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Self-Regulation as a Mediator Between Learning Motivation and Academic Procrastination in Students Who Are Preparing a Thesis

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ABSTRACT

Academic procrastination is the failure to complete an academic task within the desired timeframe or postpone the task until the last moment. Academic procrastination can be reduced if students have good self-regulation and motivation. This study aims to empirically test the role of learning motivation in academic procrastination with self-regulation as a mediator. This study uses a quantitative approach with a cross-sectional study. The population in this study is students who are working on a thesis, have worked on at least one semester, and are active in organizations. Sampling was done using purposive sampling techniques. The instruments used are the learning motivation scale, the academic procrastination scale, and the self-regulation scale. The data analysis in this study uses a path analysis technique with the partial least square structural equation model (PLS-SEM). The program or software used to conduct the analysis is SmartPLS 4. The results showed that self-regulation played a mediator between learning motivation and academic procrastination, with a significance value of 0.001 ($p<0.05$). Coefficient Test -0.242 (p-Value,0.001<0.05). Regulation partially mediates the relationship between learning motivation and academic procrastination. The conclusion of this study states that self-regulation plays an important role in mediating the relationship between learning motivation and academic procrastination in students. In other words, the ability to self-regulate effectively can help students overcome the tendency to delay completing academic assignments.

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INTRODUCTION

Higher education is the highest level of education after high school and is also an educational unit that organizes education, community service, and research with students as students and lecturers as teachers (Sedyati, 2022). Students are required always to be able to improve their abilities and skills in order to compete and adjust to a global world full of pressure and competition, especially for students (Lubis, 2019). Students in higher education are required to be able to develop their potential optimally and are always faced with challenges, both academic and non-academic. Therefore, students are expected to be able to complete whatever task they have to complete, although in reality, students still often procrastinate in doing so. The psychological symptoms of this procrastination behavior are called procrastination. As revealed by Dami and Loppies (2019), procrastination tends to be done by delaying starting or completing the entire task while prioritizing other useless activities.

Procrastination is the behavior of deliberately and irrationally delaying starting or completing a task, thus negatively impacting the perpetrator (Steel & Klingsieck, 2016; Ghufron & Risnawati, 2012; Zacks & Hen, 2019). Procrastination occurs in various aspects of human life, and in the academic sphere, it is referred to as academic procrastination. This phenomenon often occurs among students and can have a negative impact on academic achievement. Academic procrastination is the failure to complete academic assignments within the desired time frame or postponing assignments until the last moment (Wolter, 2003). Academic procrastination is a type of procrastination that is carried out on formal tasks related to academic assignments or academic performance (Ferrari & McCown, 1995).

The characteristics of academic procrastination in students include delays in starting or completing work or assignments, delays in completing assignments, and the habit of procrastinating on tasks that need to be completed (Madjid et al., 2020). Ferrari and McCown (1995) also stated that aspects of procrastination include (a) procrastination when starting or completing performance in the face of tasks, (b) inaction in doing tasks, (c) time gaps between plans and actual performance in doing tasks, and (d) a tendency to engage in other activities that are seen as bringing more entertainment and pleasure. Procrastination can be associated with anxiety and fear of failure, which can reduce the quality and quantity of learning, increase stress, and negatively impact students' lives, thus harming students' academic performance. Students who procrastinate on academic assignments are believed not to use the time given to them to complete the assignments. In the end, delays that are not in accordance with the adaptive role of students can result in low student achievement (Kafipour & Jafari, 2021).

The phenomenon of academic procrastination among students at this time is especially apparent because of the existence of other activities that are more enjoyable for students. Selecting students currently writing their final assignments as respondents in the study is very relevant. At this stage, students

experience firsthand the various challenges associated with writing a final assignment, including understanding theories, applying research methods, and interacting with supervisors. Their involvement in this process allows them to provide in-depth insights into the academic and emotional dynamics they face. Therefore, these respondents can offer valuable perspectives to further understand the challenges in completing a final assignment (Wakhyudin & Putri, 2020). Academic procrastination is becoming one of the main reasons why students' lives are affected so badly, whether it has affected their grades, performance, growth, or success in their lives. Procrastination shown by students can be caused by many factors, among which there may be factors that control our emotions, such as emotional intelligence and emotional stability (Nangru, L. 2024).

Research on the level of academic procrastination of students has been carried out extensively. Based on several studies that have been conducted, it has been shown that procrastination exhibited by students is at a high level, with percentages of 81.17% (Afandy & Fuat, 2021), 60% (Dharma, 2020), 67.8% (Tuaputimain, 2021), 81.3% (Rohmatun, 2021), 79.1% (Farkhah et al., 2022), 93% (Wulandari & Matulessy, 2023), 83% (Suhadianto &Ananta, 2022), 80.7% (Husain et al., 2023), and 66% (Anisa & Ernawati, 2023). Based on this data, it can be seen that academic procrastination among students is still an emerging phenomenon, and it is interesting to continue studying it. In accordance with what was stated by Margareta and Wahyudin (2019), procrastination affects student learning achievement, so serious attention is needed for students to reduce or even eliminate the habit of procrastinating on assignments.

Ferrari and McCown (1995) stated that there are two types of factors that cause academic procrastination, namely factors from within the individual (internal) and outside the individual (external). Internal factors are the physical and psychological conditions of the individual, such as health, emotional regulation, self-efficacy, and self-confidence (Ferrari, 2010), personality or self-regulation (Zimmerman, 1990; Iskandar, 2023; Vega et al., 2020; Fitriya & Lukmawati, 2019; Nisva & Okfrima, 2019; Rusmaini et al., 2021), and the existence of behavior to avoid duties. The external factors are the causal factors that come from outside, such as tasks that are too difficult (Ferrari, 2010; Shalev, 2019), parenting style, and environmental conditions (Ghufron & Risnawati, 2016). Tasks that pile up too much and must be done immediately (Burka & Yuen, 2008) can also contribute. Time management refers to the effective and efficient use of time, which may be achieved by planning, scheduling, and controlling time (Inayah et al., 2023).

Fitriya and Lukmawati (2019) and Ziegler and Opdenakker (2018) stated that academic procrastination in students is essentially caused by a lack of self-regulation. Low self-regulation makes it impossible for students to find the right attitude to deal with various stimuli that arise, such as not being able to complete a task on time. Bandura (1997) states that self-regulation is the way individuals

regulate themselves, influence their behavior, and provide support to understand and implement the consequences of their actions. Self-regulation is related to how a person performs a series of actions aimed at achieving a goal through purposeful planning (Zimmerman, 1990). Self-regulation is used to describe these efforts to initiate, direct, and strategically manage goal pursuit in situ via metacognitive planning, monitoring, evaluating, and adapting one's cognition, behavior, motivation, and affect. According to Zimmerman (1990), several aspects underlie self-regulation, namely self-set standards and goals, emotion regulation, self-instruction, self-monitoring, self-evaluation, and self-determined contingency. Self-defined standards and objectives refer to the self-regulating individual. In this case, the individual will have a common standard as a criterion for measuring personal performance in a given situation. The aspect of emotion regulation is maintaining or controlling emotions such as happiness, sadness, anger, worry, or hatred to prevent them from becoming excessive and leading to unproductive reactions. Self-instruction is when a person gives himself a guide to remind himself of the right action. Self-monitoring involves carrying out an activity. Individuals need to recognize how successful they are in order to lead towards important goals. The aspect of self-evaluation, which is the assessment of one's own behavior, known as self-evaluation, is a person's ability to judge oneself objectively and clearly, which is essential for long-term success in becoming an adult. The last aspect, namely the contingency aspect, is self-determined. Accordingly, a self-determined contingency is a punishment that a person imposes on himself to follow a behavior.

Several studies in Indonesia that examine the relationship between self-regulation and academic procrastination show that self-regulation has a negative and significant effect on academic procrastination (Fitriya & Lukmawati, 2019; Triovano & Khoirunnisa, 2021; Mujirohmawati & Khoirunnisa, 2020; Ghufron, 2014). The relationship between self-regulation and procrastination shows that self-regulation is very important for academic procrastination. Self-regulation is an important aspect of reducing academic procrastination because if students have good self-regulation, it can be expected that their academic procrastination will decrease (Loeffler et al., 2019). Based on research conducted by Batubara and Asriatuzzeky (2022), self-regulation has an important role in the dynamics of the emergence of procrastination. This shows that individuals must possess self-regulation to achieve a high level of success and reduce the level of procrastination.

Cobb (2003) explained the factors that affect self-regulation in learning, namely motivation. This means that the motivation students have is positively related to self-regulation in learning. Learning motivation is needed by students to implement strategies that will affect the learning process. Students tend to be more efficient in managing their time and effective in learning if they have the motivation to learn. Santrock (2014) explains learning motivation as a process that gives encouragement, direction, and persistence in behaving to achieve optimal learning goals. Learning motivation is a person's energy that is

characterized by feelings and preceded by a response to the goals to be achieved in the learning process (Rahiem, 2021). Cherniss and Goleman (2001) explain learning motivation as one of the facilities or tendencies of a person to achieve goals with persistence and enthusiasm in carrying out his learning activities.

Wlodkowski and Jaynes (2004) define learning motivation as a value and passion for learning, where students are encouraged to do positive things in learning to achieve satisfactory results. According to Cherniss and Goleman (2001), there are five aspects of learning motivation, namely motivation, commitment, initiative, optimism, pleasure, and satisfaction in doing the tasks given. In relation to this, the motive aspect is an impulse where a person feels compelled to fight for the realization of his desires and hopes. The commitment aspect is one of the most important aspects of the learning process. Through high commitment, a person has the awareness to learn, is able to do tasks, and can balance tasks. The initiative aspect is where a person is required to come up with new initiatives or ideas that will support his success in completing his educational process so that the individual can guide himself to do things that are beneficial to him and those around him. The aspect of optimism is a persistent attitude, not giving up on pursuing goals, and always believing that challenges are always present. The aspect of happiness and satisfaction in doing the assigned task is where the individual feels that the task given is according to his interests, has an important goal or benefit for learning, and the support of friends will help complete the task successfully.

Jensen (2008) explained that students who do not have a passion for learning will withdraw from involvement in learning. Passion is energy and the driving force behind learning new things—a passion that makes life or the learning process more vibrant and interesting. This means that motivation is very important in the learning process because, without motivation, it is impossible to carry out learning activities (Zainuddin, 2018). Learning motivation plays a very important role in learning success. However, motivation is also a complex construct. Motivation theory suggests that learning motivation should be conceived as a system with many components that interact in complex ways and affect metacognitive processes such as goal setting, self-evaluation, and regulation (Kubsch et al., 2023). Several studies related to the relationship between learning motivation and self-regulation in learning stated that the formation of learning motivation may increase self-regulation in learning in students (Aprilyani, 2022). In line with Zimmerman's (2000) statement, self-regulation in learning is highly correlated with individual motivation in handling task challenges and self-satisfaction because being involved in tasks contributes more to creativity.

Students with high motivation to learn show high academic ability. On the other hand, students who are less motivated to learn will have low academic ability. Furthermore, it is recognized that motivation is an important component of education, and the effectiveness of learning depends on the motivation of students to learn (Busato et al., 2019). Especially when students are interested in

appearing and participating in learning, they are automatically motivated to learn (Fazriyah & Khusrohmaniah, 2022). Students who are motivated to learn and have a high interest in the material will use more self-regulation strategies when studying than students who are less motivated to learn and lack self-control, making them less interested in the material (Cobb, 2003).

In addition to playing a role in self-regulation, learning motivation also plays an important role in academic procrastination. Ferrari and McCown (1995), in their theory, explain the factors that cause academic procrastination, one of which is learning motivation. Learning requires motivation to increase enthusiasm so that students feel happy and encouraged to participate in learning. This is in accordance with Sardiman's (2014) and Rahiem's (2021) statements that students who have strong motivation will have a lot of energy to carry out learning activities. Based on research conducted by Margareta and Wahyudin (2019), Wahyuningtyas and Setyawati (2021), Putri and Kurniasari (2019), Unda-López et al. (2022) revealed that to reduce or eliminate academic procrastination, students should be directed or motivated to manage their time well, make daily schedules, create task lists, so they can set targets to

be achieved and prioritize tasks that ensure good results. Based on previous research, many studies have examined the relationship between motivation and student academic procrastination, including Seto et al. (2020), Putri and Kurniasari (2019), Pedhu and Indrawati (2022), and Novitarum et al. (2022) with results showing that there is a significant negative relationship between learning motivation and academic procrastination.

The study conducted by Septiani and Fitria (2016), Muntazhim (2022), and Hadi (2020) found that self-regulation of academic procrastination is negative. This shows that the higher the self-regulation, the lower the level of academic procrastination. On the other hand, the higher the level of academic procrastination, the lower the level of self-regulation. Thus, it can be concluded that self-regulation can be one of the strategies and solutions to reduce academic procrastination.

Several studies examining self-regulation that acts as a mediator have shown that self-regulation plays a partial mediation role in the relationship between mindfulness and academic procrastination. Increasing the state of awareness in mindfulness helps students regulate themselves, thereby reducing the tendency to engage in academic procrastination (Dzakiah & Widyasari, 2021). There is also a study conducted by Benitha (2020) indicating that learning motivation and self-regulation can partially mediate the relationship between internet addiction and academic procrastination, with a p-value of 0.030 ($p<0.05$). The mediation that occurred was labeled as partial because there was a direct influence of internet addiction on academic procrastination, with an R Square value of 0.235, which means that the internet addiction variable was able to explain 23.5% of the academic procrastination variable directly.

Using self-regulation as a mediator variable in research involving learning motivation and academic procrastination is highly relevant. By incorporating self-regulation, the study can explain the mechanism by which learning motivation affects procrastination. Students with high motivation are generally better at self-regulating, which helps reduce their tendency to procrastinate. Furthermore, understanding the role of self-regulation can aid in designing effective interventions to enhance this skill, ultimately improving students' academic outcomes.

Based on studies that previous researchers have conducted, it has been shown that research on academic procrastination has been widely associated with learning motivation and self-regulation. However, so far, there has never been a study that relates the role of learning motivation to academic procrastination by using self-regulation as a mediator, especially in students who are preparing their thesis. Although several studies also discuss self-regulation that acts as a mediator, there are differences in the free variables. Therefore, the essential difference of this study lies in the self-regulation variable that functions as a mediator between learning motivation and academic procrastination as an independent variable and a dependent variable. The novelty of this study is the use of path analysis techniques with the Partial Least Squares Structural Equation Model (PLS-SEM), while the subject of the study was students who have worked on the thesis for at least one semester and are active in organizations. This consideration is because students who are in organizations have many activities that must be prioritized compared to students who do not participate in organizations. Procrastination tends to occur in students who participate in organizations, while students who do not participate in organizations tend to have lower levels of procrastination (Cinthia & Kustanti, 2017). Thus, the purpose of this study is to empirically test the role of learning motivation on academic procrastination mediated by self-regulation. This research is expected to provide solutions to overcome problems related to academic procrastination among students, especially those who are preparing a final project or thesis. In addition, this research is expected to contribute to the development and expansion of science in the field of educational psychology so that it can be a source of reference for future researchers related to the role of self-regulation as a mediator between learning motivation and academic procrastination. The hypotheses that can be proposed in this study are: a) Self-regulation mediates the role of learning motivation and academic procrastination; b) Learning motivation plays a role in academic procrastination; c) Learning motivation plays a role in self-regulation; d) Self-regulation plays a role in academic procrastination. Thus, the purpose of this study is to empirically test the role of learning motivation on academic procrastination mediated by self-regulation.

METHODS

Research Design

This research used a quantitative approach with a correlational study research

design. This design was intended to see the relationship between learning motivation (independent variable) and academic procrastination (dependent variable) mediated by self-regulation (mediator variable) in students who are preparing a thesis.

Research Subject

The population in this study consisted of students who had been working on their thesis for more than one semester. The sampling technique used was purposive sampling. The sample from this study included students who also had active criteria in organizing and were willing to be research participants. This consideration is because students who are organized have many activities that must be prioritized compared to students who do not participate in organizations. In accordance with what Cinthia and Kustanti (2017) conveyed, procrastination tends to occur in students who join organizations, while students who do not participate in organizations tend to have a lower level of procrastination.

This research was conducted on students who have been working on a thesis for more than one semester, who are participating in an organization, and who are willing to be research participants by asking students to fill out an informed consent form. Based on the data collection that had been carried out, there were only 100 data points that met the criteria requirements as research samples. Thus, the data analysis technique in this study used a nonparametric approach, specifically the SmartPLS 4.0 application.

Research Ethics

The procedure for collecting data for this research was carried out by distributing three measurement instruments through Google Forms. However, data collection in this study has met ethical steps to protect participants, including participants not being asked to write their names on the personal data provided. In addition, participants were asked to provide a statement of willingness to be involved in the research before they filled out the instruments provided on the Google Form link. If a student fills out an approval form, it can be interpreted as being ready or willing to participate in the research. On the other hand, if the student has not filled out the approval form, it means that he is not willing to participate in the research.

Data Collection Method

The data collection method used in this study utilizes an instrument in the form of a psychological scale. The scales used in this study are procrastination, self-regulation, and learning motivation. The scale is shared in Google Forms, with two types of statements formulated: favorable and unfavorable, about the variables studied (Azwar, 2018).

The academic procrastination scale was adopted by Ningsih (2018) using four aspects, referring to Ferrari (1995). The first is the delay in starting and

completing tasks, delays in completing tasks, the time gap between plans and actual performance, and more enjoyable activities. This scale has 24 items, with 13 favorable items and 11 unfavorable items, using a Likert scale with four answer choices, namely (Strongly Agree), (Agree), (Disagree), and (Strongly Disagree).

The learning motivation scale in this research adopted the learning motivation scale compiled by Suciati (2018) using the theory of Cherniss and Goleman (2001) with aspects of learning motivation, namely, the drive to achieve something, commitment, initiative, and optimism. This scale has 32 items, with 18 items favorable and 18 items unfavorable, using the Likert scale with four answer options, namely (Strongly agree), (Agree), (Disagree), and (Strongly disagree).

The self-regulation scale in this study will adopt the self-regulation scale compiled by Surdi (2022) using Zimmerman's theory (1990). Several aspects underlie self-regulation, namely personal behavior and the environment. This scale has 18 items, with nine items favorable and nine items unfavorable, using a Likert scale with four answer choices, namely (Strongly Agree), (Agree), (Disagree), and (Strongly Disagree).

The validity testing used in this study was carried out using the SmartPLS 4.0 application, specifically by testing convergent validity and discriminant validity. Reliability in this study is assessed using Cronbach's Alpha and Composite Reliability. Then, SmartPLS 4.0 will predict the relationship between constructs, confirm the theory, and explain whether there is a relationship between the variables.

Data Analysis Method

The data analysis in this study uses a path analysis technique with the partial least squares structural equation model (PLS-SEM). The program or software used to conduct the analysis is SmartPLS 4.

RESULTS AND DISCUSSION

Results

Most respondents in this study were female (64%) and male (36%). Table 1 contains demographic details of respondents in this study, including aspects such as respondents' age, gender, university origin, and other activities that are being actively carried out apart from studying. The demographic data used in this research included the gender, age, and university of the subjects. The results of the demographic data by gender show that the respondents in this study are dominated by the female gender, with a total of 64 students, accounting for 64%, while male students total 36 students, accounting for 36%. The results of the demographic data based on age show that 24-year-olds account for 36 students, which is 36%; 25-year-olds account for 45 students, which is 45%; and 26-year-olds account for 19 students, which is 19%. The results of the demographic data by university show that the respondents in this study are dominated by private

universities, with a total of 72 students, accounting for 72%, while public universities account for 28 students, which is 28%.

Table 1. Demographic Data

Categorization	Total	Percentage
Gender		
Male	36	36
Female	64	64
Age		
24 Years	36	36
25 Years	45	45
26 Years	19	19
University		
Public	28	28
Private	72	72

Outer Model Results

The validity testing used in this study was carried out using the SmartPLS 4.0 application, specifically by testing convergent validity and discriminant validity. The reliability test in this study also utilized SmartPLS 4.0 analysis. Figure 1, Figure 2, and Figure 3 illustrate the measurement model to test validity and reliability, the model's coefficient of determination, and the path coefficients for the equation model.

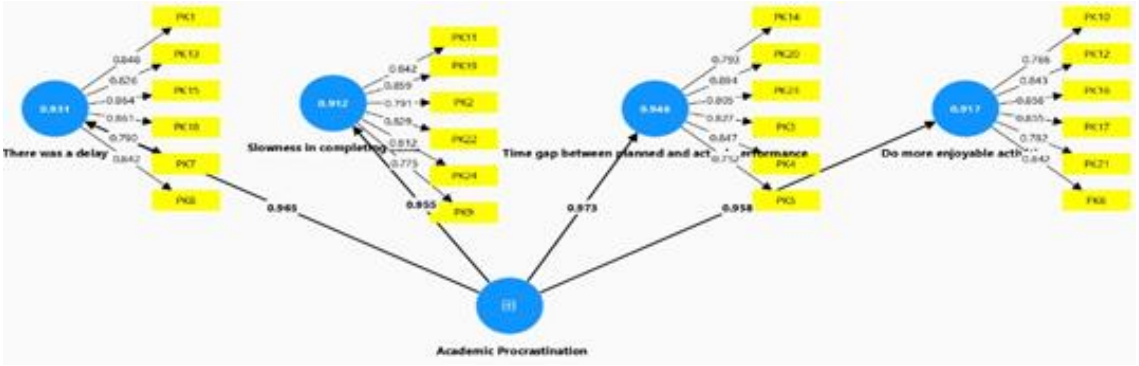

Figure 1. Display of academic procrastination outer loading results

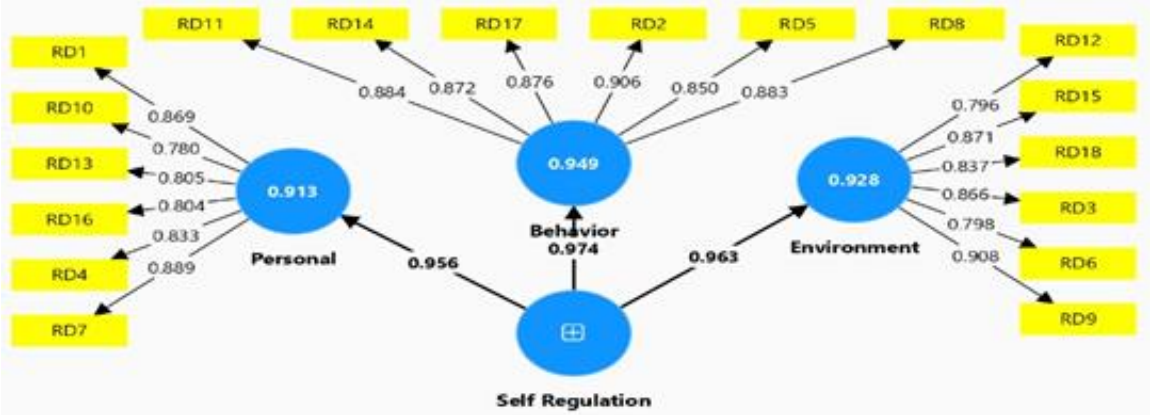

Figure 2. Display of self-regulatory outer loading results

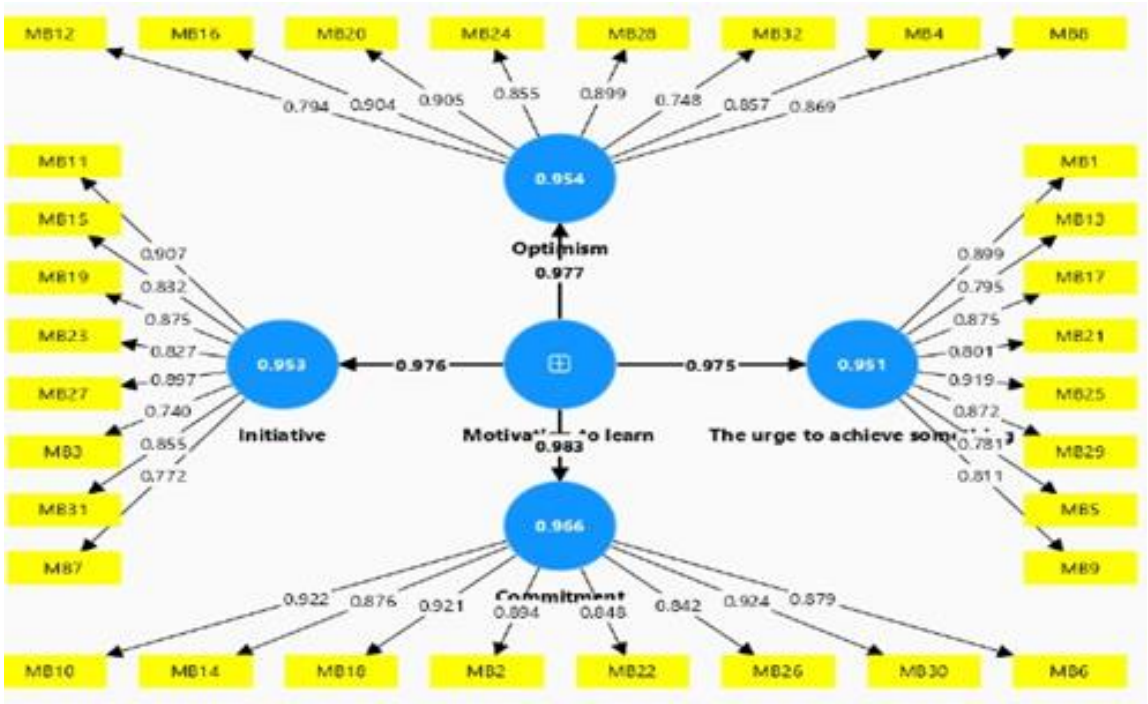

Figure 3. Display of the results of outer loading of learning motivation

Convergent validity testing is carried out by looking at the outer loading value and the Average Variance Extracted (AVE) value or score. An outer loading value of more than .5 can be considered to meet the requirements for fulfilling convergent validity; however, the researcher chooses to use a standard value of more than .5 because an indicator with a value of .5 is considered to meet the requirements for fulfilling good convergent validity. Based on the analysis of the indicators used in measuring variables, the results indicate that none of the indicators had a value below .5. This shows that these indicators are appropriate and valid measuring tools to assess the variables of learning motivation, academic procrastination, and self-regulation (Sarstedt et al., 2021).

Table 2. Average Variance Extracted (AVE)

Variable	AVE
Academic Procrastination (Y)	.703
Learning Motivation (X)	.631
Self-Regulation (M)	.675

Based on Table 2, it can be seen that all AVE values are above .5, which means that the indicators used are qualified and are the right measuring tools to measure the variables. The discriminant validity test was carried out by looking at the cross-loading value of the research variable items and the square root of the AVE. The condition for discriminant validity is that the cross-loading value for each construct with a measurement item is greater than that of other constructs. Based on the cross-loading value, it is known that all items of each variable have a greater value compared to the items of other variables, so it can be said that the items in this study meet the requirements of discriminant validity.

In addition to looking at the value of cross-loading, the second way to assess validity is to look at the value of the square root of the AVE, shown in Table 3. An item can be said to be valid if the value is greater than .7.

Table 3. Square Root of Average Variance Extracted (AVE)

Variable	Learning Motivation (X)	Academic Procrastination (Y)	Self-Regulation (M)
Learning Motivation (X)			
Academic Procrastination (Y)	.754		
Self-Regulation (M)	.897	.782	

From Table 4, the reliability test of the items was carried out by looking at Cronbach's Alpha value and composite reliability. A variable can be said to be reliable if it has a value of more than .7. Based on Table 4, the Cronbach's Alpha and Composite Reliability values of all variables show values of more than .7, which means that the reliability construct is considered very good. This shows that the measuring tools used in this study are reliable and can be used.

Table 4. Cronbach's Alpha Values and Composite Reliability

Variable	Cronbach's Alpha	Composite Reliability
Learning Motivation (X)	.986	.987
Academic Procrastination (Y)	.974	.978
Self-Regulation (M)	.971	.973

Categorization of participant scores is the result of analysis using SPSS software version 26. The descriptive statistics of each variable are shown in Table 5. The researcher also carried out categorization based on the acquisition of total scores into five categories using the ideal average score (Mi) and the ideal standard deviation (SDi) on each scale. Table 5 shows that most of the participants are in the moderate category of academic procrastination variables (34%), self-regulation (47%), and learning motivation (40%).

Table 5. Categorization of Participant Score Acquisition

	Academic Procrastination		Self-Regulation		Learning Motivation	
	N	%	N	%	N	%
Very High	3	3	10	10	6	6
Tall	33	33	13	13	26	26
Keep	34	34	47	47	40	40
Low	25	25	27	27	19	19
Very Low	5	5	3	3	9	9

Inner model results

From Table 6, the existence of a collinearity problem can be determined by examining the variance inflation factor (VIF) value. According to Ghozali (2016), if the VIF value is < 10, then it can be concluded that the data are free from collinearity problems.

Table 6. Collinearity (VIF)

Variable	Learning Motivation (X)	Academic Procrastination (Y)	Self-Regulation (M)
Learning motivation (X)		2.363	1.000
Academic Procrastination(Y)			
Self-Regulation (M)		2.363	

From Table 7, the direct effect of learning motivation on academic procrastination was -0.274 (negative), meaning that if learning motivation decreases, academic procrastination increases. The p-value is 0.009 < 0.05, so the relationship between learning motivation and academic procrastination is significant. The direct effect of learning motivation on self-regulation is 0.593 (positive), meaning that if learning motivation increases, self-regulation also increases. The p-value shows 0.000 < 0.05, so the relationship between learning motivation and self-regulation is significant. The direct effect of self-regulation on academic procrastination was -0.408 (negative), meaning that if self-regulation decreases, academic procrastination also increases. Since the p-value is 0.000 < 0.05, the relationship between self-regulation and academic procrastination is significant.

Table 7. Path Coefficient

Path Notation	The sample also (O)	Average sample (M)	Standard deviation (STDEV)	t statistics	p values
X1 => Y	-.274	-.276	.104	2.623	.009
X1 => M	.593	.599	.069	8.604	.000
M => Y	-.408	-.415	.112	3.651	.000

These results prove that self-regulation acts as a mediator in the relationship between learning motivation and procrastination. The effect of mediation can be seen from the direct effect of learning motivation on academic procrastination, which has a smaller score compared to the indirect effect, namely through the presence of self-regulation variables. This means that the role of learning motivation in academic procrastination is better explained indirectly; namely, learning motivation increases self-regulation, which then decreases the tendency to engage in academic procrastination. Learning motivation can be directly related to academic procrastination, or it can be related indirectly through increasing self-regulation.

Table 8. Coefficient of Indirect Influence

Path Notation	Learning motivation => Self-Regulation => Academic Procrastination
The sample also (O)	-.242
Average sample (M)	-.249
Standard deviation (STDEV)	.075
t statistics	3.216
(p-values)	.001

From Table 8, it can be seen that the value of the coefficient of indirect influence of learning motivation on academic procrastination is -.242 with a p-value of .001 < .05. Therefore, the relationship that actually occurs is indirect, meaning that self-regulation plays a role in mediating the effect of learning motivation on academic procrastination.

Table 9. Coefficient of Determination

Variable	R-square	Adjusted R-square
Academic Procrastination (Y)	.374	.361
Self-Regulation (M)	.352	.345

From Table 9, R-Square is a measure of the proportion of variation in the value of the affected variable (endogenous) that can be explained by the variable that affects it (exogenous). This is useful for predicting whether the model is good or bad (Juliandi, 2018). Criteria: If the value of R^2 = .75, the model is substantial (strong). If the value of R^2 = .50, the model is moderate. If the value of R^2 = .25, the model is poor. From Table 8, it can be seen that the R-Square Adjusted Model Path I = .374, meaning that the ability of the learning motivation variable to explain the self-regulation variable is 37.4%; thus, the model is classified as moderate. R-Square Adjusted Model Line II = .352, meaning that the ability of the learning motivation variable and procrastination to explain the self-regulation variable is 35.2%; thus, the model is classified as moderate.

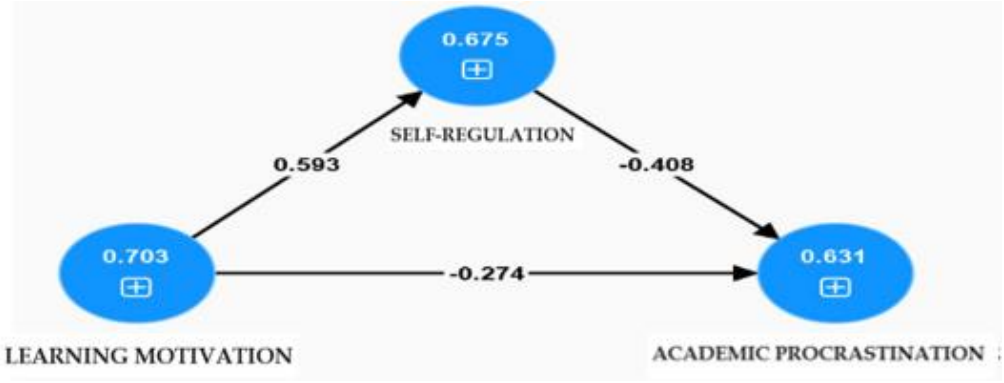

Figure 4. Research Framework based on the mediation model

Discussion

Based on the results of the indirect influence coefficient test, the results of the role of self-regulation as a mediator in the relationship between learning motivation and academic procrastination in students were obtained. It was found that all three variables had a relationship. Self-regulation has a very significant relationship with learning motivation, while self-regulation has a very significant relationship with academic procrastination. This indicates that self-regulation plays a mediating role in the relationship between learning motivation and academic procrastination. This is in line with the cognitive learning theory of Bandura, which states that through self-regulation, a person is able to motivate and guide their own behavior (Bandura et al., 2008). This means that individuals

who have self-regulation can create their own learning motivation. Self-regulation is very important, considering that student life is not only limited to lecture activities but also involves activities outside the academic scope (Cahyani et al., 2019). Activities outside the classroom can be a distraction that detracts from academic tasks that must be completed, especially if students do not have an adequate level of self-regulation (Rabin et al., 2020). Without the ability to self-control, students are prone to the tendency to avoid difficult or undesirable tasks, opting to do more enjoyable activities (Jia et al., 2019).

The gap between intention and behavior becomes apparent when students engage in more enjoyable activities, even though they realize they should be able to complete their coursework. This reflects a low level of self-regulation. Students tend to respond automatically with a tendency to seek pleasure and avoid difficulties (Ostafin, 2015). Self-regulation is needed to regulate behavior and actions, as well as being the main driving force of an individual's personality to restrain themselves from the temptation of temporary pleasure and delaying work, which can threaten the achievement of their goals in an academic context (Bandura, 2005). The better students' ability to regulate themselves while studying, the less likely they are to engage in academic procrastination. Conversely, if self-regulation ability is low, academic procrastination tends to increase (Mujirohmawati & Khoirunnisa, 2022). Therefore, a high level of self-regulation in students has an inverse relationship with their tendency to procrastinate in completing academic tasks.

Research conducted by Dzatifauz (2023) obtained results indicating that self-regulation in learning significantly plays a mediating role in the relationship between academic self-efficacy and academic procrastination in high school students. In an effort to reduce the level of academic procrastination among students, self-regulation in learning and academic self-efficacy are important factors that need to be developed. Self-regulation reflects behavior that is focused on achieving goals. The existence of goals in individuals who have a high level of self-regulation motivates them to move towards these goals, such as by planning, managing time, and consistently monitoring progress toward the goal. Therefore, procrastination in completing academic tasks is often considered an indication of failure in one's self-regulation (Rabin et al., 2020). Cahyani et al. (2020) and Schweder and Raufelder (2024) stated that several factors affect the decline in student learning motivation, one of which, when viewed from internal factors, includes self-regulation due to low learning motivation, which is influenced by self-regulation such as managing time, commitment, responsibility, and encouragement from within to achieve the expected results.

Based on the results of the pathway coefficient test, there was a very significant negative relationship between learning motivation and academic procrastination. This means that the lower the motivation to learn, the higher the level of academic procrastination— the role of learning motivation with academic procrastination in students. Academic procrastination often arises as a result of a

sense of laziness, which reflects a lack of motivation to carry out academic tasks (Pedhu & Indrawati, 2022). According to Winkel (2014), learning motivation is a psychological driving force in a person that causes learning activities, provides direction for learning activities, and ensures the continuity of learning activities to achieve a desired goal. Ghufron (2014) stated that the relationship between learning motivation and academic procrastination is such that the higher the learning motivation, the lower the level of procrastination that individuals have. Therefore, individuals who have high learning motivation will not procrastinate academically, which will make them responsible for their study tasks. Steel and König's theory of temporal motivation (2006) explains that motivation influences decisions or behaviors. Students who have high motivation to learn will direct themselves to carry out learning or academic activities. They have more enthusiasm and movement to carry out or complete academic tasks than students who have low learning motivation, so students with have high learning motivation tend to avoid academic procrastination. The higher the learning motivation that exists in the individual, the lower the possibility of academic procrastination being carried out. This is in line with several previous studies that indicate learning motivation has a negative influence on academic procrastination (Martínez-Huerta et al., 2024; Nastiti & Puspasari, 2024). However, learning motivation is also not always related to academic procrastination. This is supported by several previous studies showing that there is no relationship between learning motivation and academic procrastination in students (Parastiara & Yoenanto, 2022).

Based on the results of the pathway coefficient test, it was found that there was a very significant positive relationship between learning motivation and self-regulation. This means that the higher the motivation to learn, the higher the self-regulation, and vice versa. The lower the motivation to learn, the lower the self-regulation. The relationship between learning motivation and self-regulation in learning is that the formation of learning motivation will activate self-regulation in learning in students (Tosuncuoglu, 2019). This is in line with Rodríguez et al. (2022) statement that learning motivation is closely related to students' self-regulation in handling task challenges and self-satisfaction because they are involved in completing tasks as a student's responsibility. Students who have a higher motivation to learn are more likely to be involved in completing coursework and implementing more effective self-regulation processes in learning. In addition, students who are involved in coursework are more interested in learning and view the assignments they participate in as very valuable. High and low learning motivation depends on various strategies. Teachers can help students have high learning motivation by providing interesting learning methods (Haniko et al., 2023). If students' motivation to learn is low, then they cannot make efforts to determine learning goals, choose and use methods, techniques, and strategies, or start learning well (Wulandari & Matulessy, 2023). Other research has also found that there is a relationship between learning motivation and self-regulation, which is a very significant

positive relationship (Febriyanti, 2023). Meanwhile, the research conducted by Widyastuti and Haerudin (2022) showed that learning motivation had no relationship with self-regulation, with t = -1.164 and p = 0.248. This research was conducted on students who were working in the Sharia economics study program at Mulawarman University.

Based on the results of the pathway coefficient test, it was found that there was a very significant negative relationship between self-regulation and academic procrastination. This means that the higher the self-regulation, the lower the academic procrastination, and vice versa. If self-regulation is low, academic procrastination is higher. This is in accordance with Stell (2007), who explains that academic procrastination is influenced by self-regulation in the form of failure to self-regulate. According to Cobb (2003), one of the factors that increase motivation in learning is self-regulation. The relationship between learning motivation and self-regulation is that students who have good learning motivation will be able to develop self-regulation in learning to achieve the goals to be targeted. On the other hand, students who do not attend class due to a variety of factors, including poor time management, lack of planning, lack of seeking help, and lack of self-monitoring of their actions in the learning process, which indicates students who do not self-regulate their learning, create a lack of motivation to learn (Cerón et al., 2024).

The relationship between self-regulation and procrastination is known to be that if an individual has good self-regulation, then the individual will be able to exert attention, thoughts, emotions, and actions toward a goal (Zimmerman, 2000). This is in line with research conducted by Ardina and Wulan (2020), which found that self-regulation of academic procrastination is negative. This shows that the higher the self-regulation, the lower the level of academic procrastination. On the other hand, the higher the level of academic procrastination, the lower the level of self-regulation. Thus, it can be concluded that self-regulation can be one of the strategies and solutions to reduce academic procrastination. Some studies that state the relationship between self-regulation and procrastination are those conducted by Fitriya and Lukmawati (2019), which indicate that self-regulation has a negative and significant effect on academic procrastination. Several other studies that also show that self-regulation has a significant negative effect on academic procrastination are Mujirohmawati and Khoirunnisa (2022), Arwina et al. (2022), and Nisva and Okfrima (2019).

Self-regulation has a very significant relationship with academic procrastination. Based on research by Lubis (2019), there is a negative and significant relationship between self-regulation and academic procrastination. This indicates that the higher the self-regulation, the lower the academic procrastination in students, and if the self-regulation in students is low, the higher the academic procrastination. The results of a study by Aprilyani (2022) show that self-regulation does not have an effect on academic procrastination. The researcher conducted interviews with three students working at University X Jakarta related

to how they practice self-regulation when dealing with academic procrastination. According to the students, when faced with academic problems, they utilize different ways and solutions, suggesting that each individual has their own method of self-regulation in achieving a goal or solving a particular problem. Research conducted Sedyawati (2021) found that there is no relationship between self-regulation and academic procrastination caused by individual differences that can affect the way a person regulates themselves.

CONCLUSIONS

The results of the study found that self-regulation acts as a partial mediator in the relationship between learning motivation and academic procrastination. This indicates that students with high learning motivation tend to have better self-regulation skills, which, in turn, reduces the level of academic procrastination. In other words, the ability to self-regulate effectively helps students overcome the tendency toward academic procrastination. For students, this study is expected to increase their understanding of academic procrastination and how this behavior can affect academic achievement. This study provides a useful basis for further research on academic procrastination. However, this study still has limitations that allow future researchers to fill the gaps that have not been tested in this study. The variables tested in relation to procrastination are limited to self-regulation and learning motivation, whereas many other variables can help reduce academic procrastination. In terms of methodology, the researchers only used a quantitative approach, which was unable to explore in depth the causes of the delays and how real efforts can be made. Similarly, regarding the limited number of subjects and the uneven distribution of subjects, which is confined to only a few universities, this research cannot comprehensively represent the entire student population. Therefore, another approach is still needed to deepen this study.

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