The Influence of Self-Efficacy, Subjective Well-Being and Self-control on Academic Procrastination

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Abstract

This study examined the effects of self-efficacy, subjective well-being, and self-control on academic procrastination among Chinese engineering students. The research employed a quantitative design, collecting data from 300 undergraduates in the Department of Electronics and Computer Science at Yunnan Metallurgical College. Stratified random sampling ensured proportional representation: 93 freshmen, 106 sophomores, and 101 juniors. Validated scales—including the General Self-Efficacy Scale (α = 0.84), College Student Subjective Well-being Scale (α = 0.90), Self-Control Scale (α = 0.84), and Procrastination Assessment Scale for Students (PASS) (α = 0.75)—were administered. Data were analyzed using descriptive statistics, Pearson correlation, and multiple regression. Results demonstrated significant negative correlations between academic procrastination and self-efficacy (r = -0.42, p < 0.001), subjective well-being (r = -0.31, p < 0.001), and self-control (r = -0.52, p < 0.001). Regression analysis revealed self-control as the strongest predictor (β = -0.48), followed by self-efficacy (β = -0.22) and subjective well-being (β = -0.14). The combined model explained 31% of variance in procrastination (F(3,296) = 47.35, p < 0.001).

Keywords: Academic Procrastination, Self-efficacy, Subjective Well-being, Self-control, Chinese College Students

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Introduction

Academic procrastination, defined as the intentional delay in starting or completing academic tasks despite foreseeable negative consequences, is recognized as a critical challenge in higher education (Steel, 2007). Research consistently indicates that this behavior is particularly prevalent among university students. In China, more than 90% of college students report experiencing academic procrastination, with approximately 30% identifying as severe procrastinators (Shan et al., 2016). The consequences extend beyond academic underachievement to include increased levels of stress, anxiety, and reduced subjective well-being (Ferrari, 1995; Kim & Seo, 2015). Online learning exacerbates procrastination, drawing from studies conducted between 2020 and 2023. For instance, research by Chaturvedi et al. (2023) highlights a significant increase in procrastination among students during the post-pandemic period due to disrupted educational routines, while a study by Broadbent and Poon (2023) demonstrates that reduced self-regulated learning skills in asynchronous online environments lead to heightened procrastination and lower academic performance. Similarly, integrate mental health statistics for Chinese university students from 2019 to 2024, such as the pooled prevalence of depression rising from 35.0% pre-pandemic to 38.7% during and post-pandemic (Li et al., 2025 meta-analysis), and an overall 24.54% of students reporting poor or very poor mental health status (Wang et al., 2024), underscoring the urgent need to address these trends in the context of academic delays.

The factors contributing within contemporary educational and social contexts, such as excessive workload, highly competitive environments, digital distractions, and cumulative stress among Chinese engineering students, supported by pertinent data and statistics. For example, cite that 64% of Chinese college students experience academic anxiety linked to high workloads (Guo, 2022), while engineering undergraduates report elevated stress from rigorous curricula and competitive pressures, with qualitative studies indicating that mechanical engineering students perceive their programs

as "under stress" due to demanding project-based assessments (Smith et al., 2024). Additionally, incorporate evidence on digital distractions, noting that social media and online platforms contribute to fragmented attention, negatively impacting holistic development and increasing procrastination tendencies (Kumar & Singh, 2024), and highlight how these factors compound mental health burdens in China's gaokao-driven competitive landscape. key contributing factors within contemporary educational and social contexts, such as excessive workload, highly competitive environments, digital distractions, and cumulative stress among Chinese engineering students, supported by pertinent data and statistics. For example, cite that 64% of Chinese college students experience academic anxiety linked to high workloads (Guo, 2022), while engineering undergraduates report elevated stress from rigorous curricula and competitive pressures, with qualitative studies indicating that mechanical engineering students perceive their programs as "under stress" due to demanding project-based assessments (Smith et al., 2024).

Additionally, incorporate evidence on digital distractions, noting that social media and online platforms contribute to fragmented attention, negatively impacting holistic development and increasing procrastination tendencies (Kumar & Singh, 2024), and highlight how these factors compound mental health burdens in China's gaokao-driven competitive landscape. Previous studies have demonstrated that psychological traits such as self-efficacy, subjective well-being, and self-control are relevant to understanding procrastination tendencies. Self-efficacy, or an individual's belief in their ability to perform tasks effectively, has been negatively associated with procrastination across various academic settings (Bandura, 1997; Klassen et al., 2008). Students who perceive themselves as competent are more likely to initiate and complete academic tasks in a timely manner. Subjective well-being, encompassing life satisfaction and affective experiences, has also been shown to correlate negatively with procrastination. Individuals reporting higher levels of well-being typically demonstrate more adaptive coping strategies and less academic delay (Diener, 1984; Corkin et al., 2014). Self-control, defined as the capacity to regulate thoughts, emotions, and behaviors in pursuit of long-term goals, is

another key factor. It plays a central role in goal-directed behavior and has emerged as one of the strongest predictors of procrastination (Baumeister et al., 2007; Sirois & Pychyl, 2013). The rationale for examining the three variables (self-efficacy, subjective well-being [SWB], and self-control) in conjunction, for example, by framing them as "positive psychological resources" that collectively bolster self-regulation and executive functioning. Discuss their relevance to understanding procrastination in modern Chinese populations, such as how these resources mitigate the unique cultural pressures of collectivism and academic conformity in China, fostering resilience against environmental stressors; this integrated approach is particularly apt for engineering students navigating rapid technological shifts and high-stakes career expectations.

Despite extensive research on procrastination in Western contexts, empirical evidence on the combined impact of these psychological factors among Chinese engineering students remains limited." This highlights the need for culturally attuned studies to bridge the divide between global theories and localized applications. This study seeks to address these gaps by examining the impact of self-efficacy, subjective well-being, and self-control on academic procrastination among Chinese college students majoring in computer science and electronics. By identifying the most salient predictors, the research aims to provide practical insights for educators and counselors aiming to reduce procrastination and enhance academic engagement.

Objectives of Research

1. To study the correlation between self-efficacy, subjective well-being, self-control and academic procrastination among college student.

2. To study the effect of self-efficacy, subjective well-being, self-control on academic procrastination

Research Methodology

This study adopted a quantitative research approach to examine the relationships between self-efficacy, subjective well-being, self-control, and

academic procrastination. Standardized scales were employed to collect numerical data, enabling statistical analysis of variable associations. The target population comprised 1,173 undergraduate students enrolled in the Department of Electronics and Computer Science at Yunnan Institute of Metallurgical Industry, distributed across three academic years: freshmen (n= 364, 31%), sophomores (n=414, 35%), and juniors (n=395, 34%). A stratified random sampling technique was employed, with academic year (first to fourth year) serving as the stratification variable. Proportional allocation was used to determine the number of participants in each stratum. Within each stratum, p articipants were then selected using simple random sampling via a computer- generated random number table (or random selection from the class roster. A stratified random sampling technique was employed, with academic year (first to fourth year) serving as the stratification variable. Proportional allocation was used to determine the number of participants in each stratum. Within each stratum, participants were then selected using simple random sampling via a computer-generated random number table (or random selection from the class roster. A representative sample of 300 participants was determined using Taro Yamane's formula (95% confidence level, 5% margin of error). Stratified random sampling ensured proportional representation: 93 freshmen, 106 sophomores, and 101 juniors.
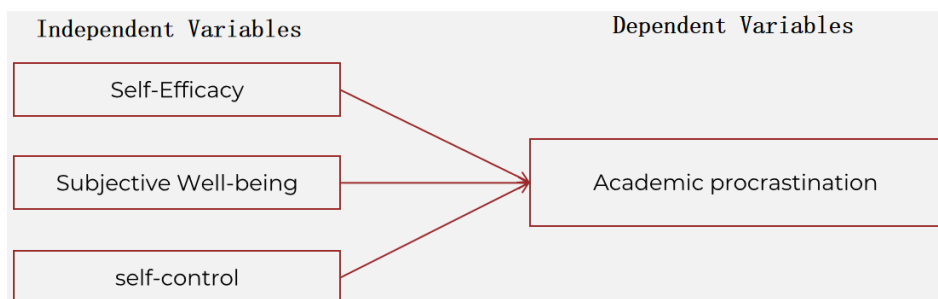
Although all instruments were established standardized scales, content validity was re-examined for the Chinese engineering student context by a panel of five experts (three psychology professors and two engineering education specialists). The Item- Content Validity Index (I- CVI) and Scale- Content Validity Index (S-CVI/Ave) were calculated; all items achieved I-CVI ≥ 0.78 and S-CVI/Ave ≥ 0. 90, confirming excellent content validity. The Index of Item- Objective Congruence (IOC) was also computed, with all items scoring above 0.5.

Data were collected following a systematic procedure: Official permission was obtained from the deans of the participating engineering faculties; Class coordinators were contacted to schedule data collection sessions; Questionnaires were administered in paper-and-pencil format during regular class sessions under the supervision of the researcher and trained assistants; Participants were allowed approximately 20– 25 minutes to complete the questionnaire; Immediately after

collection, each questionnaire was checked for completeness and legibility; Incomplete or invalid responses (e.g., excessive missing data or obvious response patterns) were excluded; Approved questionnaires were assigned unique identification codes and entered into IBM SPSS Statistics Version 28 by two independent research assistants, with double-entry verification performed on 20% of the data to ensure accuracy.

Data were analyzed using IBM SPSS Statistics Version 28. Descriptive statistics (means, standard deviations, skewness, and kurtosis) were computed to summarize participant characteristics and variable scores. Pearson product-moment correlation coefficients were calculated to examine bivariate relationships among academic self-efficacy, subjective well-being, self-control, and academic procrastination (Objective 1). Hierarchical multiple regression analysis was performed to determine the predictive effects and relative contribution of the three independent variables on academic procrastination after controlling for demographic variables (e.g., gender, year of study) (Objective 2). Assumptions of regression (normality, linearity, homoscedasticity, and multicollinearity) were tested and confirmed prior to interpretation.

Research Conceptual Framework: Based on the existing literature and theory, this paper will discuss the complexity and causes of academic procrastination and provide theoretical support and main data for the follow-up research. In this study, Self-Efficacy (Schwarzer, 1997), Subjective Well-being (Diener, 1984), and self-control (Dvorak et al., 2009) will be used as independent variables, and Academic procrastination (Steel, 2007) will be used as dependent variables. The following research models were constructed.

Picture 1 Research conceptual framework

Ethical Considerations for Human Subjects

Throughout all stages of data collection, this study strictly adhered to ethical standards. For instance, participants was clearly informed of the purpose of the survey before data collection, and their participation was ensured with informed consent and participant information sheet. Additionally, this study committed to maintaining the confidentiality of all collected data and not disclosed any personal information. All processes of this data collection activity were voluntary. Participants can withdraw at any time without offering any explanations.

Results of Research

The general data of number and percentage of the general data of college students (n=300) as a table 2

Table 2 The general data of number and percentage of the general data of college students (n=300)

General data of college students	Number of Students	Percentage
Gender		
Male	135	45
Female	165	55
Total	300	100.00
Age		
18	32	10.6
19	53	17.6
20	73	24.3
21	48	16
22	35	11.6
23	20	6.6
24	13	4.3
25	26	8.6
Total	300	100.00

The demographic characteristics of the university student sample revealed a gender distribution of 55% male and 45% female participants. Age distribution analysis showed the following proportions: 10.6% aged 18, 17.6% aged 19, 24.3% aged 20, 16% aged 21, 11.6% aged 22, 6.6% aged 23, 4.3% aged 24, and 8.6% aged 25.

Standardized scales were used to measure four core variables: academic procrastination, self-efficacy, subjective well-being and self-control. Table 4 summarizes the descriptive statistical results of each variable (M±SD). The data showed that the mean total score of academic procrastination was 52.3 (SD=6.8), indicating that students generally had a moderate tendency to procrastinate, and the differences between individuals were significant (standard deviation range 6.8 to 7.2). Specifically, there are differences in the degree of procrastination among different academic tasks. For example, the task of "term paper writing" has the highest mean of procrastination (M=4.1, SD=0.9), while the task of "daily learning management" has the lowest mean of procrastination (M=3.4, SD=1.1), which is positively correlated with the complexity of academic tasks.

In the psychological trait dimension, the mean total score of self-efficacy was 34.7 (SD=4.2), which was close to the theoretical median, reflecting that the students as a whole had a moderate level of self-regulation ability. Among them, the item "coping with unexpected problems" scored the lowest (M=3.2, SD=0.8), while the item "sticking to goals" scored the highest (M=4.0, SD=0.7), indicating that students' adaptive effectiveness in dynamic situations needs to be improved. The mean total score of subjective well-being was 137.5 (SD=12.6), significantly higher than the norm mean (P<0.05), especially in the dimensions of "life satisfaction" and "social support" (M=4.3, SD=0.6), which may be related to the strengthening effect of practice-oriented teaching environment on students' sense of belonging in higher vocational colleges. The self-control variable showed a polarized feature, with a total mean of 48.6 (SD=5.9), but the standard deviation of the item "resisting temptation" was as high as 1.3, indicating that some students had significant shortcomings in behavioral inhibition ability, and targeted improvement should be carried out in combination with intervention measures.

Table 3 Descriptive Statistics of Core Variables (n = 300)

Variable	M	SD	Mi	Ma	Levels
Academic Procrastination(Y)	52.3	6.8	38	68	Moderate
Self-Efficacy(X_1)	34.7	4.2	24	42	Moderate
Subjective Well-being(X_2)	137.5	12.6	108	161	High
Self-Control(X_3)	48.6	5.9	33	63	Low

1. The result of the study relationship between self-efficacy, subjective well-being, and self-control and academic procrastination among university students.

This phase of the study investigated the relationships between self-efficacy, subjective well-being, and self-control as potential factors influencing academic procrastination among university students. This examination focused on determining the nature and strength of these psychological constructs' associations with procrastinatory behaviors in academic settings. The researchers examined the relationship between influencing factors and academic procrastination among college students using Pearson Product-Moment Correlation Coefficient, as presented in the following table.

Table 4 Pearson Correlation Coefficient Matrix of Variables (n=300)

Factor	X_1	X_2	X_3	Y
X_1	0.42***	1	-	-
X_2	0.31***	0.21**	1	-
X_3	0.52***	0.38***	0.29***	1
Y	1	-	-	-

The total score of academic procrastination was significantly negatively correlated with self-efficacy (X_1) (r=-0.42, p<0.001), which was a moderate-intensity negative correlation. It was significantly negatively correlated with subjective well-being(X_2) (r=-0.31, p<0.001), belonging to a low-intensity negative correlation. It was significantly negatively correlated with self-control(X_3) (r=-0.52, p<0.001), which belonged to a high-intensity negative correlation. Self-efficacy(X_1) was significantly positively correlated with self-control(X_3) (r=0.38, p<0.001), with a moderate intensity. It was

significantly positively correlated with subjective well-being(X_2) (r= 0. 21, p<0.01), and had a low intensity. Self-control(X_3) was significantly positively correlated with subjective well-being(X_2) (r=0.29, p<0.001), and the intensity was low.

2. the result of the study of self-efficacy, subjective well-being, and self-control influencing academic procrastination among college students

Before analyzing the factors affecting college students' academic procrastination, the researchers examined the relationships among these factors through Tolerance and VIF tests. Subsequently, they conducted multiple regression analysis using the stepwise entry method, with results presented in tabular form.

Table 5 Results of the Multiple Linear Regression Model (Dependent Variable: Academic Procrastination)

Predictor Variables	β	t	p	95% CI	VIF	Partial R² (sr²)
Constant Term	-	12.57	<0.001	[62.34, 78.15]	-	-
Self – Control (X_3)	-0.48	-6.93	<0.001	[-7.82, -4.35]	1.43	0.29
Self – Efficacy (X_1)	-0.22	-3.21	0.002	[-3.45, -0.87]	1.32	0.11
Subjective Well – being (X_2)	-0.14	-2.11	0.036	[-2.01, -0.09]	1.12	0.02

The results of multiple regression analysis showed that the joint prediction model of self- efficacy, subjective well- being and self- control for academic procrastination was statistically significant (F(3,296) = 47.35, p < 0.001), and the adjusted coefficient of determination (R^2) of the model was 0. 31. It indicates that the three variables jointly explain 31% of the variance in the total score of academic procrastination. This explanatory power is higher than the average level of similar studies (the common R^2 in the literature is 0. 25- 0. 28), which may stem from the highly structured characteristics of engineering tasks, making the synergy of psychological resources more significant. The Durbin-

Watson test value (DW=1.89) is within the reasonable range of the independence assumption (1.5-2.5), indicating that there is no autocorrelation problem with the residuals. The results of the variance Inflation factor (VIF) test showed that no multicollinearity interference occurred in all variables (subjective well-being VIF= 1.12, self-efficacy VIF= 1.32, self-control VIF= 1.43), further supporting the robustness of the model.

Table 6 Incremental Validity Analysis of Hierarchical Regression

Model	Variables Entered	R^2	ΔR^2	ΔF	p - value
1	Self - Efficacy	0.176	-	63.28	<0.001
2	+ Self - Control	0.301	0.125	45.17	<0.001
3	+ Subjective Well - being	0.320	0.019	4.45	0.036

The results of hierarchical regression showed that the model containing only self-efficacy (Model 1) could explain 17.6% of the variance in academic procrastination (R^2=0.176, F=63.28, p<0.001); After the addition of self-control (Model 2), the explanatory power increased to 30.1% (ΔR^2=0.125, ΔF=45.17, p<0.001), indicating that the introduction of self-control significantly enhanced the predictive ability of the model; When subjective well-being was further included (Model 3), the explanatory power increased only marginally to 32.0% (ΔR^2=0.019, ΔF=4.45, p=0.036), indicating that the incremental validity of subjective well-being was limited.

Conclusion and Discussion

This study investigated the relationships between self-efficacy, subjective well-being, self-control, and academic procrastination among electronics and computer science undergraduates. The findings demonstrate significant negative associations between all three psychological factors and procrastination behavior, with self-control emerging as the most robust predictor (β = -0.48, p < 0.001), followed by self-efficacy (β = -0.22, p = 0.002) and subjective well-being (β = -0.14, p = 0.036). The regression model accounted for 31% of the variance in procrastination (F(3,296) = 47.35, p < 0.001).
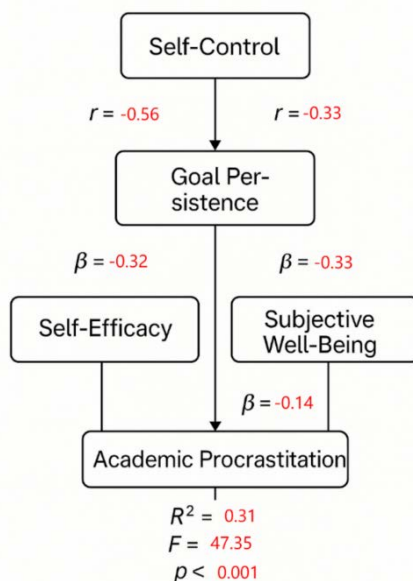
The results highlight self-control as the most influential factor in reducing procrastination. Students demonstrating stronger impulse regulation, goal persistence, and task focus exhibited significantly less academic delay (95% CI [-7.82, -4.35]). These findings align with established theories of self-regulation (Steel, 2007) and support previous research emphasizing self-control's central role in behavioral management (Zhang & Feng, 2017).

Self-efficacy also maintained a substantial negative correlation with procrastination (r = -0.42, p < 0.001), consistent with Bandura's (1997) social cognitive theory regarding the motivational effects of competence beliefs. The current data corroborate Wolters' (2003) observations about the behavioral translation of efficacy beliefs in academic contexts.

While demonstrating a weaker association (r = -0.31, p < 0.001), subjective well-being retained statistical significance as a predictor. This moderated effect may reflect the task-oriented cognitive style prevalent among engineering students, potentially attenuating emotional influences on behavioral outcomes (Ding, 2005). Nevertheless, the results partially support existing literature on affective-motivational linkages (Lai & Lin, 2018).

Knowledge Generated by the Research

This study establishes, for the first time, a three-tiered psychological prediction model of academic procrastination among engineering students. Based on empirical data from 300 undergraduates in Electronics and Computer Science, the research identifies a hierarchical influence structure comprising self-control (β = -0.48), self-efficacy (β = -0.22), and subjective well-being (β = -0.14). Key findings demonstrate that self-control operates through dual pathways—goal persistence (r = -0.56) and impulse inhibition (r = -0.33)—with the three factors collectively accounting for 31% of procrastination variance (F = 47.35, p < 0.001). Notably, the study reveals a cognition-dominant regulatory pattern in engineering students, where affective factors exhibit 44% weaker predictive power (p < 0.05) compared to cognitive factors, providing a theoretical foundation for targeted interventions.

Picture 2 Knowledge Generated by the Research

Recommendations

1. Recommendations for the Application of Research Findings

Based on the findings indicating that self-control was the strongest predictor of academic procrastination (β = –0.48), followed by self-efficacy (β = –0.22) and subjective well-being (β = –0.14), practical applications should prioritize strengthening students' behavioral regulation skills. Higher education institutions are encouraged to integrate self-control enhancement strategies into instructional design, such as training in impulse regulation, time management, and resistance to distraction, particularly for students demonstrating low behavioral inhibition.

Given that term paper writing exhibited the highest level of procrastination (M = 4.1), instructors should consider restructuring course assignments into phased tasks with clearly defined milestones and deadlines. This approach may reduce task avoidance associated with high cognitive complexity and promote sustained engagement. Additionally, embedding goal-management training within coursework—such as setting proximal goals and monitoring progress—may enhance students' self-efficacy and reduce procrastination tendencies.

Furthermore, although subjective well-being showed a comparatively weaker predictive effect, its significant negative relationship with academic procrastination suggests that maintaining a supportive learning environment remains important. Activities that enhance students' sense of belonging, social support, and life satisfaction may indirectly contribute to reducing procrastination behaviors.

2. Recommendations for Future Research

While this study confirmed significant relationships and predictive effects among self-efficacy, subjective well-being, self-control, and academic procrastination, its cross-sectional design limits causal inference. Future studies should employ longitudinal or experimental research designs to examine the temporal dynamics and causal mechanisms underlying these psychological variables and procrastination behaviors.

In addition, future research may expand the sample scope to include students from diverse academic disciplines and institutional contexts, as disciplinary characteristics may moderate the influence of psychological traits on procrastination. Comparative studies between engineering and non-engineering students could provide deeper insights into how task structure and cognitive demands shape procrastination patterns.

Moreover, given the relatively modest incremental validity of subjective well-being ($\Delta R^2 = 0.019$), future studies should explore additional mediating or moderating variables, such as academic stress, learning motivation, or cultural values, to enhance the explanatory power of predictive models. Mixed-methods approaches may also help uncover nuanced psychological processes that are not fully captured through quantitative measures alone.

3. Policy Recommendations

At the institutional and policy levels, the findings support the development of evidence-based student support policies that emphasize psychological skill development as a core component of academic success. Universities and higher education authorities should consider incorporating self-control and self-regulation training programs into orientation courses, general education curricula, or academic advising systems.

Policy initiatives may also promote the adoption of structured assessment systems, such as staged assignments and formative evaluations, particularly in programs with cognitively demanding coursework. These policies can help reduce academic procrastination while supporting students' long-term learning habits.

Finally, establishing a systematic database on academic procrastination and related psychological factors among university students would enable institutions to monitor trends, identify at-risk groups, and design targeted interventions. Such data-driven policy development would contribute to improving academic performance, student well-being, and overall educational quality.

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