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**Submission date:** 04-Nov-2022 06:34AM (UTC+0700)

**Submission ID:** 1943885405

**File name:** M.\_Nur\_Ghufron\_dan\_Risna\_IGCJ\_2022.docx (193.92K)

**Word count:** 6030

**Character count:** 35525

## The Role of Epistemological Belief and Self Regulation in Academic Procrastination of College Students

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**Abstract:** The study on academic procrastination can help educators and educational developers in avoiding the lack of success and even failure in the educational process. This study aims to examine the effect of epistemological belief and self-regulation in learning on academic procrastination. This quantitative study involves 277 college students. The data collection technique used in this study is a questionnaire in the form of a scale. There are three types of scales used in the data collection process: the scale of epistemological belief, the scale of self-regulation in learning and the scale of academic procrastination. Data analysis technique using structural equation technique. The results show that belief about knowledge has an effect on self-regulation in learning ( $r = 0.157$ ,  $p = 0.028$ ), belief about knowledge affects academic procrastination ( $r = -0.157$ ,  $p = 0.000$ ), belief about learning affects self-regulation in learning ( $r = 0.199$ ,  $p = 0.040$ ), belief about learning affects academic procrastination ( $r = -0.147$ ,  $p = 0.019$ ), and self-regulation in learning affects significant negatively to academic procrastination ( $r = -0.097$ ,  $p = 0.030$ ).

**Keywords:** Belief about knowledge, belief about learning, self-regulation in learning and academic procrastination.

### INTRODUCTION

Understanding why people who generally have the best effort for completing academic assignments and professional assignments fail to complete them on time has been an eternal focus of research in psychology, education, and procrastination (Ellis & Knaus, 1977). The uncertainty regarding procrastination has resulted in various studies due to low psychological factors such as self-efficacy (Haycock, McCarthy, & Skay, 1998), affective states including shame and guilt (Fee & Tangney, 2000), one's characteristics such as dependence (Johnson, Green, & Kluever, 2000), locus of control includes intrinsic and extrinsic motivation (Carden, Bryant, & Moss, 2004), role conflict (Senécal, Julien, & Guay, 2003), social activities (Jackson, Weiss, Lundquist, & Hooper, 2003), personality roles (Lee, Kelly, & Edwards, 2006), situational characteristics and traits (Stainton, Lay, & Flett, 2000) and self-regulation (Steel, 2007).

Steel (2007) noted that procrastination is a common phenomenon and some people have made it as a way of life. Ferrari (2017) emphasized, 20% of men and women are clinical procrastinators, at school, home, work, and in relationships. Although often considered as a minor problem, clinical procrastination is not a bad time management problem. Thus, it can be concluded that procrastination is quite widespread, and sometimes ends with a level of depression or psychological disorders. Whether it is a serious psychological disorder or not, it seems that in an achievement-oriented society in which people are faced with major changes and are required to pursue the latest advances, procrastination can become an important problem (van Eerde, 2003) It is assumed that a number of college students (80-85%) of various levels are involved in procrastination (Ellis & Knaus, 1977); 60% of students procrastinate doing their assignments (Onwuegbuzie & Jiao, 2000); 40% to 60% of students report that they almost always procrastinate writing papers, preparing for exams, and completing weekly reading assignments (Onwuegbuzie, 2004). Balkis and Duru (2009), also reported that 23% of students procrastinate their academic assignments.

A delay is said to be procrastination, if it is carried out on an important task, done repeatedly intentionally and causes feelings of discomfort, subjectively felt by a procrastinator (Solomon and Rothblum, 1984), while Millgram (1991) said that procrastination is a specific behavior which includes: (1) a behavior which involves an element of procrastination, either to start or complete a task or activity, (2) produces other further effects, such as lateness in completing tasks or failure to do tasks, (3) involves a task perceived by procrastinators as an important task to do, for example office work, school work, or chores, (4) produces unpleasant emotional states, such as feelings of anxiety, guilt, anger, panic, and so on.

Historically, procrastination research has focused on cognitive behavioral factors from a motivational perspective. For example, Lum (1960) reported that there are differences in academic motivation and learning habits in underachieving and high-achieving students. High-achieving students tend to delay doing tasks which are considered difficult and prone to bother enjoying activities such as engaging in social activity opportunities. Lum noted that although underachieving students share the same talents as high-achieving students, high-achieving students differ in attitude and tend to need external pressure to fulfill

assignments. It can be emphasized that procrastination is predominantly a cognitive-behavioral problem as opposed to a lack of learning habits. Meanwhile, Solomon and Rothblum (1984) reported that the procrastination factor due to the fear of failure and reluctance to do the task became the most counted portion. Both factors correlate with mental health and interpersonal factors.

The past 30 years of research on academic procrastination and other forms of procrastination have been examined from various perspectives. The exploration of procrastination associated with metacognitive perspectives, mental health, motivation and self-regulation in learning has received potential explanations and various results. Based on a variety of potential explanations for procrastination, it is proved that there is not much to be explored. The relationship between college students' epistemological belief and academic procrastination do not seem to have been studied much and is assumed to be able to reveal a deeper understanding of the factors associated with unproductive academic achievement. According to Schommer (1990) about the importance of epistemological belief on learning process which is assumed to be able to explain psychological dynamics of problematic academic phenomenon.

According to Runes (1970), epistemology is a branch of philosophy which investigates the authenticity of definition, structure, method, and knowledge validity. The traditional philosophy of personally epistemological paradigm emphasizes the relationship between the perceiver or the knower and what is felt and can be known. The study of epistemology is originally a part of philosophy which discusses philosophical problems about the theory of science. However, the study of epistemology has also recently become an interesting problem to be studied by psychologists in empirical research (Hofer & Pintrich, 1997).

According to Schommer-Aikins (2004), Perry's research with Harvard Scholars in the late 1960s was an important result which related empirically to personal epistemological belief. Perry's research results determined that the college students have complex knowledge, interactive relationships with knowledge and processes in which knowledge is accepted and conducted or rejected. Starting from the first level, the college students are dualistic in keeping truth and error, have absolute views, and believe that truth can be known from the teacher's communication role. This first-year student believes that simple knowledge and unchanging facts are taught by people who know better. As time goes by,

students become more knowledgeable and more realistic in believing knowledge which is complex and tentative from the results of thoughts and empirical events. Perry hypothesized eight developmental positions and classified them into four categories which belong to the dualistic thinking of students in the early stages to relativist thinkers by the end of the fourth year of research.(Ren, 2006).

The results of Perry's research, for example, found that the students changed their belief about knowledge in several phases, namely: from simple, permanent and unchanging knowledge, obtained from authority, to the belief in more complex and changing knowledge (tentative), obtained from thought processes, empirical events, and enriched by the time movement to be more mature. More than 30 years, research on the epistemological belief has attempted to ensure aspects of the relationship between the knower and what can be known about knowledge in an academic setting.

The epistemological belief related to how people's beliefs about how knowledge occurs, how much knowledge is acquired, where it is obtained, and how knowledge is constructed and evaluated. Furthermore, the focus of personal epistemological research is how individuals construct knowledge concepts and how to know which concepts are then used in developing an understanding of the world (Hofer, 2002).

In the procrastination literature, Solomon and Rothblum (1984) considered fear of failure as an important factor in academic procrastination. The college students who choose to avoid carrying out assignments are less likely to have positive experiences during the learning process and are more likely to experience many negative psychological things (Elliott & Sheldon, 1997). Interpretively, this condition may be a natural result of underdeveloped epistemological belief.

The procrastination appears to be a chronic academic pattern (Ferrari, Johnson, & McCown, 1995). It can have negative effects on emotions, academic achievement (Stead et al., 2010), social achievement, subjective well-being (Gueorguieva, 2011), sleep quality (Przepiorka et al., 2019), and even physical health (Klingsieck, 2013). Academic procrastination is a specific type of procrastination, a manifestation of learning delays (Zhang et al., 2010). It is commonly seen among secondary school, high school, and college students (Ghosh and Roy, 2017; Ziegler and Opdenakker, 2018; Li et al., 2019), and produces many bad effects such as negative emotions, anxiety and depression, poor

learning efficiency, lower academic self-esteem, and academic stress. Mengenai kepercayaan pada pengetahuan, Hill, Hill, Chabot, and Barrall (1978) suggested that academic procrastination may increase from one year to the next in college. Rothblum, Solomon, and Murakami (1986) stated that procrastination is detrimental to academic performance leading to lower grades and failure (Beswick, Rothblum, & Mann, 1988). Tice and Baumeister (1997) linked academic procrastination to an increased health risk. Regarding the belief on knowledge, Hofer (2004) suggested that understanding the barriers to the change and growth of the epistemological belief will be important for students. Since procrastination continues into adulthood, understanding the relationship between epistemological belief and procrastination at the college level is very useful for understanding procrastination at the professional level.

In addition to the epistemological belief, self-regulation is one of the important concepts in social cognitive theory which bridges external influences with the capabilities or capital possessed by humans, as the basis for carrying out purposeful behavior, thus enabling humans to have individual control over their thoughts, feelings, motivations, emotions, and behavior. Self-regulation is one of the important concepts in social cognitive theory. Bandura (1986) said that the self-regulation system bridges external influences with the capabilities or capital possessed by humans, as the basis for carrying out purposeful behavior, thus enabling humans to have individual control over their thoughts, feelings, motivations, and behavior. Based on this definition, self-regulation has an important role in human behavior. It can be interpreted as self-direction or self-control in acting. Self-regulated learning can be interpreted as "regulating or directing oneself in learning" or "learning by directing or self-regulating". Researchers use the term "learning based on self-regulation" to replace the term self-regulated learning, a term that is more efficient without reducing its meaning.

Zimmerman & Martinez-Pons, (1990) proposed a formulation to explain learning based on self-regulation based on Bandura's triadic social cognitive theory. He said that students' efforts to regulate themselves in learning involve three determinants, namely the student's personal process, environment, and behavior. The application of learning strategies makes students be able to personally regulate their behavior and environment as well as regulate their metacognitive functions. The choice and use of strategies by students

depends directly on their perception of their academic self-efficacy, and reciprocally through the feedback they receive. If the student's monitoring shows a deficiency in their performance, the student's self-efficacy will be low, and vice versa. If monitoring shows that the performance is effective, it will affect subsequent motivation and the choice of the used strategy. According to this triadic formulation, learning based on self-regulation is not an absolute functional state, but rather varies, depending on the academic context, the individual's attempts to self-regulate, and the outcome of behavioral performance.

The absence of the forced direction means that competent individuals must create conditions such as those among which are self-regulating (Kanfer & Heggstad, 1997). Meanwhile, individuals who do not have good self-regulation in themselves are more likely to procrastinate the various tasks they face and are easily tempted to do other activities that do not support the completion of their academic tasks such as playing games, playing more social media and so on.

Self-regulation has an important role in human behavior including academic procrastination behavior. The problems associated with procrastination and lack of self-regulation particularly in learning appear to be increasing. At the same time, it is expected that academic assignments are done on time and can be done structuredly and on time (Cascio, 1995).

Based on the explanation above, it can be emphasized that procrastination is a complex phenomenon related to various aspects of human activity. Explaining the relationship between personal epistemological belief and academic procrastination would potentially explain the role played multifacetedly by knowledge belief, sometimes the procrastination process is detrimental. In addition, self-regulation in learning is also an important aspect which can explain academic procrastination. Although it has been studied several times and is closely related to academic procrastination, it is still rare to place its position as a mediator variable between epistemological belief and academic procrastination.

Understanding the relationship of epistemological belief and self-regulation in learning to academic procrastination would be advantageous since a basic for future causal or explanatory research. If they are significant encouragement for academic procrastination, so assessments which focus on changing or improving academic abilities will ultimately enhance personal and professional achievement talent.

Based on the explanation above, it should be emphasized that the purpose of this study is to examine the effect of epistemological belief which consists of belief about knowledge and learning and self-regulation in learning on academic procrastination.

## METHODS

### *Research Participant*

Participants in this study are students of the Islamic Guidance and Counseling study program, Faculty of Islamic Da'wah and Communication, Kudus State Islamic Institute. The technique of taking participants in this study is purposive random sampling which the steps to take the subject as a sample are carried out by, *first*, determining where students come from the Islamic Guidance and Counseling study program. *Second*, students who have taken thesis and *third* are students who have taken thesis for at least two semesters. The number of participants is 277 students.

Table 1. Participant characteristics (N=277)

Variable	Percentage (n)
<i>Gender:</i>	
Woman	61.7 (171)
Man	38.3 (106)
<i>Age:</i>	
22-23	35.4 (98)
24-25	42.2 (117)
>26	22.4 (62)
<i>Range of work for the current semester:</i>	
2-4 semesters	71.8 (199)
Over 4 semesters	28.2 (78)



### **Research Instruments**

The epistemological belief in this study is divided into two components of belief. First, belief about the nature of knowledge is an individual's belief about the nature of knowledge which includes aspects; (1) authority/expert knowledge that it derives from people who know more / an expert, (2) certain knowledge, and (3) orderly process. Generally, it can be said that the higher the value obtained, the more naive the belief about their knowledge. The number of statement items on the knowledge's belief scale is 8. Examples of items are; *"I like the class where the teacher before teaching determines the unit of learning program"*, *"The answers in the reference book are very helpful because I am not sure of my own solutions"* and *"I feel comfortable when dealing with uncertain learning conditions"*.

Meanwhile, belief about learning is an individual's belief in learning which includes; (1) quick learning and (2) innate ability. This epistemological belief is expressed by using an epistemological belief scale which is modified based on the epistemological belief scale developed by Jehng, Johnson, & Anderson, Jehng (1993). Generally, it can be said that the higher the value obtained, the more naive the belief about learning is. The number of statement items on the belief scale in learning is 6. Examples of items are; *"If I can't understand something quickly, I usually have difficulty in learning it as a whole"* and *"Students who have moderate achievement in SMP/MTs, will remain the same and achieve moderately when they are high school students."*

Self-regulation in learning is a learning activity which is carried out by people actively both motivationally, metacognitively, and learning behavior. This variable is revealed by using a learning scale based on self-regulation with the dimensions of motivation, metacognition and behavior as proposed by Zimmerman (1989). Overall, the learning scale based on self-regulation is 30 items, with 11 items for the motivation dimension. Examples of items are; *"If I plan something, I'm pretty sure I can carry it out."* The metacognition dimension consists of 9 items, examples of which are; *"To produce a good work, I determine every step in the preparation"*. Meanwhile, the behavioral dimension consists of 10 items. Examples of items are; *"The biggest problem for me is hard to begin my ta"*.

Academic procrastination is the tendency of people to respond to the final lecture they have by keeping a long time to start or finish the performance intentionally to carry out

other unnecessary activities to complete assignments, referring to the academic procrastination theory of Solomon and Rothblum (1984). The indicators are the delay in starting to complete the performance in having the task, the slack in doing the task, the time gap between the plan and the actual performance in doing the task and the tendency to do other activities which are considered having more enjoying and pleasure. Overall, the academic procrastination scale is 32 items. Examples of items are; “*In preparing the lecture task which has deadline, I often waste the time by doing others*” and “*I always say I will do it tomorrow*”.

The reliability calculation result of the belief about knowledge gets 0.853, while belief about learning gets 0.843, self-regulation in learning reliability is 0.871, and academic procrastination reliability is 0.869. Thus, all variables get quite good reliability above 0.70, so it can be stated that all used variables have met the reliability requirements.

**Data Analysis Techniques**

The used technique to analyze the data in this study uses *Structural Equation Models* Models. For the analysis needs, the Analysis of **MO**ment Structures (AMOS) software program is used.

**RESULTS AND DISCUSSION**

**Results**

Before analyzing the model, descriptive research data for each scale will be presented first. The statistical description of the research data is summarized in table 2 below:

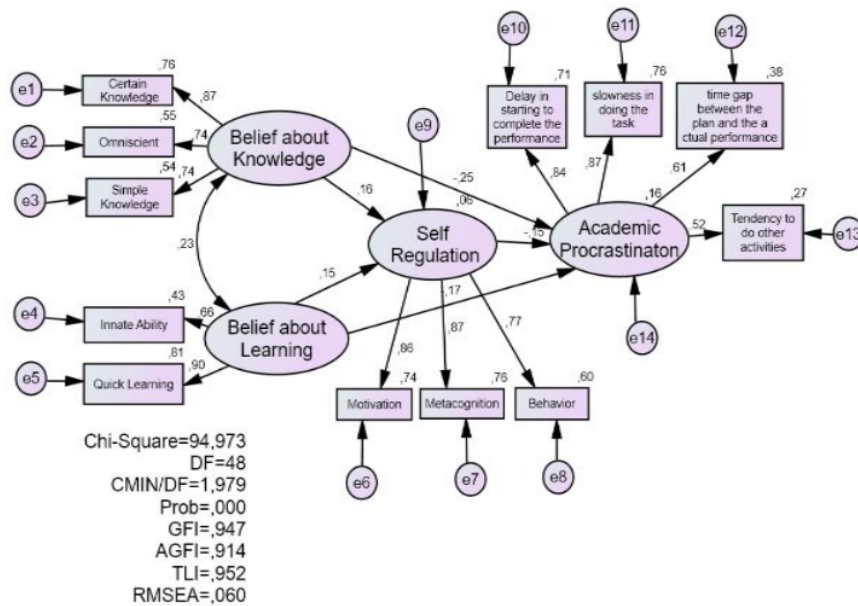
Table 2. Description of research data

Variable	Descriptive Statistics				
	N	Minimal	Maximal	Mean	Std. Deviation
Belief about knowledge	277	0	12	7,98	2,475
Belief about learning	277	1	8	5,15	1,681
Self-regulation	277	0	12	6,74	2,627
Academic Procrastination	277	2	16	11,48	2,640

Based on table 2 above, it is known that the belief about knowledge variable has an empirical score of 7.98, with a standard deviation of 2.475, the belief about learning variable has an empirical score of 5.15, with a standard deviation of 1.681, the variable of self-regulation in learning has an empirical mean score of 6.74, with a standard deviation of 2.627, and the academic procrastination variable has an empirical mean score of 11.48 with a standard deviation of 2.640.

Before analyzing the structural equation model wholly, the unidimensionality test for each construct is carried out using confirmatory factor analysis. Based on the results of the confirmatory analysis on each variable, it shows that the value of the fit criteria is achieved well. Likewise, the significance values of the estimated *standardized loading parameters* are all above 0.05.

After some of the proposed conditions are met, the next step is to test the hypothesis in the form of testing the theoretical model data with empirical data as a whole.



**Figure 1. Analysis Results of the Model of Epistemological Beliefs and Self-regulation's Influence on Student Academic Procrastination**

Based on the analysis results of the initial structural model, it shows that the Chi-Square is 89.285 (DF = 48,  $p = 0.000$ ), CMIN/DF = 1.860, GFI = 0.920, AGFI = 0.870, TLI = 0.944 and RMSEA = 0.070. That the criteria for several model acceptance conditions have been met properly except for the p-value which is still below 0.005. Because the other criteria have been met, it is decided not to reprocess or repair. The results of the analysis can be seen in Figure 1.

Estimation of *loading factors* or *lambda value* which is an evaluation of the results of the regression weights between latent variables and degrees of freedom (df), CR value or t-count (with a significance probability value of 0.05), can be known after being analyzed through AMOS statistics program assistance. The results of the causality test regression weights are presented in table 3.

Table 3: The Result of Causality Test Regression Weight

	Estimate	S.E.	C.R.	P
The variable of belief about knowledge on self-regulation in learning	0,157	0,071	2,203	0,028
The variable of belief about knowledge on academic procrastination	-0,157	0,047	-3,314	0,000
The variable of belief about learning on self-regulation in learning	0,199	0,097	2,053	0,040
The variable of belief about learning towards academic procrastination	-0,147	0,063	-2	0,019
The variables of self-regulation in learning towards academic procrastination	-0,097	0,045	-2	0,030

From table 3, it is known that the variable of belief about knowledge has a significant positive effect on self-regulation in learning ( $r = 0.157$ ,  $p = 0.028$ ), the variable of belief about knowledge has a significant negative effect on academic procrastination ( $r = -0.157$ ,  $p = 0.000$ ). The variable of belief about learning also has a significant positive effect on self-regulation in learning ( $r = 0.199$ ,  $p = 0.040$ ). The variable of belief about learning has

a significant negative effect on academic procrastination ( $r = -0.147$ ,  $p = 0.019$ ), the variable of self-regulation in learning also has a significant negative effect on academic procrastination ( $r = -0.097$ ,  $p = 0.030$ ).

Based on the results of the analysis above, it can be concluded that the variables of belief about knowledge have a significant positive effect on self-regulation in learning and have a negative influence on academic procrastination. The variable of belief about learning has a significant positive effect on self-regulation in learning and has a significant negative effect on academic procrastination. Moreover, the variable of self-regulation in learning also has a significant negative effect on academic procrastination.

## Discussion

This study aims to examine the theoretical model of epistemological beliefs' influence in the form of belief about knowledge and belief about learning as well as self-regulation on academic procrastination.

Based on the analysis results, it is found that the variable of belief about knowledge has a significant positive effect on self-regulation in learning and had a negative effect on academic procrastination. The variable of belief about learning has a significant positive effect on self-regulation in learning and has a significant negative effect on academic procrastination. Moreover, the variable of self-regulation in learning also has a significant negative effect on academic procrastination.

Previous research results related to academic procrastination influenced by fear of failure (Ferrari, Parker, & Ware, 1992; Sénécal, Lavoie, & Koestner, 1997; Solomon & Rothblum, 1984; Tulier, 2000). Fear of failure associated with self-efficacy (Ferrari et al., 1992) may represent students' insight that tasks in the learning process obviously involve belief about knowledge and learning or epistemological belief itself. Research on task procrastination (Solomon & Rothblum, 1984; Ferrari, Keane, Wolfe, & Beck, 1998; Hess, Sherman, & Goodman, 2000; Senecal, Koestner, & Vallerand, 1995) reflects epistemological beliefs.

Based on this study results indicate that students who believe that knowledge is certain (certain knowledge), absolute, unchangeable, and not tentative, that knowledge comes from people who know more or are expert (*authority/expert knowledge*) such as lecturers or reference books and that the way to get knowledge is an orderly process or simple knowledge tends not to do academic procrastination. This can happen because students are obedient in carrying out what the lecturer says and doing it.

On the other hand, students who have sophisticated epistemological beliefs, who tend to believe that knowledge is tentative, and do not believe that knowledge is certain and changeable, that knowledge comes from the construction of one's own thoughts through the process of formulating personal facts independently tends to do academic procrastination. This phenomenon can be explained that if lecture assignments are considered challenging or difficult because of the complexity of knowledge, then epistemological beliefs can affect academic delays in starting or completing work. As an illustration related to task procrastination and naive epistemological beliefs, Ferrari et al. (1998) reported that task avoidance is a major motivator for procrastination for college students.

In addition, people with naive epistemological beliefs may be associated with perfectionism. Perfectionist students prefer to procrastinate because of the understanding that knowledge is complex, process-oriented, changing, and comes from oneself. Due to their more mature epistemological beliefs and their consistent goal of optimizing all aspects of learning, these people procrastinate due to perfectionism and delay experience in starting assignments due to the high learning process.

Meanwhile, it is likely unrelated to perfectionism, it may also be rooted in mature epistemological beliefs. Due to the results of several studies on procrastination regarding skill, time, and effort problems of more or lack of independent learning (Howell, Watson, Powell, & Buro, 2006; Pychyl, Morin, & Salmon, 2000; Senecal, Julien, & Guay, 2003; Tuckman & Schouwenburg, 2004).

The students who have a belief about the nature of learning which can be done quickly and to understand something is very dependent on the first time learning it



and requires innate ability or skills has lower academic procrastination, than the students who believe that learning is through a process of hard work. As students used to the "easy life" or at least minimal academic effort is required at lower levels of education, then when they are in college, the previous belief that knowledge should be simple and easy to learn will be possible in college, and will think it can be a pulse not to procrastinate at the next school.

Schommer (1990) argued that people's beliefs about how much time they take to achieve a goal, complete or finish a task are significant to epistemological beliefs about the nature to obtain it. The epistemic dimension of "fast learning" includes one belief about learning which can occur through a gradual process or occur quickly. On dimension of fast learning, students have a perspective which believes that to understand something is very dependent on the first time learning it and if a material is tried to be studied seriously, it will experience a kind of confusion (Jehng et.al., 1993; Schommer, 1990).

This study also shows that self-regulation in learning also has a significant negative effect on academic procrastination. It means that the higher the student's self-regulation, the lower the academic procrastination. That the way students regulate academic behavior has a significant effect on the extent to which students procrastinate. This study results indicate that the high procrastinators exhibit a lack of self-regulation in the three regulation areas: cognition, motivation, and behavior proposed in Pintrich's (2000) self-regulation model. This is consistent with the results reported in several recent studies that low self-efficacy for self-regulation is the strongest predictor of procrastination tendencies (Klassen, Krawchuk, Lynch, & Rajani, 2008; Klassen, et.al, 2010).

Students have not been able to avoid procrastination in achieving targets due to poor time management, inability to set priorities, too many tasks to be completed in a certain time, anxiety about tasks which make a lot of time spend thinking about what to worry about instead of doing them, difficult concentration, not knowing what is needed, feeling too pressured by tasks, thinking too much about failure or not being able to meet the expected standards, and fear of success.

## CONCLUSIONS

Academic procrastination is a behavior which is detrimental ones. Some disadvantages of academic procrastination are that it makes the following tasks pile up, although tomorrow there are still other tasks to be done. The more there are piles of tasks, the more people are lazy to do. When going to do the task, it makes them feel like they are running out of time. In addition, the given tasks are not complete yet make other people's assessments not good. It could even reduce confidence in the ability of the procrastinator.

Nevertheless, this study results indicate that belief about knowledge has a significant positive effect on self-regulation in learning and has a negative effect on academic procrastination, belief about learning has a significant positive effect on self-regulation in learning and has a significant effect on academic procrastination, and self-regulation in learning also has a significant negative effect on academic procrastination. However, this study has several limitations such as the research theme is approached only with a quantitative approach model.

It is recommended to further deepen the findings in the field through experiments, qualitative methods, or mixing methods which combine quantitative and qualitative approaches integrately. It is expected to provide more information about the studied themes. In addition, the sample of this research is only limited to certain study programs where climate and institutional management can have an effect. Therefore, it is highly recommended to expand the population and sample in order to get more comprehensive illustrations and factors which influence academic procrastination.

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