Proceedings of ICEIPI 2026 Symposium: Inclusive Education, Cultural Transformation, and the Ethical Dimensions of Learning
DOI: 10.54254/2753-7048/2026.LD34109

Academic Stress and Procrastination Among College Students: The Role of Self-deceptive Regulation

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Abstract. In undergraduate populations, academic procrastination (AP) is a common behavior problem which not only affects academic performance but also has a negatively associated with students' mental health. Additionally, exploring its influencing factors and underlying mechanism is of great significance. In this research, 401 undergraduate students were selected as participants and data were collected through a questionnaire survey. SPSS 27.0 and PROCESS 4.1 were used to examine the effect of academic stress(AS) on AP and the moderating role of self-deception(SD). The results showed that AS was significantly and positively correlated with AP. However, the moderating effect of SD was not significant. These findings illustrate that AS is an important factor contributing to AP among college students. The universities should pay greater attention to the management of AS when intervening in students' academic procrastination. In the future, research may further explore and include variables that are more closely related to learning behavior in order to reveal the formation mechanism of AP among universities' students more deeply.

Keywords: Academic Stress, Academic Procrastination, Self-deception, Undergraduate

1. Introduction

Nowadays, with the increasing competitiveness of higher education, college students generally face considerable academic stress (AS). Moreover, the proliferation of digital information technology has led many college students to rely heavily on social media browsing as a primary means of stress relief. However, this form of instant entertainment often grabs attention strongly. As a result, learners find it hard to avoid turning to social media during time meant for academic tasks. In this setting, academic procrastination (AP) has become a common issue in learning behavior. The negative effects of AP appear not only in academic performance, but also in learning adjustment and mental health. Therefore, looking at how AS leads to AP is of practical importance. So is understanding why students differ from each other when facing the same level of stress.

Previous studies have shown that AS is closely linked to AP. Under similar stress levels, individuals may show different degrees of procrastination. This suggests that important individual difference mechanisms exist. As a self-protective cognitive tendency, self-deception (SD) may affect how individuals judge academic tasks. This, in turn, may change how AS influences AP. Although past research has looked into the relationship between AS and AP, and some studies have explored

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how SD relates to learning performance, few empirical studies have included SD as a moderating variable in the model between AS and AP.

The purpose of this study was to look into the link between AS and AP. It also aimed to examine the role of SD. Using a questionnaire survey, this study took undergraduates as the participants. It explored the relationship between AS and AP. In addition, it tested whether SD moderated this relationship.

2. Literature review

2.1. The relationship between academic stress and academic procrastination

As per the explanation provided by AP, it is the feeling of putting off the commencement of activities despite the fact that the individual understands that the consequences might be negative. It is a sign of poor self-regulation [1]. The other way of defining the behavior is the habit of delaying work till some future date although the worker is aware of the deadline and the importance of this work. This can also go by the name of purposeful procrastination [2]. One feature of procrastinating is its ability to elect it. This is not because of weakness but rather a choice caused by too much difficulty, external pressure, or both. A common characteristic of all the definitions is that AP does not depend on the quantity of effort expended to perform a task. Instead, it is based on the deliberate choice of people not to do something knowing very well that the right thing to do is to execute that particular task.

AS is also one of the most important factors to determine AP. The phrase explains the psychological stress that occurs when students view their academic tasks as being beyond their limit of coping. This process is frequently accompanied by negative feelings such as tension, anxiety and sense of loss of control [2]. The research done with students of Chinese colleges has shown that there is a strong positive relationship between AS and AP [1, 3]. Moreover, the longitudinal analysis suggests that AS is a good early marker of AP. The logical explanation of the differences in the final procrastination behavior among the university students could be given by it [4].

2.2. The role of self-deception theory in learning situations

When there are similar levels of stress among different individuals they exhibit different types of procrastinating patterns. This provides a useful clue about the psychological processes involved in SD. The theory of SD has been defined as the defensive cognitive disposition. By this disposition, individuals safeguard their sense of self-conception against intimidating outside information. There are three prominent displays of SD, which are overestimating ones own abilities, neglecting ones own drawbacks, and holding unrealistic positive views of oneself [5, 6]. This tendency can be observed during studying, when students become excessively optimistic about their capabilities in regards to academic activities. It might make them miscalculate the amount of time and effort necessary to complete tasks. Simultaneously, studies have shown that SD as a form of self-protection cognitive tendency could be positively related to performance-avoidance motivation in educational contexts. In other words, most vulnerable to SD are people who are inclined to eliminate failure rather than attempting to attain mastery and development. This kind of motivation opposes real learning achievement [7]. Therefore, it can be used as an influence on the manner in which people control themselves and join the learning process of the task. Based on the above findings, SD warrants examination as a moderating variable in the present study. It may not directly lead to procrastination, but it may change the strength of the effect of AS on AP [8].

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2.3. Theoretical model and research hypotheses

Existing studies have revealed that AS is positively linked to AP, and prior research has explained how stress affects procrastination from the perspectives of emotion and coping strategies [9]. However, few empirical studies have treated SD as a moderator in the relationship between AS and AP. Therefore, the present study proposes and tests a model among college students to further examine whether SD affects the strength of the effect of AS on AP, and to better explain the individual mechanism through which stress leads to procrastination. The hypotheses of this study are as follows: (1) the greater the AS, the more serious the AP; (2) SD moderates the relationship between AS and AP. Namely, the higher the level of SD, the stronger the positive effect of AS on AP. When the level of SD is lower, this positive effect is relatively weaker.

3. Method

3.1. Research participants

A total of 401 undergraduate students took part in this study, comprising 197 males (49.1%) and 204 females (50.9%), spanning all four academic years from freshman to senior. Information was collected through an anonymous online questionnaire. All participants took part voluntarily, and only valid questionnaires were included in the formal analysis. Table 1 summarizes the demographic characteristics of the study samples.

Table 1. Demographic characteristics of the study sample

Category	Subgroup	n	%
Gender	Male	197	49.1%
	Female	204	50.9%
Grade	Freshman	51	12.7%
	Sophomore	79	19.7%
	Junior	157	39.2%
	Senior	114	28.4%
Ranking	Top 10%	66	16.5%
	Top 10% -30%	114	28.4%
	Top 30%-50%	99	24.7%
	Top 50%-70%	61	15.2%
	Last 30%	61	15.2%

3.2. Measures

3.2.1. Academic stress

The Stress Scale for College Students (SSCS), developed by Li Hong and Mei Jinrong in 2002, was used in this study [10]. The scale consists of 30 items and includes three dimensions: 16 items on personal annoyances, 10 items on learning annoyances (e.g., "poor performance in some subjects"), and 4 items on negative life events. As this study focuses on AS among college students, only the learning annoyance subscale was selected to assess AS. The scale uses a 4-point Likert format,

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ranging from 0 = no experience or no stress despite the experience to 3 = great stress. Higher scores indicate higher levels of perceived AS. The Cronbach's α coefficient of the total scale was 0.91, and the 6-month test–retest reliability was 0.78. The internal consistency coefficient of the learning annoyance subscale was 0.88.

3.2.2. Academic procrastination

AP was measured using the first part of the Procrastination Assessment Scale–Students (PASS) developed by Solomon and Rothblum in 1984 [11]. This part contains 18 items across six academic domains: writing term papers, studying for examinations, keeping up with weekly reading assignments, performing administrative tasks, attending academic meetings, and completing academic tasks in general. Each dimension includes three items that assess the degree of procrastination, the extent to which procrastination causes problems, and the willingness to reduce procrastination. The scale uses a 5-point Likert format. For the degree of procrastination, 1 = never procrastinate and 5 = always procrastinate. For problems caused by procrastination, 1 = never causes problems and 5 = always causes problems. For willingness to reduce procrastination, 1 = never considered reducing it and 5 = strongly considered reducing it. Higher scores indicate a higher level of academic procrastination. Subsequent studies have shown that this scale has good reliability. For example, Mortazavi et al. reported a Cronbach's α of 0.781 [12].

3.2.3. Self-deception

SD was assessed using the Self-Deceptive Enhancement (SDE) subscale of the Balanced Inventory of Desirable Responding (BIDR), developed by Paulhus in 1991 [13]. This subscale consists of 20 items (e.g., "My first impressions are often correct") and represents a single dimension. The scale uses a 7-point Likert format, ranging from 1 = very inconsistent to 7 = very consistent, with some items reverse scored. Higher scores indicate higher levels of SD. The Cronbach's α coefficient of the scale ranges from 0.68 to 0.80, indicating acceptable internal consistency.

3.2.4. Experimental procedure

The researchers distributed the questionnaire link through campus communities, class groups, and participant recruitment groups to recruit eligible college students. Before participation, the researchers explained the purpose of the study, the requirements for completing the questionnaire, and the principles of confidentiality, and ensured that all participants took part voluntarily and were free to withdraw at any stage. After reading the informed consent statement, participants who agreed to join the study completed the questionnaire anonymously. They first provided personal information, including gender, age, and grade point ranking. They then completed the Academic Stress Scale, the Academic Procrastination Scale, and the Self-Deception Scale. Following data collection, questionnaires exhibiting patterned responses, abnormal response times, incomplete answers, or failed attention checks were excluded, yielding the final valid sample.

4. Result

4.1. Reliability analysis

First, the reliability of the three scales was checked. These were the Academic Stress Scale, the Academic Procrastination Scale, and the Self-Deception Scale. The results indicated a Cronbach's α

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of 0.907 for the Academic Stress Scale, 0.945 for the Academic Procrastination Scale, and 0.810 for the Self-Deception Scale. These values suggest that all three scales had good internal consistency. Thus, the measures used in this study showed sound reliability and were fit for further statistical analysis.

4.2. Correlation analysis

To investigate the relationships among AS, AP, and SD, Pearson correlation analysis was conducted using SPSS 27.0. The results showed a significant positive correlation between AS and AP ($r = .551$, $p < .001$), indicating that higher AS was associated with higher levels of academic procrastination. However, the correlation between AS and SD did not reach statistical significance ($r = -.095$, $p = .057$). A significant negative correlation was found between SD and AP ($r = -.108$, $p = .031$). Therefore, Hypothesis 1 was supported. The relevant results are presented in Table 2.

To control for the effects of gender, grade, and grade point ranking on the relationships among the variables, partial correlation analysis was conducted. The results showed that AS remained significantly and positively correlated with AP ($r = .521$, $p < .001$). AS showed a weak negative correlation with SD ($r = -.117$, $p = .020$), whereas the correlation between AP and SD did not reach statistical significance ($r = -.098$, $p = .051$). After controlling for demographic variables, the relationship between AS and AP remained robust, whereas the association between AP and SD did not reach statistical significance.

Table 2. Correlation analysis of AS, AP and self-deception

Variable	1	2	3
1.Academic stress	1		
2.Academic procrastination	0.511**	1	
3.Self-deception	-.095	-0.108*	1

Note: n=401, *p<0.05, **p<0.01

4.3. Regression analysis

Based on the correlation analysis, this study used Model 1 in PROCESS 4.1 to examine the moderating effect of SD. Gender, grade, and grade point ranking were included in the model as control variables. The results showed that the model was significant, $R = .526$, $R^2 = .277$, $F(6, 394) = 25.14$, $p < .001$, indicating that the model significantly predicted academic procrastination.

The regression coefficients showed that AS had a significant positive predictor of AP, $b = .907$, $SE = .311$, $t = 2.92$, $p = .004$, 95% CI [.296, 1.518]. This indicates that, after controlling for gender, grade, and grade point ranking, higher AS was associated with higher levels of academic procrastination. Thus, Hypothesis 1 was further supported. However, the main effect of SD on AP did not reach significance, $b = .157$, $SE = .184$, $t = 0.85$, $p = .395$, 95% CI [-.205, .518].

The interaction test showed that the interaction between AS and SD was not significant, $b = -.077$, $SE = .072$, $t = -1.08$, $p = .280$, 95% CI [-.218, .063]. This result indicated that SD did not significantly moderate the relationship between AS and academic procrastination. Therefore, Hypothesis 2 was not supported. Among the control variables, gender was a significant predictor ($b = -.123$, $p = .035$), while grade and grade point ranking did not reach statistical significance.

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5. Discussion

The correlation between AS, SD, and AP was investigated in this paper among a cohort of undergraduates. Besides that, they aimed to determine if SD could mediate the relationship between AS and AP. Results indicated strong positive correlation between AS and AP. Nevertheless, even when gender, grade level and rank in class were controlled, AS continued to be positively predictive of AP. It means that the greater AS goes hand-in-hand with the larger AP. Thus Hypothesis 1 has been proven. The result is quite consistent with the other studies. It confirms the concept that AS may be regarded as one of the most important preliminary predictors of AP in the college students. When course work is difficult and taxing, and examination-related pressures are heightened, or when there is a strong fight against getting high marks, many students react with anxiety and avoidance. Other common strategies are to postpone working on tasks to lessen unwanted feelings. Theory of emotion regulation says that individuals are prone to using short-term measures to relieve their negative emotions. Procrastination is obviously included in this tendency. This approach, which is applied in practice, offers some kind of short-term relief only. After some period of time, it results in growing quantities of pending work. Subsequently, the backlog rises and the level of AS increases and further issues, including lower self-efficacy and more self-criticism are created. It turns into a vicious circle: stress brings about procrastination and procrastination contributes to the stress.

SD had no statistically significant effect as a moderator of the relationship between AS and AP. In other words, the main contribution of SD was negligible. Also, the interaction between AS and SD was not statistically relevant. It may be explained with the help of the fact that SD has a self-protective nature of the cognitive tendency. This effect can be seen much more strongly in how people see their tasks rather than a direct change in the rate at which they are prone to procrastinating. However, AP can be affected by other factors like time management abilities, self-efficacy confidence, and perception of task value. Consequently, SD was not used as the moderator in this study.

5.1. Research limitations and future directions

Though the current work has some important results, several drawbacks may be stated. First, a cross-sectional approach was selected. All the data represented self-reports provided by the participants at just one time. Causal inference is not possible here. Some longitudinal studies are planned to be conducted in future to examine the interactions between AS and AP throughout the time. Third, although it consisted of 401 students (which is quite large), it had a limited geographic scope and only included a small variety of schools that took part in the study. The next stage of research might involve recruitment of students in various regions, such as east, central and west China. Other types of colleges (such as famous universities and those that are less prestigious) may be included. In addition, students who have different academic backgrounds such as science and humanities should also be considered. These strategies have the potential to increase understanding of how cultural background, academic rivalry, and course structure influence the result. If so, the external validity and generalizability of the findings would be improved.

Lastly, it was found that SD did not play a moderating role on the link between AS and AP in this study. The implication of this is that future studies can use additional variables. These variables are supposed to have a stronger correlation with the learning behavior. Examples include time management, self-efficacy and task-value judgment.

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5.2. Theoretical and practical implications

Theoretically speaking, it has been demonstrated that AS and AP are positively correlated very clearly in this paper. The outcome provides another empirical evidence to understand how AP is achieved by college students. Furthermore, a moderating variable, SD, was incorporated in the model. Nonetheless, because there had not been any moderating effect established, it would be deemed informative in further research. To be specific, when developing the explanatory models of AP, researchers should select psychological determinants that could be directly associated with the actual behavior.

From the first floor, the institutions of higher learning should take into consideration the fact that the focus of students on AS management should be more pronounced in the context of learning guidance and mental health instruction. Since AS is a positive indicator of AP, it is essential that schools detect the stress at an early stage and offer the appropriate help through academic counseling and mental health support. For instance, AS can be measured when there is a large amount of academic work, such as at the beginning of the term. The highly-stressed students could benefit from customized time management training and cognitive reappraisals guidance. In addition, schools can alter the way they are evaluating courses. Increased focus on process-based assessment had a possibility of lowering high levels of AS. This can lead to lower frequency of AP.

6. Conclusion

The work under consideration has attempted to explore the relationship between AS and AP among the undergraduates. The work also assessed if SD can be used to moderate this link. There was a high positive correlation between AS and AP. Even though gender, age and academic standing were controlled, A/S had a considerable association with A/P. Thus, hypothesis 1 was supported. On the other hand, the role of SD as a moderator was not significant. Thus, hypothesis 2 could not be confirmed.

The findings of this study confirm the role AS plays in the occurrence of AP among college students. It is evident that there should be a higher focus on AS to reduce the AP in the schools. Future studies of sources of AP could be much more closely associated with the concept of learning behavior. This would help explain how AP develops in college students. It can also be used as a vital point of reference to mental health education in colleges and universities.

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