Original Research Paper

Relationship between Self-Regulated Learning and Academic Procrastination

Yap Li San, Samsilah Bte Roslan and Fatemeh Sabouripour

Faculty of Educational Studies, University Putra Malaysia, Serdang, 43400, Malaysia

Abstract: This study aims to investigate the relationship between the components of motivation in self-regulated learning as well as the components of learning strategies in self-regulated learning and academic procrastination. Academic procrastination creates problems for undergraduates such as stress and poor academic performance which should be investigated as a serious issue in the educational context. The participants in this study included 100 undergraduates in Universiti Putra Malaysia. The result of a Pearson correlation analysis revealed intrinsic goal orientation, task values, rehearsal, elaboration, meta cognitive self-regulation, resource management strategies, organisation and critical thinking as self-regulated learning components that have significant negative correlations with academic procrastination. In addition, anxiety was found to have a significant positive correlation with academic procrastination. Extrinsic goal orientation and control of learning beliefs were not significantly correlated to academic procrastination. The findings suggested that in order to cope with academic procrastination, an academic procrastinator might consider being a self-regulated learner as most of the components of self-regulated learning indicated a strong relationship with academic procrastination that can be encouraged in order to improve those lacking components of self-regulated learning. Also, to help undergraduates to improve on the components of self-regulated learning that they lack, strategies can be planned by educators to deal with academic procrastination and to increase academic performance.

Keywords: Self-Regulated Learning, Motivation, Learning Strategies, Academic Procrastination

Introduction

Many undergraduates encounter procrastination as a problem in their learning process. As stated by Solomon and Rothblum (1984) students reported procrastination as a problem when they need to write a paper or do weekly reading. Steel *et al*. (2001) believed that "procrastination is an active mental process of diverting oneself from doing high priority things in the delusion that tomorrow will be better because you will know more, you will have more time or the sun will shine differently". For academic procrastination, Solomon and Rothblum (1984) mentioned that "academic procrastination can be seen as delays in tasks particularly related to working, studying, or completing homework and class assignments that produces a feeling of discomfort". Undergraduates could be in a stressful situation when such a "delay"

takes place. Also they could experience text anxiety as they are not ready to, for example, sit for an exam or finish the assigned academic tasks to meet a deadline. Academic procrastination also is apparently seen when an examination is approaching. Undergraduates perhaps do not systematically prepare for an examination by doing revision every day, but instead cram everything into their brain on the day before the examination. This occurrence might be related to the lack of self-regulated learning skills on the part of the undergraduates (Wolters, 2003).

As stated by Zimmerman (1989), we can define undergraduates as self-regulated to the extent that their goals are achieved cognitively, motivationally and behaviourally by actively participating in their own learning stages and processes. Pintrich and De Groot (1990) stated three components involved in self-regulated learning, including the metacognitive

strategies of students (for planning, monitoring and modifying their cognition), the management and control of their effort in classroom academic tasks and actual cognitive strategies that students use to learn, remember and understand the material.

Yaakub (2000) showed that Malaysian university students do tend to procrastinate to varying degrees. Academic procrastination is a bad habit such that there is a need to identify students who are involved in this practice and to cope with it (Yaakub, 2000). Burka and Yuen (2008) stated procrastination is a serious problem and it creates difficulties for undergraduates such as stress, poor academic performance and can even cause them to withdraw from their studies. Further, Beswick *et al.* (1988) indicated that procrastination creates problems for studies, careers and the personal life of students as it is a destructive habit. A variety of difficulties such as test anxiety, exams, overlooking dates and deadlines to submit assignments, weak semester results, depression affect low confidence and social anxiety are associated with academic procrastination (Beswick *et al.*, 1988; Lay, 1986). There are studies conducted on the relationship between different aspects of self-regulated learning and academic procrastination. This research has yielded significant results such as intrinsic motivation (Senécal *et al.*, 1995), self-efficacy (Haycock *et al.*, 1998; Wolters, 2003), task value (Ackerman and Gross, 2005), self-efficacy for self-regulation (Klassen *et al.*, 2008), cognitive and meta cognitive strategy usage (Howell *et al.*, 2006) and disorganisation (Howell *et al.*,

2006). These aspects are part of self-regulated learning which has been studied separately and differently from time to time.

In addition, according to Steel (2007), further confirmation would be desirable to strengthen the Temporal Motivation Theory (TMT) proposed by him to describe procrastination. All these studies indicate that self-regulated learning might be related to academic procrastination. However, self-regulated learning has not been studied as a whole as related to academic procrastination. Hence, this subject ought to be studied to examine how self-regulated learning is related to academic procrastination. In order to have clear picture of the relationship between self-regulated learning and academic procrastination, all components of self-regulated learning are included in this study. The aim of this study is to determine the relationship between the motivation components in self-regulated learning (intrinsic goal orientation, extrinsic goal orientation, task value, control of learning beliefs, self-efficacy for learning and performance and test anxiety) and academic procrastination. Furthermore, this study aims to investigate the relationship between learning strategy components in self-regulated learning (rehearsal, elaboration, organisation, critical thinking, metacognitive self-regulation and resource management strategies) and academic procrastination. The objectives of the study are designed based on a conceptual framework (Fig. 1) to achieve the research goals.
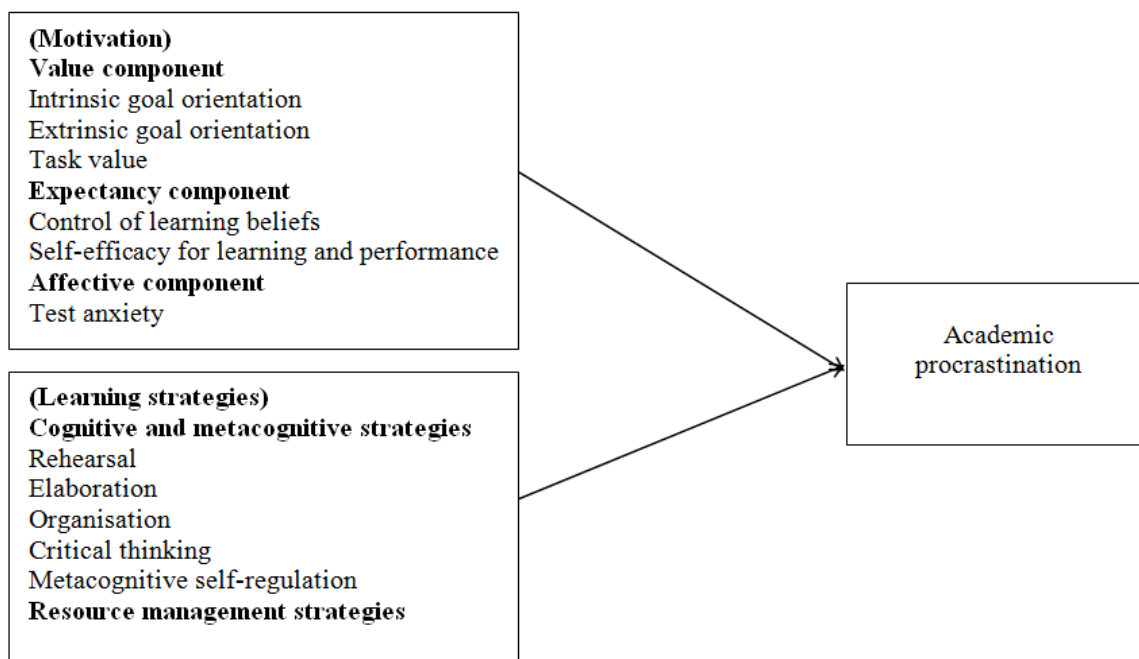

Fig. 1. Conceptual framework of the study

Literature Review

Temporal Motivation Theory (TMT) is an interactive motivational concept which explains procrastination in a detailed and comprehensive way (Steel, 2007). Besides stressing time as a critical and motivational factor, TMT also aids in understanding the effects of time and deadlines on dynamic attention allocation. TMT suggests that the motivation of a person to undertake a task can be derived as follows to examine the pervasive phenomenon of procrastination:

$$Motivation = \frac{Expectancy \times Values}{1 + Impulsiveness \times Delay}$$

Motivation is a desire for certain outcomes. Expectancy or self-efficacy refers to the chance of success. Value refers to the reward received from the outcome. Impulsiveness refers to the sensitivity of a person to delay and Delay refers to the time to realisation. As an example for TMT, suppose a one month period is given to a student for a final exam. The student has two options, namely studying or socialising. Even though the student enjoys socialising, he/she needs to perform well in the exam. The reward of studying is not immediate. Therefore, at the beginning of the given period the student is less motivated to study and prefers to partake in socialising. However, as time goes by there will be less time for exam preparation and thus, motivation for studying will outweigh the motivation for socialisation. The question is, when will this kick in? When students choose to go with their motivation to socialise over their motivation to study, they are actually putting off studying until it might be too late. In other words, procrastinating.

Academic procrastination is not just a poor skill in time management skills or trait laziness as it is a motivational problem as suggested by (Senécal *et al*., 1995). A study by Taura *et al*. (2015) shows that 36.9% pre-service teacher trainees in Nigeria have high level of active procrastination, while 62% have moderate level (Taura *et al*., 2015). Senécal *et al*. (1995) stated that low levels of procrastination are guaranteed only with intrinsic motivation. If a student is not truly interested in the study materials, he/she tends to procrastinate regardless of the importance of the study in his/her future life. Less procrastination is recorded by individuals who have a high level of efficacy expectations (Haycock *et al*., 1998). Academic procrastination is suggested to have relationship with self-efficacy and work avoidance goal orientation of students (Wolters, 2003). In fact, faith of students in their capability to accomplish an academic task and their tendency to ignore complicated tasks or put more effort when dealing with school tasks are related to academic procrastination. Wolters (2003) mentioned the expectations of students of what is necessary to accomplish a task successfully and whether or not they possess the skills to achieve expected success is associated with academic procrastination rather than the benefits or value that students might receive after performing such a task successfully. This suggests procrastination is related to task averseness. The finding of Wolters (2003) provide mixed support for the expectation that students who procrastinate could express a less adaptive pattern of cognitive and metacognitive strategy use.

Howell *et al*. (2006) showed that academic procrastination was associated with lower cognitive strategies (students' use of rehearsal, elaboration and organisation strategies) and metacognitive strategies (students' use of planning, monitoring and regulating strategies) in terms of usage and also disorganisation. Howell *et al*. (2006) also showed that usage of cognitive and meta-cognitive strategies and disorganisation significantly predicts academic procrastination. The study by Klassen *et al*. (2008) of the relationship between academic procrastination, metacognitive self-regulation (involving the three general processes of planning, monitoring and regulating), academic self-efficacy, self-esteem and self-efficacy for self-regulation (the confidence that a person has to select and implement self-regulation strategies). The same result was obtained in a study by Tan *et al*. (2008) which indicated that self-efficacy for self-regulated learning was significantly and negatively related to procrastination. It has been stated that students with high self-efficacy for self-regulated learning are involved in low levels of academic procrastination and had have an expectation of doing well academically. These studies show that self-regulated learning components, both motivational and learning dimensions, might explain academic procrastination. It is important to explore and analyze all the components of self-regulated learning in terms of their relationship with academic procrastination to see if this assumption is substantiated.

Methods

Participants and Sampling

Using Cohen's power analysis for sample size to determine the sample size for a one tailed test correlation analysis with a significance level of 0.025, power of 0.80 and medium effect size ($r = 0.30$) a minimum of 84 participants are required (Cohen, 1977). The participants were selected using cluster random sampling. There are five groups of undergraduate students registered in the educational psychology course in the first semester of 2009/2010 at the faculty of educational studies of university Putra Malaysia totaling 228. Three groups

were then selected at random. Subsequently, all students in the three groups participated in the study. The total sample included of 100 undergraduates and this is more than the minimum sample size of 84 computed using Cohen's formula. Students in the three groups selected were from the programmes of Bachelor of Education (Home Science), Bachelor of Education (Teaching Malay as the First Language), Bachelor of Education (Teaching English as a Second Language) and Bachelor of Education (Agricultural Science). The consent of the participants was sought before they participated in this study. The majority of the participants were female 84 (84.0%) and the rest male 16 (16.0%).

Research Instruments

The motivation scale in the motivated strategies for learning (MSLQ) by Pintrich (1991) was utilised to assess the motivational orientations of the undergraduates. MSLQ consists of 31 items which contain three components, namely, a value component, an expectancy component and an affective component. The value component consists of intrinsic goal orientation, extrinsic goal orientation and task value. The expectancy component consists of control of learning beliefs and self-efficacy for learning and performance. Lastly, the affective component consists of test anxiety. Also, all questions were rated on a 5-point Likert-type (1 = not all true for me, 5 = very true of me).

A learning strategy scale to measure the Motivated Strategies for Learning (MSLQ) by Pintrich (1991) with 50 items was conducted to assess the use of different cognitive and metacognitive strategies by undergraduates and their management of different resources. MSLQ is made up of cognitive and metacognitive strategies and resource management strategies. Cognitive and metacognitive strategies contain rehearsal, elaboration, organisation, critical thinking and metacognitive self-regulation. For metacognitive self-regulation, control and self-regulation aspects of metacognition are focused on MSLQ. The three general processes that make up metacognitive self-regulatory activities are planning, monitoring and regulation. Resource management strategies consist of time and study environment, effort regulation and peer learning and help seeking. The procrastination scale by Tuckman (1991) with 16 points was employed to assess the undergraduates' procrastination with regard to academic tasks. Participants were required to rate each question with a 4-point Likert scale (1 = that's not me for sure, 2 = that's not my tendency, 3 = that's my tendency, 4 = that's me for sure).

Design of Research

The research applied correlational design to determine the relationship between variables. Frequencies, percentages, means and standard deviations were parts of the descriptive statistic in this study. For the inferential statistics, the Pearson's product moment correlation was employed to ascertain the relationship between the variables. All analysis was performed using Statistical Package for the Social Sciences 17.0 (SPSS).

Results

As a result of the descriptive analyses, the cumulative mean and standard deviation of all the variables are reported in Table 1. The undergraduates rated their extrinsic goal orientation the highest (M = 5.85, SD = 0.84), followed by task value (M = 5.72, SD = 0.78) and control of learning beliefs and organisation (M = 5.47, 5.31, SD = 0.89, 0.89), academic procrastination was the lowest mean (M = 3.11, SD = 0.54).

According to Table 1, skewness is less than ±2 which shows a normal distribution of data (Lomax and Schumacker, 2012). As specified by the correlation test result, there was no violation of normality, homoscedasticity and linearity assumptions and overall the study meets the assumptions.

The Pearson correlation was utilized to investigate the relationship between the motivation components in self-regulated learning (intrinsic goal orientation, extrinsic goal orientation, task value, control of learning beliefs, self-efficacy for learning and performance, test anxiety) and academic procrastination. As detailed in Table 2, the results demonstrate a significant negative relationship between intrinsic goal orientation and academic procrastination ($r = -0.23$, $p<0.05$). Task value and self-efficacy for learning and performance are also significantly and negatively correlated to academic procrastination ($r = -0.29$, $p<0.01$, $r = -0.28$, $p<0.01$). Conversely, test anxiety was significantly positively correlated to academic procrastination $r = 0.22$, $p<0.05$. Also, the result indicates that there is no significant relationship between extrinsic goal orientation and control of learning beliefs with academic procrastination ($r = -0.07$, $p = 0.224$ n.s, $r = -0.08$, $p = 0.209$ n.s). In addition, the result of the Cronbach Alpha values from each component is presented in the following Table 2 and 3.

The Pearson correlation was also employed to examine the relationship between the learning strategy components in self-regulated learning (rehearsal, elaboration, organization, critical thinking, metacognitive self-regulation, resource management strategies) and academic procrastination. As reported Table 3, rehearsal, elaboration and metacognitive self-regulation are significantly and negatively correlated to academic procrastination ($r = -0.32$, $p<0.01$, $r = -0.39$, $p<0.01$, $r = -0.31$, $p<0.01$). Moreover, there is a significant and negative correlation between resource management strategies, organisation and critical thinking with academic procrastination ($r = -0.45$, $p<0.01$, $r = -0.27$, $p<0.01$, $r = -0.24$, $p<0.01$).

Table 1. Descriptive statistic and normality

Variables	Mean	SD	Skewness
Motivation scales			
Intrinsic goal orientation	5.25	0.78	-0.87
Extrinsic goal orientation	5.85	0.84	-0.46
Task value	5.72	0.78	-0.42
Control of learning beliefs	5.47	0.89	-0.16
Self-efficacy for learning and performance	5.28	0.65	-0.26
Test anxiety	4.43	1.02	-0.63
Learning strategy scales			
Rehearsal	5.27	0.88	-0.67
Elaboration	5.28	0.73	-0.15
Organisation	5.31	0.89	-0.67
Critical thinking	5.11	0.73	-0.69
Metacognitive self-regulation	4.58	0.67	-0.52
Resource management strategies	4.76	0.48	-0.06
Procrastination scale	3.11	0.54	-0.10

Table 2. Results of Pearson correlation for the relationship between the motivation components in self-regulated learning and academic procrastination

Scale	1	2	3	4	5	6	7
1. Academic procrastination	0.70						
2. Intrinsic goal orientation	-0.23*	0.74					
3. Extrinsic goal orientation	-0.07	0.47**	0.80				
4. Task value	-0.29**	0.65**	0.49**	0.84			
5. Control of learning beliefs	-0.08	0.44**	0.58**	0.56**	0.64		
6. Self-efficacy for learning and performance	-0.28**	0.60**	0.42**	0.64**	0.46**	0.88	
7. Test anxiety	0.22*	0.30**	0.37**	0.07	0.33**	0.12	0.55

Note: *$p<0.05$ (1-tailed) ** $p<0.01$ (1-tailed), diagonal line shows Cronbach Alpha values

Table 3. Result of Pearson correlation for relationship between learning strategy components in self-regulated learning and academic procrastination

Scale	1	2	3	4	5	6	7
1. Academic procrastination	0.70						
2. Rehearsal	-0.32**	0.88					
3. Elaboration	-0.39**	0.77**	0.89				
4. Organisation	-0.27**	0.77**	0.73**	0.78			
5. Critical thinking	-0.24**	0.73**	0.75**	0.68**	0.78		
6. Metacognitive self-regulation	-0.31**	0.71**	0.75**	0.71**	0.76**	0.84	
7. Resource management strategies	-0.45**	0.68**	0.63**	0.54**	0.63**	0.66**	0.60

Note:*$p<0.01$ (1-tailed), diagonal line shows Cronbach Alpha values

Discussion

This study was conducted to determine the relationship between self-regulated learning and academic procrastination among undergraduates. The first research question is: Are the motivation components in self-regulated regulated learning (intrinsic goal orientation, extrinsic goal orientation, task value, control of learning beliefs, self-efficacy for learning and performance and test anxiety) significantly related to academic procrastination? The results illustrate that there are significant negative relationships between task value, self-efficacy for learning and performance, intrinsic goal orientation and academic procrastination. Moreover, the results indicate a significant positive relationship between test anxiety and academic procrastination.

However, there is no relationship between extrinsic goal orientation and academic procrastination. This finding is in line with the results of previous studies. High academic procrastination is related to low task pleasantness or task value (Ackerman and Gross, 2005; Milgram *et al.*, 1988; Solomon and Rothblum, 1984). For task value, undergraduates tend to procrastinate less in academic tasks in which they are interested, or tasks that are important and useful to them. This is because it is likely that people will finish tasks which they find interesting without any delay. Also, high academic procrastination is related to low efficacy expectations or low self-efficacy for learning and performance (Haycock *et al.*, 1998). For self-efficacy for learning and performance, undergraduate procrastination is less when they possess a strong belief about their own capability to

complete a task and they have confidence in their own skills to accomplish that task, as they do not perceive any difficulty in starting a task. Hence the tendency to delay is eliminated.

High academic procrastination is related to low intrinsic motivation or low intrinsic goal orientation (Senécal *et al.*, 1995). For intrinsic goal orientation, undergraduates procrastinate less when they perceive themselves to undertake a task for reasons such as challenge, curiosity and mastery as the urge to master the task or to seek for an answer. These reasons tend to eliminate the tendency to delay. High academic procrastination is also related to high test anxiety (Beswick *et al.*, 1988; Lay, 1986). Under a time constraint situation, individuals who procrastinate at academic tasks tend to experience test anxiety. Wolters (2003) stated that procrastination has nothing to do with the benefits or value that might accrue after completing a task (extrinsic goal orientation) as procrastination is associated with the students' expectations of what is required to succeed in a task and whether they own the required skill to accomplish the success.

There is no relationship between control of learning (concerns the beliefs that outcomes are contingent on a person's own effort, in contrast to external factors) and academic procrastination suggested that academic procrastination has nothing to do with control of learning. Control of learning assesses the effort in mastery of knowledge such as understanding of a lesson which is not related to academic procrastination. By putting effort into studies, no matter whether a person is involved in academic procrastination or not, he/she is able to understand a lesson.

The second research question is: Are the learning strategies components in self-regulated learning (rehearsal, elaboration, organisation, critical thinking, metacognitive self-regulation and resource management strategies) significantly related to academic procrastination? The findings reveal that there is a significant negative relationship between resource management strategies, elaboration, rehearsal metacognitive self-regulation, organisation and critical thinking with academic procrastination. This finding is consistent with previous research by Howell *et al.* (2006) which stated that high academic procrastination was related to lower cognitive and metacognitive strategies used (rehearsal, elaboration, organisation, critical thinking and metacognitive self-regulation). Compared to undergraduates who are not involved in academic procrastination, undergraduates who are indeed involved in academic procrastination will not spend much time to use study skills such as rehearsal, elaboration, organisation, critical thinking and metacognitive self-regulation strategies. This is because they do not have enough time to use these skills while rushing to finish

their academic tasks or revising for an examination. Moreover, the resource management strategies in this study are time and study environment management (includes effectively utilize study time and set realistic target and the schedule within which the student does his/her class work), effort regulation (includes the ability of the students to manage their effort and focus their attention despite distractions or less interested tasks), peer learning and help seeking. Although resource management strategies do not involve the aspect of self-efficacy, this finding is somewhat consistent with previous research by Klassen *et al.* (2008). Klassen *et al.* (2008) stated that self-efficacy for self-regulation shares a strong inverse relationship with academic procrastination as this self-efficacy involves structuring the learning environment to plan and organize tasks, to use cognitive strategies, to obtain the required information and to persevere in the face of distractions. Undergraduates who are involved in academic procrastination start doing their assigned academic tasks at the last minute. This indicates academic procrastination. At the beginning of the semester, an academic procrastinator puts off the assigned academic tasks by not thinking about or looking into the tasks. This is because they think there is plenty of time before the deadline so they spend their time on activities that they prefer. Towards the end of the semester, academic procrastinators have to rush to finish their assigned academic tasks as the deadline is near. This reflects academic procrastination as they are not using resource management strategies.

Conclusion

Based on the results, intrinsic goal orientation, task values, rehearsal, elaboration, metacognitive self-regulation, resource management strategies, organisation and critical thinking as self-regulated learning components have significant negative correlations with academic procrastination. On the other hand, anxiety was found to have a significant positive correlation with academic procrastination.

Theoretically, the findings of this study are in line with the Temporal Motivation Theory (TMT) that provides an understanding of the relationship between the components of motivation in self-regulated learning and the components of learning strategies in self-regulated learning with academic procrastination. This is different from previous studies. Practically, the findings of this study indicate that most of the components of self-regulated learning are related to academic procrastination. Based on this result, being a self-regulated learner may reduce academic procrastination. In order to deal with the problem, a person susceptible to academic procrastination might consider improving those components of self-regulated learning that have

shown a significant relationship with academic procrastination. Educators may consider helping undergraduates who are facing the problem of academic procrastination by improving the components of self-regulated learning that the students lack that are found to be related to academic procrastination. This is so they can cope with academic procrastination by taking a course in self-regulated learning in order to learn, practice and then apply the learned learning strategies they have studied to their various courses.

Future Study

This study has only looked into the relationship between self-regulated learning and academic procrastination but not into the cause and effect. It is recommended that a future study should be focused on experimental research to investigate whether or not a high level of academic procrastination is caused by low levels of self- regulated learning. Also, this study is limited in sample size and the result is not suitable to generalise to other settings as it was undertaken only in the Faculty of Educational Studies, Universiti Putra Malaysia. For a future study, a larger sample size can produce more precise results, although the present study represented significant findings.

Funding Information

The authors have no support or funding to report.

Author's Contributions

This study is a result of the full collaboration of all the authors.

Yap Li San: As the main author, she performed the experiments, analyzed the data and gave the conclusions, discussed the results, implications and commented on the manuscript at all stages.

Samsilah Bte Roslan: As the advisor, she designed the research plan and organized the study.

Fatemeh Sabouripour: The author contributed in development of the conceptual framework and contributed in writing of the manuscript.

Ethics

This article is original and contains unpublished material. The corresponding author confirms that no ethical issues involved.

Reference

Ackerman, D.S. and B.L. Gross, 2005. My instructor made me do it: Task characteristics of procrastination. J. Market. Educ., 27: 5-13. DOI: 10.1177/0273475304273842

Beswick, G., Rothblum, E.D. and L. Mann, 1988. Psychological antecedents of student procrastination. Aus. Psychol., 23: 207-217. DOI: 10.1080/00050068808255605

Burka, J.B. and L.M. Yuen, 2008. Procrastination: Why you do it, what to do about it now. 1st Edn., Da Capo Press, Cambridge, ISBN-10: 0738211702, pp: 322.

Cohen, J., 1977. Statistical Power Analysis for the Behavioral Sciences. 1st Edn., Academic Press, New York, ISBN-10: 0121790606, pp: 474.

Haycock, L.A., P. McCarthy and C.L. Skay, 1998. Procrastination in college students: The role of self-efficacy and anxiety. J. Counsel. Dev., 76: 317-324. DOI: 10.1002/j.1556-6676.1998.tb02548.x

Howell, A.J., D.C. Watson, R.A. Powell and K. Buro, 2006. Academic procrastination: The pattern and correlates of behavioural postponement. Person. Individual Differences, 40: 1519-1530. DOI: 10.1016/j.paid.2005.11.023

Klassen, R.M., L.L. Krawchuk and S. Rajani, 2008. Academic procrastination of undergraduates: Low self-efficacy to self-regulate predicts higher levels of procrastination. Contemporary Educ. Psychol., 33: 915-931. DOI: 10.1016/j.cedpsych.2007.07.001

Lay, C.H., 1986. At last, my research article on procrastination. J. Res. Person., 20: 474-495. DOI: 10.1016/0092-6566(86)90127-3

Lomax, R.G. and R.E. Schumacker, 2012. A Beginner's Guide to Structural Equation Modeling. 3rd Edn., Routledge, ISBN-10: 1136968555, pp: 530.

Milgram, N.A., B. Sroloff and M. Rosenbaum, 1988. The procrastination of everyday life. J. Res. Person., 22: 197-212. DOI: 10.1016/0092-6566(88)90015-3

Pintrich, P.R., 1991. A manual for the use of the Motivated Strategies for Learning Questionnaire (MSLQ). ERIC.

Pintrich, P.R. and E.V. De Groot, 1990. Motivational and self-regulated learning components of classroom academic performance. J. Educ. Psychol., 82: 33-40. DOI: 10.1037/0022-0663.82.1.33

Senécal, C., R. Koestner and R.J. Vallerand, 1995. Self-regulation and academic procrastination. J. Soc. Psychol., 135: 607-619. DOI: 10.1080/00224545.1995.9712234

Solomon, L.J. and E.D. Rothblum, 1984. Academic procrastination: Frequency and cognitive-behavioral correlates. J. Counsel. Psychol., 31: 503-509. DOI: 10.1037/0022-0167.31.4.503

Steel, P., 2007. The nature of procrastination: A meta-analytic and theoretical review of quintessential self-regulatory failure. Psychol. Bulletin, 133: 65-94. DOI: 10.1037/0033-2909.133.1.65

Steel, P., T. Brothen and C. Wambach, 2001. Procrastination and personality, performance and mood. Person. Individual Diffe., 30: 95-106. DOI: 10.1016/S0191-8869(00)00013-1

Tan, C.X., R.P. Ang, R.M. Klassen, L.S. Yeo and I.Y. Wong *et al*., 2008. Correlates of academic procrastination and students' grade goals. Curr. Psychol., 27: 135-144. DOI: 10.1007/s12144-008-9028-8

Taura, A.A., M.C. Abdullah, S. Roslan and Z. Omar, 2015. Relationship between self-efficacy, task value, self-regulation strategies and active procrastination among pre-service teachers in colleges of education. Int. J. Psychol. Counsell., 7: 11-17.

Tuckman, B.W., 1991. The development and concurrent validity of the procrastination scale. Educ. Psychol. Measure., 51: 473-480. DOI: 10.1177/0013164491512022

Wolters, C.A., 2003. Understanding procrastination from a self-regulated learning perspective. J. Educ. Psychol., 95: 179-187. DOI: 10.1037/0022-0663.95.1.179

Yaakub, N., 2000. Procrastination among students in institutes of higher learning: Challenges for k-economy. Ph.D. Thesis, Universiti Utara Malaysia.

Zimmerman, B.J., 1989. A social cognitive view of self-regulated academic learning. J. Educ. Psychol., 81: 329-339. DOI: 10.1037/0022-0663.81.3.329