity, task aversiveness related cause is found highest in Madheshi ethnical group (Mean=3.25, SD=0.59) as compared to Dalit, Janajati and Brahmin/Chhetri students. On the basis of students' study hour, task aversiveness related cause found higher whose study hour between two to four hours (Mean=3.19, SD=0.6) than less than two hours (Mean=3.18, SD=0.63) and greater or equal to four hours (Mean=2.98, SD=0.54) at home. Similarly, on the basis of parents' education, task aversiveness related cause is found highest in students whose father's education and mothers' education was university (Mean=3.23, SD=0.58) and (Mean=3.34, SD=0.51) respectively than illiterate and school education counterparts. Furthermore, a one-way ANOVA result shows that mothers' education is significant having p-value=0.04 with F(2,473) =3.20 affects to the task aversiveness related cause however students' ethnicity, study hour, father education, are all insignificant. Additionally, the results of post-hoc statistics show that the result is significant (p=0.03<0.05) within the school education and university education.

Table 2

Results of Causes of Procrastination (Time Management and Task Aversiveness) based on Sample Characteristics (n= 474)

Variables with categories	Frequencies (%)	Time Management			Task Aversiveness		
		Mean	SD	P-value	Mean	SD	P-value
Ethnicity							
Janajati	40.7	3.17	0.67	0.71	3.18	0.60	0.40
Dalit	5.9	3.11	0.52		3.03	0.50	
Madhesi	13.3	3.25	0.7		3.25	0.59	
Brahmin/ Chhetri	40.1	3.21	.68		3.15	0.64	
Study hour							
<2hrs	41.8	3.24	0.68	0.01*	3.18	0.63	0.13
2-4 hrs	49.8	3.2	0.66		3.19	0.60	
≥ 4 hrs	8.4	2.9	0.57		2.98	0.54	
Father education							
Illiterate	23	3.25	0.74	0.51	3.19	0.63	0.57
School education	61.6	3.16	0.65		3.15	0.61	
University education	15.4	3.22	0.63		3.23	0.58	
Mother Education							
Illiterate	31.9	3.24	0.71	0.48	3.18	0.59	0.04*
School education	55.9	3.16	0.67		3.12	0.64	
University education	12.2	3.22	0.56		3.34	0.51	

*$p<0.05$

Table 3 shows the effect of causes of procrastination on mathematics achievement. Moreover, sample characteristics were used as mediating variables. The regression model is 15.2 % variance with significant ANOVA $F_{(6,473)} =13.97$

whereas the adjusted R square value is 0.14, indicating that the model is a modest fit (Cohen et al., 2007). In the analysis, aversiveness of task (Beta=0.08), ethnicity (Beta=0.15), study hour (Beta= 0.21), father's education (Beta=0.16), and mother's education (Beta=0.12) are significant predictors of mathematics achievement whereas study hour is main predictor because of having beta value.

Table 3

Effect of Causes of Procrastination on Mathematics Achievement

Model	B	Std. Error	Beta	t-value	p-value
(Constant)	15.54	1.57		9.86	.00*
Ethnical group of participants	.51	.14	.15	3.54	.00*
Study Hour	1.52	.32	.21	4.77	.00*
Father's education	1.19	.35	.16	3.34	.00*
Mother's education	.89	.35	.12	2.58	.01*
Time management	.11	.30	.02	.36	.72
Aversiveness of task	.63	.33	.08	1.91	.05*

*P≤ 0.05

   The provided figure illustrates the relationship between time management (TM), task aversiveness (TA), and motivation (MA) across four variables: gender, ethnicity, study hours, and father's education. In Figure 1, the trends indicate gender differences in how time management interacts with task aversiveness to influence motivation, with females showing less variability compared to males. Figure 2 highlights that ethnicity impacts the interplay of these factors, with distinctive patterns of motivation across ethnic groups. Figure 3 examines study hours, showing significant fluctuations in motivation levels, particularly for those with varying time management skills and aversion to tasks. Lastly, Figure 4 explores the effect of father's education, revealing that students with fathers holding higher education demonstrate relatively consistent motivation despite differences in time management or task aversiveness. Overall, these graphs emphasize how demographic and contextual factors moderate the relationship between time management, task aversiveness, and motivation. The Figure 5 examines the effect of time management (TM) and task aversiveness (TA) on motivation (MA) based on maternal education levels. Motivation fluctuates across TM levels, with distinct patterns for illiterate, school-educated, and university-educated mothers. Students with university-

educated mothers show sharp declines at higher TM levels, especially under low task aversiveness.

Figure 1

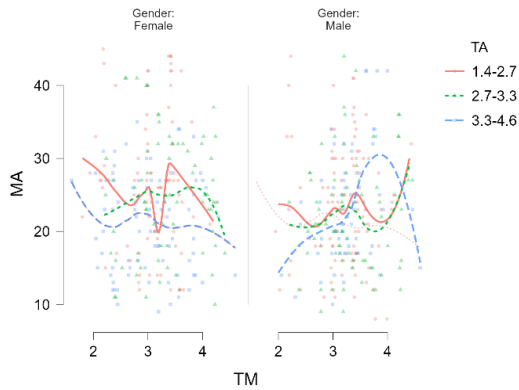*Effect of Time Management and Task Aversiveness based on Gender*

Figure 2

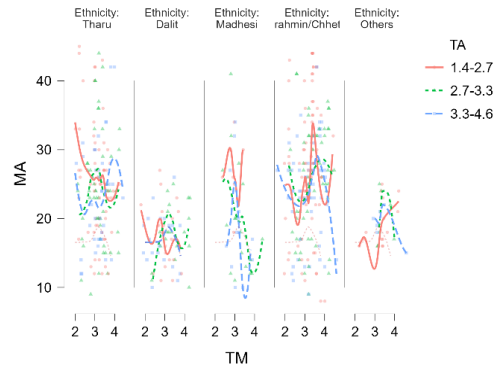*Effect of Time Management and Task Aversiveness based on Ethnicity*

Figure 3

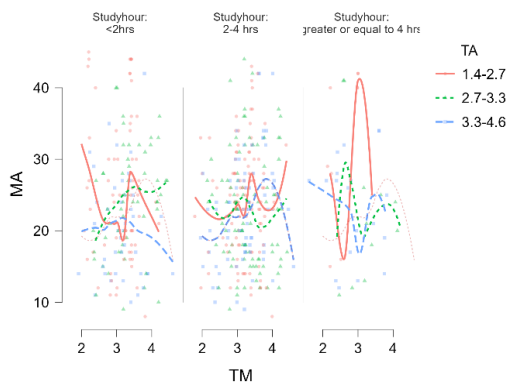*Effect of Time Management and Task Aversiveness based on Study Hours*

Figure 4

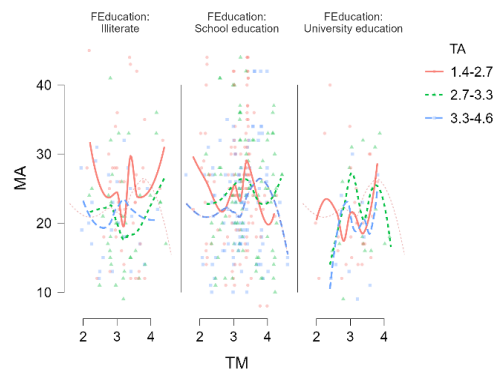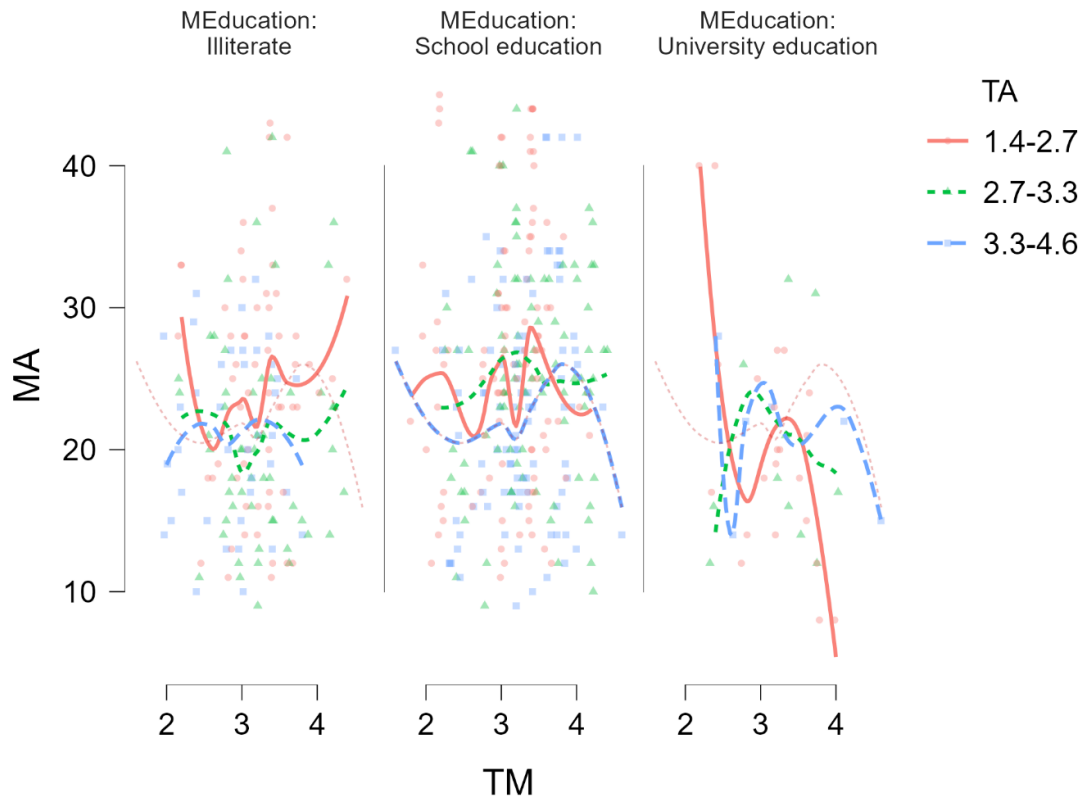*Effect of Time Management and Task Aversiveness based on Father Education*

Figure 5

Effect of Time Management and Task Aversiveness based on Mother Education

Discussion

    The aim of the study was to analyze the role of cause of procrastination (time management and task aversiveness) in shaping mathematics achievement score. Results showing that time management-related factors are significant contributors to procrastination. Findings also indicated that waiting for classmates to provide feedback, perceiving project work as too much time, and conscious to complete tasks before peers significantly influenced students' cause of academic procrastination. These findings suggest that students' confidence on external validation and competitive pressure from peers can hinder timely task completion. Previous studies shows that social science students engage to receive peer feedback, who perceive time constraints as a barrier (Altstaedter & Doolittle, 2014). Interestingly, procrastination may be more common among capable individuals who have learned to perform well under time pressure (Ferrari et al., 1995). Understanding these factors can help educators and counselors address procrastination more effectively

in academic settings. However, non-academic overload and enjoying the challenge of awaiting deadlines did not significantly contribute to procrastination in Nepalese context, indicating that students may not view these factors as critical obstacles.

The study found that task aversiveness plays a significant role in procrastination. This finding aligns with the research by Li et al. (2024) which demonstrated that task aversiveness and outcome value mediate the relationship between self-control and academic procrastination in students. The study suggests that helping students focus more on positive outcomes and less on the negative aspects of tasks could be an effective approach to reducing academic procrastination. The result of this study further show item-wisely concerns about teacher approval, difficulty in deciding task content, and anxiety about poor academic performance are significant. These components highlight the emotional and cognitive challenges students' face, which can lead to delayed task initiation. These findings resonate with the conclusions of (Hooshyar et al., 2020), who demonstrated that anxiety and fear of failure are noticeable in causing academic procrastination. Similarly, Peixoto et al. (2021) which showed that greater academic procrastination predicted greater psychological distress (e.g., stress, depression, anxiety) and lower life satisfaction among students. Interestingly, results showed that feelings of bitterness towards deadlines and unwillingness to complete assignments were not significant procrastination factors, suggesting that while students may not enjoy these tasks, they do not necessarily delay them because of these feelings.

The study also examined the influence of sociodemographic factors on procrastination. Study hours at home were significantly associated with time management procrastination, while ethnicity, father's education, and mother's education were not. This finding aligns with research by Fostervold et al. (2022) which shows students' perceived stress and physical working conditions increased both procrastination and independent study time. The study further found that, mother's education significantly affected task aversiveness, and both mother and fathers' education significantly influenced sincerity-related procrastination, echoing the findings of (Moed et al., 2017) their findings suggested that when mothers react negatively to challenging child behavior, it can influence how children interact and adapt. This may increase the chances of children developing adjustment problems.

Finding of this study also reveals that study hour is the main predictor of mathematics achievement. This finding echoes research by Quilez-Robres et al. (2021) which demonstrated that consistent study habits are significantly related to academic achievement in mathematics. In the reason of procrastination, task aversiveness is significant with mathematics achievement in Nepalese context. Hence, further researches are necessary with large sample and geographically.

Various research conducted in different samples showed that procrastination behaviors were negatively correlated with academic achievement (Balkis & Duru, 2017; Goroshit, 2018; Joubert, 2015; Nwosu, 2018). As a result, it appears that procrastinating on purpose to complete a task could be viewed as a corollary of underachievement or poor grades, and this might have specific implications for success.

Conclusion

This study underscores the multifaceted nature of academic procrastination, particularly in the context of mathematics achievement among students in Nepal. Key findings reveal that time management and task aversiveness significantly contribute to procrastination, influencing academic outcomes. Students' reliance on external validation and competitive peer pressure were identified as critical factors delaying task completion. Furthermore, emotional and cognitive challenges, such as anxiety and fear of failure, exacerbate procrastination, while consistent study habits emerge as strong predictors of academic success. Interestingly, non-academic overload and negative attitudes toward deadlines did not significantly influence procrastination, suggesting a unique cultural or contextual nuance. However, this study has several limitations. The sample size and geographic focus limit the generalizability of the findings. Self-reported data may introduce bias, as students might underreport procrastination behaviors. The study did not explore the potential long-term effects of procrastination on academic performance or its interplay with other psychological factors like resilience or self-efficacy. Future research should include larger, more diverse samples and longitudinal studies to validate and extend these findings across different contexts.

The study highlights key educational implications for addressing academic procrastination, particularly in mathematics learning. Effective time management and reducing task aversiveness are crucial for enhancing students' academic performance. Educators should foster strategies to reduce reliance on peer validation and competitive pressure, promoting intrinsic motivation and time management skills. Interventions can focus on emphasizing positive task outcomes and alleviating anxiety about performance. Addressing emotional and cognitive barriers, such as fear of failure, can further reduce procrastination. Additionally, consistent study habits should be encouraged as they directly correlate with better academic achievement. Targeted support, particularly for students with limited parental educational backgrounds, can bridge performance gaps.

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