THE INFLUENCE OF SELF-EFFICACY SUBJECTIVE WELL-BEING AND SELF-CONTROL ON ACADEMIC PROCRASTINATION AMONG CHINESE COLLEGE STUDENTS

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2024

ผลของมุมมองช่วงเวลาในอนาคต ความผาสุข การมองโลกในแง่ดี ต่อการผัดวันประกันพรุ่งทางการเรียนของนักศึกษาจีน

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ปริญญานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตร
การศึกษามหาบัณฑิต สาขาจิตวิทยาการศึกษาและการแนะแนว
คณะคณะศึกษาศาสตร์ มหาวิทยาลัยศรีนครินทรวิโรฒ
ปีการศึกษา 2567

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A Thesis Submitted in Partial Fulfillment of the Requirements

for the Degree of MASTER OF EDUCATION

(M.Ed. (Educational Psychology and Guidance))

Faculty of Education, Srinakharinwirot University

2024

THE THESIS TITLED

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BY

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HAS BEEN APPROVED BY THE GRADUATE SCHOOL IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE MASTER OF EDUCATION IN M.ED. (EDUCATIONAL PSYCHOLOGY AND GUIDANCE)

AT SRINAKHARINWIROT UNIVERSITY

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Title	THE INFLUENCE OF SELF-EFFICACY SUBJECTIVE WELL-BEING AND SELF-CONTROL ON ACADEMIC PROCRASTINATION AMONG CHINESE COLLEGE STUDENTS
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Degree	MASTER OF EDUCATION
Academic Year	2024
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Academic procrastination is common among university students and linked to negative academic and psychological outcomes. This study explored how self-efficacy, subjective well-being, and self-control influence academic procrastination among Chinese engineering students. A total of 300 undergraduates from Yunnan Metallurgical College were surveyed using standardized scales. The research tools consisted of the General Self-Efficacy Scale, the College Student Subjective Well-being Scale, Self-Control Scale, and the Procrastination Assessment Scale for Students (PASS). Results showed that all three factors were significantly negatively correlated with procrastination ($p < 0.001$), with self-control being the strongest predictor. The combined model significantly predicted procrastination ($F(3,296) = 47.35$, $p < 0.001$), accounting for 31% of the variance. The findings highlight the importance of strengthening psychological resources to reduce procrastination in academic settings.

Keywords: academic procrastination,self-efficacy,subjective well-being,self-control,Chinese college students

ACKNOWLEDGEMENTS

During the completion of this thesis, I have received tremendous support and assistance from many individuals, to whom I would like to express my deepest gratitude.

First and foremost, I am sincerely grateful to my advisor, Professor Kanchit Saenubol, and the department head, Professor Patcharaporn, for their invaluable guidance and insightful suggestions on topic selection, research methodology, and thesis writing. Their rigorous academic standards and patient mentorship have greatly benefited my work.

I would also like to extend my thanks to the students from the Department of Electronics and Computer Science at Yunnan Metallurgical College who participated in the questionnaire survey. Their cooperation provided a solid data foundation for this research.

Lastly, I am deeply indebted to my family and friends for their unwavering understanding and encouragement throughout my academic journey. Their support has been my greatest motivation to persevere.

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CHAPTER 1
INTRODUCTION

1.1 Background

The definition of procrastination was first proposed by J. and D. (1984b), which is defined as a purposeful procrastination that leads to the undesirable result of the task not being completed on time. Subjectively, individuals may feel uncomfortable. Procrastination has plagued humankind at least since the birth of civilization.(Piers, 2007) meta-analysis, procrastination, as an irrational delay behavior, is common among all kinds of people. If our research perspective does not develop, it may continue to define us for quite some time. Procrastination is a problem for people of different cultures and ages (R. & A., 2018). A study has found that nearly 50% of college students admit to long-term barrier procrastination and strongly believe that procrastination is harmful and want to reduce procrastination(Victor et al., 2000). Many studies have shown that procrastination can affect student achievement and well-being, and that procrastination can have a serious impact on academic performance(Ryung & Hee, 2015). The procrastination discussed in this study is academic procrastination. Academic procrastination is a special type of procrastination, which is a manifestation of procrastination in learning(C. et al., 2010). Academic procrastination is common among college students at home and abroad. More than 90% of college students in China have academic procrastination, and more than 30% of college students have serious academic procrastination(Danhongbo et al., 2016). Some foreign studies show that 95% of college students delay their learning tasks and 70% of them procrastinate frequently (Ellis & Knaus, 1977).

Students who are accustomed to academic procrastination believe that academic procrastination seriously affects their academic position, ability to master classroom materials and quality of life. Some researchers also find that academic procrastination reduces academic achievement. It may even lead to more serious curriculum relegation and status problems(J. & D., 1984a).Long-term passive academic

procrastination hinders students' learning abilities. As the length of study increases, learning apathy can easily become a psychological barrier to learning, leading to poor academic performance, anxiety, irritability, frustration, feelings of helplessness, guilt, and inferiority, which seriously affect mental health and, consequently, the quality of life(R., 2023). Based on the above reasons, it is of great significance to study the influencing factors and how to improve the academic procrastination of college students.

Numerous studies have shown that academic procrastination is closely related to academic performance, stress levels, and time management skills. Procrastination is not only a time management problem, but also associated with psychological variables such as self-efficacy, anxiety, and perfectionism (Joseph et al., 1995). Self-efficacy and self-regulation are internal factors affecting procrastination (M. & S., 2017). At the same time, subjective well-being significantly negatively predicts academic procrastination, and individuals will engage in more academic procrastination behavior when they feel low levels of well-being(R. & C., 2018). In addition, self-control is closely related to procrastination (Li, 2017). This study will discuss the impact of self-efficacy, subjective well-being and self-control on academic procrastination of Chinese college students.

The concept of self-efficacy was first introduced by Bandura(Bandura, 1997). One of the most important factors in recent years is self-efficacy, which is the belief that a person can master a situation and produce positive things(W., 2017). Self-efficacy affects the beginning of a task and the level of effort in the process(Juanjuan & Xue, 2007). For example, college students with high self-efficacy plan and arrange tasks reasonably according to their actual abilities, so procrastination behavior is less or less. However, college students with low self-efficacy tend to delay tasks because of their doubts about their abilities and fear of tasks(M. et al., 2014). Joseph et al. (1995) found a negative correlation between self-efficacy and academic procrastination. Wolf (2007) found that there was a negative correlation between self-efficacy and academic procrastination, and individuals with low self-efficacy were more likely to have serious procrastination than individuals with high self-efficacy. Students with low self-efficacy

think they cannot do homework, so they avoid these tasks rather than try to do them(T. & E., 2018).

Empirical studies by Chinese scholars have found that subjective well-being significantly negatively predicts academic burnout, which in turn is a major contributing factor to academic procrastination. This provides a potential explanatory pathway for the influence of subjective well-being on academic procrastination (Lu & Lin, 2018). Academic procrastination is a complex process involving cognition, emotion, and behavior (Pang, 2010). Academic procrastination has a significant negative impact on subjective well-being, indicating that academic procrastination directly affects the subjective well-being of college students and has a strong ability to explain subjective well-being (Tianwei, 2014). People who believe they are capable of completing academic tasks use less procrastination and have higher levels of subjective well-being (M. et al., 2014). Individuals who consider academic tasks enjoyable, capable of completing, and who organize to complete projects on time without stress and with social support are considered to have high levels of subjective well-being (R., 1989). In recent years, domestic and international research has paid much attention to the subjective well-being of college students and its influencing factors.

In addition, self-control is also a factor that affects academic procrastination. Self-control refers to the ability of an individual to suppress immediate impulses and regulate his or her own behavior to conform to social norms and long-term goals (C. et al., 2016). Self-control is defined as an individual's ability to transcend dominant responses, including thoughts, emotions, and actions, in order to achieve long-term goals (Baumeister, 2002). Previous studies have attributed procrastination to depletion of resources for self-control (M. & F., 1997). Individuals with low self-control or high impulsiveness focus more on short-term goals and ignore the potential benefits of long-term goals, which leads to procrastination (Piers, 2006). Numerous studies have shown that self-control negatively predicts procrastination (Jana et al., 2018).Self-control regulates individual behavior in a top-down manner, thereby reducing procrastination (Zhang & Feng, 2017).

Academic procrastination has become a widespread issue among college students worldwide, significantly impacting their academic performance, mental health, and time management abilities. Research indicates that procrastination behavior is influenced by multiple factors, including self-efficacy, subjective well-being, and self-control. However, most existing studies focus on general student populations or specific age groups, with limited attention paid to variations across specific academic disciplines.

This study integrates the three factors of self-efficacy, subjective well-being, and self-control as independent variables to investigate their multidimensional effects on academic procrastination as the dependent variable. While few studies have examined the combined influence of self-efficacy, subjective well-being, and self-control, the majority of such research has been conducted in Western countries. This study is unique in its exploration of the topic within the context of Chinese culture. Meanwhile, this study focuses exclusively on students from the Department of Electronics and Computer Science. Students in computing-related disciplines often face complex and high-intensity academic tasks, such as programming, algorithmic problem-solving, and software development. The complexity and sustained focus required for these tasks make them particularly prone to procrastination. In addition, the computer science field, characterized by heavy workloads and frequent deadlines, serves as an ideal domain for examining academic procrastination and its related factors. The findings of this study can also provide insights for other STEM (Science, Technology, Engineering, and Mathematics) disciplines. Limiting the scope of the study to a specific department facilitates efficient management of the research process, ensuring high questionnaire response rates and reliable data collection. Practical Value for Interventions: The results of this study can inform the development of tailored intervention strategies for computer science students, aimed at enhancing their time management skills and psychological resilience—qualities that are critically important in the rapidly advancing technological sector. This research will investigate the relationships between academic procrastination, self-efficacy, subjective well-being, and self-control in the context of Chinese higher education, with a specific focus on students in computer science disciplines.

1.2 Research questions

1.2.1 Are self-efficacy, subjective well-being, and self-control correlated to academic procrastination?

1.2.2 How do self-efficacy, subjective well-being and self-control affect on academic procrastination ?

1.3 Research objectives

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

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

1.4 Research significance

1.4.1 Academic significance

The study combines "self-efficacy", "subjective well-being" and "self-control" in the context of Chinese culture. At present, the research on academic procrastination focuses on single or bivariate analysis, and this study attempts to integrate the three, which is novel and unique.

1.4.2 Practical significance

Academic procrastination is a behavior that many college students want to change. The influencing factors of academic procrastination can provide strategies for college students to improve their academic performance, and have the value of promoting practical application. Academic procrastination affects students' learning quality and leads to mental health. By exploring the causes of problem-solving behavior, especially combining self-efficacy, subjective well-being and self-control, it can provide valuable measures for educators and laborers, help students problem-solving behavior, improve learning efficiency and mental health level.

1.4.3 Future significance

By analyzing the influencing factors of academic procrastination, this study can enhance the attention of students, teachers and parents to academic procrastination, and promote the reflection and discussion of this problem.

1.5 Population and samples

1.5.1 Population

The population of this study comprises 1,173 students enrolled in the Department of Electronics and Computer Science at the Yunnan Institute of Metallurgical Industry. These students are distributed across three academic years as follows: Freshmen: 364 students (31%) Sophomores: 414 students (35%) Juniors: 395 students (34%) .

1.5.2 Sample

A total of 300 students were selected for the sample using Taro Yamane's formula, the required sample size was calculated to be 299 at a 95% confidence level with a 5% margin of error. To simplify the sampling process, the sample size was rounded to 300. Simple random sampling was used to ensure the representativeness of the sample across academic years distributed proportionally across academic years: Freshmen: 93 students Sophomores: 106 students Juniors: 101 students.

1.6 Definition of terms

1.6.1 Academic procrastination refers to the unnecessary behavior of students when performing an academic task and the delay in completing the task, resulting in subjective adverse experiences. They also find that behavior may have adverse effects on academic performance. The scale used in this study is the first part of the PASS scale revised by Liangmei and Jiayuan (2009), which is suitable for Chinese college students.

1.6.2 Self-Efficacy refers to individuals can maintain a sense of self-confidence in any situation and task, and they can think that they have enough confidence and ability to face the present things or behaviors to support their confidence in judgment to complete or continue. The scale used in this study is the Ralf et al. (1997) General Self-

Efficacy Scale revised by K. et al. (2001). The Chinese version can be widely used in various situations.

1.6.3 Subjective Well-being refer to a personal cognition and experience by people using their own judgment standards of the world. The generally accepted content of subjective well-being includes two parts: life satisfaction and emotional experience. Life satisfaction is an overall evaluation of an individual's own life based on his own standards. Emotional experience includes two parts: positive emotion and negative emotion. The scale used in this study is the The College Student Subjective Well-being Scale(CSSWS) compiled by Chinese scholar Jinan and Y. (2006), which is in line with the current situation of Chinese college students.

1.6.4 Self-control refers to the behavior that an individual monitor and adjusts his own behavior and action in order to achieve a certain goal, and can understand the relationship and connection between the current behavior and the future, and can guide his own behavior and action. This study uses Tan Shuhua (2008) revised "College Student Self-Control Scale" as an assessment tool, many scholars use this questionnaire to measure self-control ability.

1.7 Research hypotheses

1.7.1 Self-efficacy, subjective well-being and self-control will correlate academic procrastination of college students.

1.7.2 Self-efficacy, subjective well-being and self-control will have the influence on academic procrastination.

1.8 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 (Ralf et al., 1997) Subjective Well-being (E., 1984), and self-control (Dvorak et al., 2009) will be used as

independent variables, and Academic procrastination (Piers, 2007) will be used as dependent variables. The following research models were constructed.

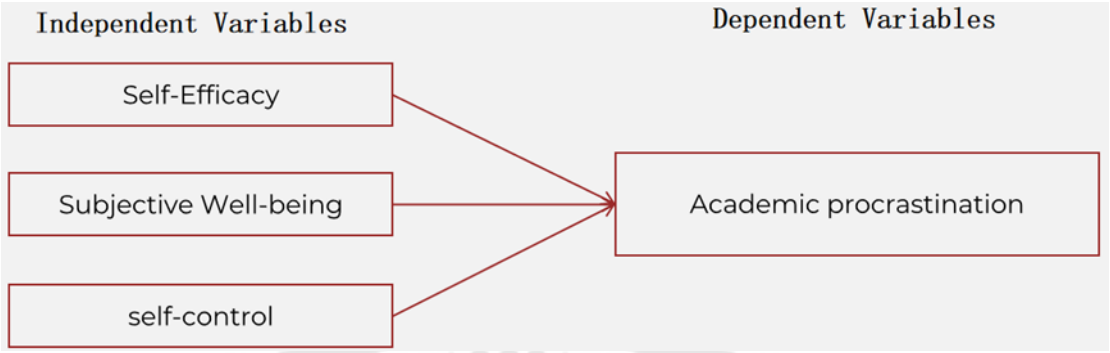

Figure 1 Research conceptual framework

CHAPTER 2
LITERATURE REVIEW

2.1 Academic procrastination

2.1.1 The concept of academic procrastination

In our life and study, procrastination is a common phenomenon, procrastination phenomenon serious will form procrastination. Procrastination is when we put something off until a future date, unnecessarily put it off or procrastinated (Morris, 1978). Continued research on procrastination should not be delayed, especially since its prevalence seems to be growing (Piers, 2007). All the concepts of procrastinus recognize that there must be a postponement, procratinus or postponement of a task or decision. According to the Latin interpretation, the word procratinus is a combination of "pro" and "crastinus", where "pro" means forward. "crastinus" means tomorrow, and the overall moral pushes "what" back to tomorrow (Klein, 1973) is consistent with it. Procrastination has many forms, academic procrastination is one of them. The concept of academic procrastination has been defined by several scholars:

Piers and B. (2016) defined academic procrastination as "voluntarily delaying learning-related tasks and activities despite the expectation that such delay will make the situation worse" in conjunction with previous research, and they considered academic procrastination as procrastination limited to learning-related tasks and activities.

J. and D. (1984a) redefined the concept of academic procrastination: when performing the current task, the individual takes unnecessary behavior and delays the completion of the task, resulting in subjective adverse experiences.

D. et al. (1986) defined academic procrastination as the deliberate and unnecessary delay in starting or completing an academic-related task.

B. et al. (1978) defined academic procrastination as passing a term paper or preparing for an exam at the last minute.

Kyle and A. (2009) defined academic procrastination as the tendency to postpone scheduled academic tasks, even if this may lead to negative consequences.

Lay (1992) defines it as the lack of correct learning behavior, which leads to procrastination in learning.

As a result, academic procrastination refers to the behavior of students who delay academic tasks, even if the delay leads to negative consequences. Procrastination is a common phenomenon and is closely related to psychological factors such as task management, time perception, and motivation. The definition of academic procrastination in this study is consistent with that definition.

2.1.2 Characteristics of academic procrastination

Academic procrastination is not only the result of a lack of sound learning habits and time management, but also the interaction of a range of behavioral, cognitive, and emotional elements (J. & D., 1984b). Steel et al.'s study showed that people with more severe procrastination performed worse academically and that procrastination was therefore a predictor of better academic performance (Piers, 2006).

Behavioral characteristics: Students' aversion to academic tasks and the difficulty of the tasks themselves have an impact on procrastination. Studies have found that aversion to academic tasks is an important reason for students' procrastination (J. & D., 1984b).

Emotional characteristics: The less time pressure, the more likely the individual is to procrastinate; The greater the external temptation, the more likely the individual is to focus on non-task-related activities (S. & C, 2002).

Cognitive characteristics: J. (2004) showed that academic procrastination was mainly caused by fear of failure and the difficulty of the task.

Psychological characteristics: The relationship between procrastination and stress and health changes over time, but the cumulative effect of procrastination is generally negative. Students with procrastination generally have relatively poor academic performance or achievement (M. & F., 1997).

2.1.3 Measurement of academic procrastination

There are many tools for measuring academic procrastination. Different researchers have different definitions of academic procrastination. Researchers study

academic procrastination from different theoretical angles. Therefore, the scales they compile focus on different components of academic procrastination. J. and D. (1984b) argue that procrastination involves not only cognitive or behavioral inefficiencies, but also emotional uneasiness about the behavior. They constructed the PASS (Student Procrastination Assessment Scale), in which students not only indicate whether they are procrastinating on an academic task, but also whether procrastination is a problem for them (an emotional problem). They combined the two scores (behavioral procrastination and emotional upset) into a contrast score by Milgram et al. and tested their relationship to the contributing variables. If behavioral inefficiencies and emotional upset scores are fully correlated, then combining the two is redundant, but if they are not fully correlated, there are serious problems. If there is a weak correlation between the two, it is possible to produce the same PASS composite score for three hypothetical students who differ greatly in components (J. & D., 1984b). Also commonly used scales include Lay's Procrastination Scale, which is used to assess general procrastination behavior (H., 1986). Tuckman Procrastination Scale (TPS) (1991) focused on measuring task avoidance (W., 1991) (Aitken, 1982) Atiken Procrastination Inventory (API) (J. & G., 2002). This study uses the PASS scale revised by Liangmei and Jiayuan (2009), which is applicable to Chinese college students.

1. PASS (Student Procrastination Assessment Scale) is a commonly used scale to measure academic procrastination. It consists of two parts, measuring the degree and reason of academic procrastination respectively. It has 44 items in total. The scale is scored by five points of the Likert. The degree of academic procrastination is reflected by the sum of the scores of procrastination and psychological stress. Ferrari reported that the correlation coefficients of the odd and even items of the PASS scale were significant in all parts, and the retest reliability of the first 12 questions and the second part of the scale were 0.74 and 0.56, respectively, which reached the significant level. This indicates that the scale has sufficient reliability as a measure of academic procrastination (Joseph, 1989). The internal consistency reliability coefficient of the first 12 questions in other existing studies is 0.85 (Chen et al., 2013). Chen Baohua made

appropriate modifications to the PASS scale, writing term papers, preparing for exams, and reading weekly. The three tasks are replaced by exam review, curriculum homework completion and obedience to the tasks that must be completed by the school, department or class management, that is, the learning tasks decided by others, and three self-determined learning tasks are added (Baohua, 2007).

2. PASS (Revised Student Procrastination Assessment Scale) used in this study. The College Students Academic Procrastination Scale is divided into two parts, which examines the academic procrastination and the causes of academic procrastination. This study used the first part of the PASS scale revised by Liangmei and Jiayuan (2009) to measure the prevalence of academic procrastination in college students. The prediction data were analyzed and processed by the original author of the scale, and the results showed that a coefficient of the scale was 0.767, the distinguishing degree of items was 0.351 to 0.647, and the indexes basically met the requirements of the scale (Gan & Xu, 2009). Based on the survey data, Cronbach's α coefficient was used in this study to evaluate the reliability of the scale. An internal consistency of the academic procrastination scale was evaluated using Cronbach's α coefficient. The overall α was 0.85, which is higher than the 0.76 reported by Liangmei and Jiayuan (2009), indicating good internal consistency among college students in assessing procrastination behaviors. Among the three dimensions, "task avoidance" (α = 0.76) and "time management disorder" (α = 0.79) showed higher reliability than non-engineering samples (α = 0.68–0.70), possibly due to the students' sensitivity to structured task management. The "emotion regulation" dimension (α = 0.71) was relatively lower, which may be associated with the emotional complexity involved in procrastination (Piers, 2007). Confirmatory factor analysis (CFA) results showed that the second-order model (χ^2/df = 2.31, CFI = 0.91, RMSEA = 0.066) provided a better fit than the first-order model of Liangmei and Jiayuan (2009) (CFI = 0.85). However, the factor loadings for the "emotion regulation" dimension (λ = 0.39–0.53) were lower than the other dimensions, suggesting the need for further exploration of emotional attribution mechanisms through qualitative interviews.

2.1.4 Intervention on academic procrastination

Academic procrastination is common and has a negative impact, but there has been no "gold standard intervention" developed for academic procrastination (M. & M., 2015). The methods found in the literature to reduce learning procrastination can be basically divided into three categories; 1) Therapeutic treatment; 2) Therapeutic prevention, teacher intervention; 3) Try to hire course instructors to provide non-therapeutic approaches to reduce procrastination among student participants. Much of the (Zacks & Hen, 2018) literature on procrastination stems from studies of college students and their tendency to delay exam preparation and completion of coursework (Burka & Yuen, 1983).

2.1.5 Study of academic procrastination

Procrastination is a common phenomenon in the academic environment. At least 50% of the students have problems related to academic procrastination, with some degree of academic procrastination (J. & D., 1984b). Academic procrastination has a significant negative impact on college students' learning and achievement (Ahmad, 2014). Scholars have studied it from different theoretical angles and put forward various causes and consequences.

In a study that investigated the causes and consequences of learning procrastination, Carola et al. (2013) interviewed 36 students. Their comprehensive analysis shows the internal and external causes of students' procrastination. Internal causes include eight categories. (Emotion, state of mind, behavior, personality, personal beliefs, abilities, previous learning experience, and perceptual task characteristics) Three types of external causes (individual working conditions, lecturer characteristics and institutional conditions).

Academic procrastination is a task-specific behavior that is considered a form of situational procrastination (Harris & Sutton, 1983). Recent research supports the idea that learning procrastination can be viewed from a contextual point of view as a failure of learning self-regulation. The study suggests that the intervention should target the situation and self-regulation deficits to help students overcome procrastination. The

results suggest that further research is needed on academic interventions for academic procrastination and the development of effective interventions (Zacks & Hen, 2018).

Some researchers in China have also done some research on academic procrastination, the main reasons for academic procrastination are task aversion, failure fear dependence, control resistance to lazy adventure and peer pressure (Baohua, 2007). Liangmei and Jiayuan (2006) focused on the relationship between personality and academic achievement and procrastination; Liangmei and Jiayuan (2006) Wanli (2007) initially established a model of the impact of academic procrastination on college students and drew conclusions. While academic procrastination is a common phenomenon and has been extensively studied over the past two decades, there has been little research on academic interventions for academic procrastination (M. & M., 2015). Other studies have highlighted the negative consequences of procrastination in the academic setting, including psychological distress, anxiety, decreased health, negative health behaviours, decreased subjective well-being, low academic performance, regret and evasion of social relationships (Ryung & Hee, 2015).

2.2 Self-efficacy

2.2.1 The concept of self-efficacy

Self-efficacy was first put forward by Bandura in his book. Scholars study self-efficacy from different angles, so they have different understandings of self-efficacy. Individuals have different senses of self-efficacy when facing different environments (Li, 2008).

Ralf et al. (1997) proposed that general self-efficacy is a kind of self-confidence that an individual can maintain in any situation and any task.

Self-efficacy is often described as academic self-efficacy, which defines a student's judgment about his or her ability to accomplish an academic task or specific academic goal (Elias & MacDonald, 2007). Self-efficacy in self-regulated learning is defined as an individual's belief in their ability to effectively use self-regulatory strategies to achieve learning goals (Usher & Pajares, 2008). Yeates (1990) and Stajkovic (1998)

put forward task-specific self-efficacy, i.e., the sense of self-efficacy under special situation, task-specific activity, in which the individual can maintain the confidence to complete the activity (Stajkovic, 1998). Ashton (1984) put forward domain self-efficacy, which is a wider and more universal sense of self-efficacy for specific tasks Zhou Wenxia et al. (2006) believed that self-efficacy is the degree of confidence in whether one can use the skills he has to complete a task.

As can be seen in the classification of the above definition of self-efficacy, self-efficacy is produced before activities, specific efficacy and specific efficacy are produced under specific behaviors and tasks, and general efficacy is narrowly applied. This study uses Schwarer's definition of self-efficacy, which is the self-confidence that an individual can maintain in any situation and any task.

2.2.2 Characteristics of self-efficacy

Bandura (1997) believes that the formation of self-efficacy is influenced by four factors: one's own direct experience, the indirect experience of others, and the physical and emotional arousal of verbal or social persuasion. At the same time, the psychological and behavioral responses of individuals are influenced by four processes: selection process, thinking process, motivation process and psychosomatic response process. Self-efficacy realizes its main action mechanism through the intermediary processes of choice, thinking, motivation and psychosomatic response. (Chen, 2003). Zhang Dingkun et al. (1999) studied learning self-efficacy and concluded that learning self-efficacy affects students in four aspects: behavior choice, persistence, attribution style and academic emotion.

2.2.3 Measurement of self-efficacy

Self-efficacy is usually measured in the form of questionnaires. According to different efficiency classification, scholars have developed different corresponding measurement tables. There are roughly two categories:

1) Special self-efficacy measurement

The student effectiveness scale (MJSES) developed by V. Morgan and J. Jinks (1999) is commonly used. Music Learning Self-efficacy Scale (X. et al., 2019),

English Learning Self-efficacy Questionnaire (ESEQ) (Da, 2016); Management Self-efficacy Scale (Lu, 2004); Career Self-efficacy Scale (Jiang, 2002) et al.

2) General self-efficacy measurement

Bandura (1997) constructed the multi-dimensional scale "Multidimensional Scale of Self-efficacy Perceived Self-efficacy (MSPSE)" in the course of research, which can accurately evaluate self-efficacy. Wood and Lacke (1987) revised and developed the Academic Self-efficacy Questionnaire (ASEQ), which consists of seven sub-tests, including comprehension and memory level, concentration, and class notes. A total of 35 test questions were included. K. et al. (2001) revised the Ralf et al. (1997) General Self-efficacy Scale, which can be widely used in various situations. The scale consists of 10 questions and has a coefficient of internal consistency of 0.87. It has good reliability and validity (K. et al., 2001).The self-efficacy scale demonstrated high internal consistency, with an overall Cronbach's α coefficient of 0.87, aligning with the revised version by K. et al. (2001). The subscales "difficulty coping effectiveness" (α = 0.83) and "social support effectiveness" (α = 0.80) also showed good reliability, reflecting the confidence college students have built through collaborative and team-based training (Bandura, 1997). CFA results indicated that the first-order three-factor model fit well (CFI = 0.95, RMSEA = 0.048), with item loadings ranging from 0.59 to 0.81. Among them, the item "complex problem solving" had the highest loading (λ = 0.81), confirming its relevance to the college students' perception of self-efficacy and highlighting the impact of professional training on this construct. This scale was used in this study for measurement.

2.2.4 Relationship between self-efficacy and academic procrastination

Wendelienvan et al. (2003) said that the procrastination phenomenon exists in learning life. In the process of completing academic tasks, the higher the sense of self-efficacy, the more people can affirm and trust themselves, and thus make corresponding positive learning behavior. The lower the self-efficacy, the more likely the negative learning attitude, resulting in the procrastination behavior. In conclusion, self-efficacy also has a significant impact on academic procrastination. A. (1998) showed that self-

efficacy can predict procrastination and there is a significant negative correlation between the two. For example, college students who have a positive attitude towards themselves have a high sense of effectiveness, and they will make practical plans for themselves in line with the actual situation, so the degree of delay is less; However, college students with low self-efficacy are more likely to procrastinate due to lack of confidence and dare not start.

Students with high self-efficacy believe that they can successfully complete their academic tasks and therefore are more likely to adopt positive learning behaviors and reduce academic procrastination. They are more confident in the face of academic challenges and are more active in coping with difficulties and setbacks. In contrast, students with low self-efficacy are prone to procrastination because they lack confidence in their abilities, which leads to negative learning attitude and behavior (Zhang, 2023) Zou Weixing (2013) found that academic self-efficacy and its dimensions were negatively related to academic procrastination. The results of Geng Yan et al. (2018) showed that self-efficacy had a significant negative predictive effect on academic procrastination. At the same time, it is pointed out in the suggestion that if the general self-efficacy level of college students can be improved, learning efficiency can be effectively improved.

2.3 Subjective well-being

2.3.1 The concept of subjective well-being

The generally accepted content of subjective well-being includes two parts: life satisfaction and emotional experience. Life satisfaction is an overall evaluation of an individual's own life based on his own standards. Emotional experience consists of two parts: positive emotion and negative emotion (Ed et al., 1985) although there are many ways to assess the pleasure-painting continuum in human experience. However, most studies in neo-hedonistic psychology use the SWB assessment (Diener & Lucas, 1999) and propose that SWB refers to the assessment of people's quality of life (Ding, 2005). Subjective Well-Being (SWB) refers to people's evaluation and experience of life in terms of emotional response and overall judgment. It is a multi-dimensional structure with a

tripartite structure, consisting of a cognitive component, life satisfaction and two emotional components, positive and negative (E., 1984). Chinese scholars regard it as a psychological index and a subjective feeling of happy life (Jianhua., 1996). Most people now accept Diener's definition of subjective well-being, which he believes is an individual's overall evaluation of his quality of life according to his own standards. 1984) consists of high positive emotions, low negative emotions and high life satisfaction (Ed et al., 2018). Subjective well-being is a category of positive psychology, which refers to the overall positive evaluation of the quality of life by individuals, which can reflect the degree of psychological and life happiness of individuals, and the direct effect of external and indirect effects of internal factors (Ding, 2005). External factors include social support, life events, external environment, and internal factors include psychological tenacity, self-esteem, etc. It has important theoretical and practical significance to study the subjective well-being of college students (Ma, 2020). Based on Diener's view, the study defines the subjective well-being of college students as the overall positive evaluation of quality of life.

2.3.2 Characteristics of subjective well-being

M. (1999) believes that SWB is largely determined by genetic factors and that SWB is relatively stable throughout the life cycle. Subjective well-being is a subjective experience, and objective external factors often play a role through subjective processing (Ed, 2000). In the past, the study of SWB has gone through two stages: description stage and theoretical construction stage (Xinggui, 2003). Ryan et al. concluded that there is only one way to increase people's well-being, namely, to value personal growth, autonomy, good friendship and social service, and to continuously strive for endogenous goals, that is, according to the self-determination model. "Good life" is the process of an individual's efforts to achieve personal growth, independence, deep friendships with others and social service. (Brrunstein&Schultheiss&Grassmann, 1998)

In recent years, there has been an increase in the study of SWB (E., 1984). In this study, three separable components of subjective well-being were identified: positive

emotions, negative emotions and life satisfaction (Andrews, 1976).Ed (2000) found that the subjective well-being of individuals is not only influenced by external factors, but also gradually affects their emotions after the brain recognizes and processes external factors. Mingxia (2000) proved that expectation is the key factor that affects subjective well-being, and reasonable expectation goals can help individuals improve subjective well-being. In terms of the impact of major events, Gable et al. (2000) showed that positive experiences, rather than negative experiences, have a greater impact on individual SWB. Xing Zhanjun (2002) defines subjective well-being from a brand-new angle, proposes the connotation of experience-based happiness, and constructs the happiness structure of Chinese residents on this basis (J. et al., 2002). Heady and Wearing argue that both events and environment affect SWB, but personality plays a bigger role in the long run. Self-esteem, control tendency and self-concept all affect SWB (Bruce & Alexander, 1989). The study of subjective well-being is of great significance and role in the development of positive psychology (Seligman, M.E.P., 2000).

2.3.3 Measurement of subjective well-being

There are many kinds of scales for subjective well-being, which have been developed and revised by scholars both at home and abroad. Common subjective well-being scales are:

1. Emotional Balance Scale (Bradburn, 1969) This scale has 10 items to measure the individual's positive and negative emotions and the balance between them

2. Subjective Well-being Scale (Ed, 2000) This scale includes Life Satisfaction Scale, Positive Affective Experience Scale and Negative Affective Experience Scale, which is used to measure individual's subjective evaluation of real life and emotional experience feelings and states

3. The Adolescent Subjective Well-being Scale (Zhang ,2004) This scale compiled by Zhang Xinggui in 2004, is used for testing the subjective well-being level of junior high school students. It is divided into two parts: the first part has 36 questions on life satisfaction and the second part has 14 questions on happiness. The higher the

score, the higher the subjective well-being. The internal agreement coefficient of the scale was 0.894, which showed good stability.

4. The Life Satisfaction Index (LSI) (Neugarten,1961) and the Self-Calibrating Trapezoidal Scale (SAS) (Cantril,1965) Both scales evaluate the subjective well-being from the perspective of the cognitive evaluation of the satisfaction of the subjects with their life. (Ding, 2005) is called subjective well-being in the sense of quality of life.

5. A quantitative table of subjective well-being indicators (Campbell et al; citing in Wang, 1999) Subjective well-being refers to the quantitative scale, which measures the level of happiness experienced by the subjects at present. The scale has two parts: the first part is the overall affective index scale, which consists of eight items and the second part is the life satisfaction questionnaire with one item. According to the application of Yao Chunsheng (1995) et al., the retest consistency of the scale was 0.849 ($P<0.001$), and it also suggested that it had good validity (Yunying, 2010).

6.The School Subjective Well-Being Scale (EBESE)(Avian&Noronha, 2021) . This scale is often used to measure students' subjective well-being in school. This scale consists of 27 items, which are divided into three dimensions: school satisfaction (7 items), school positive emotion (10 items) and school negative emotion (10 items), which are answered by five-point Likert scale. Item correlations ranged from 0.50 to 0.81 and were interpreted as moderate to high. The internal consistency of the items was low at 0.96 (F3) and high at 0.99 (F1 and F2). The calculation of internal consistency index showed that Cronbach's alpha coefficient was between 0.82 and 0.88, omega coefficient was between 0.87 and 0.90, alpha value was 0.91 and McDonald's omega value was 0.93, indicating that the instrument had good reliability index. (Avian&Noronha, 2021).

7.This study adopted the The College Student Subjective Well-being Scale(CSSWS) (Jinan & Y., 2006) developed by Ji Nan in 2006. The scale mainly refers to the foreign scales: "Self-esteem Scale" SES (M., 1965), "Center for Epidemiological Research Depression Scale" CES-D (S., 1977). The Emotional Balance Scale ABS (Bradburn, 1969), et al., has 57 items. At the same time, referring to the relevant research at home and abroad, according to the determined 10 dimensions of subjective well-

being, 42 projects were compiled by ourselves. After the strict development process, the scale finally determined 8 dimensions, including self-satisfaction, family satisfaction, negative emotion, positive emotion, energy, life satisfaction, social behavior and interpersonal relationship, with 41 items, and had good reliability and validity. A total of 208 college students were selected as subjects. The correlation coefficient between Campbell's happiness index and this scale was 0.680, $p<0.01$, the internal consistency of the scale was 0.65-0.87, and the internal consistency of the total scale was 0.937. The test-retest reliability reached 0.864, indicating that the scale has good stability across time. Responses are rated on a 5-point Likert scale from 1 (not at all) to 5 (fully). Based on the survey data, Cronbach's α coefficient was used in this study to evaluate the reliability of the scale. The subjective well-being scale also exhibited strong reliability, with an overall α coefficient of 0.90. The "life satisfaction" subscale showed an α of 0.84, close to the original scale developed by Diener (1984) (α = 0.85). However, the "positive emotion" dimension had a slightly lower reliability (α = 0.78), which may reflect cultural tendencies among Chinese students to express emotions more inwardly. The CFA of the two-factor model yielded acceptable fit indices (CFI = 0.92, RMSEA = 0.060). Interestingly, the correlation between the "negative emotion" dimension and the total score was weak (r = -0.19), which contradicts Diener's (1984) theoretical expectations. This discrepancy may be due to college students placing more emphasis on academic and achievement goals rather than on emotional evaluations.

2.3.4 Relationship between subjective well-being and academic procrastination

Because academic procrastination has negative physical and psychological effects on individuals, it is certainly indirectly detrimental to the improvement of our subjective well-being. Moreover, there is a negative correlation between the two (Zhou&Yao, 2007) Subjective well-being significantly negatively predicts academic procrastination. Individuals engage in more academic procrastination when they feel lower levels of well-being (R. & C., 2018)

2.4 Self-control

2.4.1 The definition of self-control

The definition of self-control is different in domestic and foreign scholars, and there are their own studies. The following are some definitions of foreign scholars:

Kopp (1982) said that self-control is the ability of individuals to adjust their own behavior to meet their personal value and social needs.

Baumeister (2007) said that self-control refers to the ability of individuals to change their own behavior in order to meet their ideals, personal values, moral standards and social expectations.

C. et al. (2016) said that self-control refers to the ability of individuals to suppress their current impulses, regulate their behavior by social norms, and consider future long-term goals, reflecting the ability of individuals to resist external temptations

Dvorak et al., (2009) said that self-control is the ability of individuals to monitor and adjust their own behavior in order to achieve specific goals, and to understand the relationship between current behavior and future.

Some studies on self-control by domestic scholars are as follows:

LiC(2022) said that self-control is the alignment of thoughts, emotions, and actions with one's own lasting and valuable goals when faced with temporary, more attractive choices.

Tan (2008) said that self-control is a process of suppressing and overcoming one's own desires, needs or habits and thinking modes, and a process of replacing another with one's behavior or thinking mode.

Wang (2004) said that self-control refers to the ability of an individual to actively manage his own behavior and emotion to conform to the social standard.

Zhang (2013) said that self-control is the ability to inhibit dominant reactions and change habitual behavior. In the individual's informed intention, self-control is the core component of meaning and an important embodiment of executive function.

This study uses the definition of self-control as defined by Dvorak et al. (2009): self-control is the ability of an individual to monitor and adjust his or her behavior in order

to achieve specific goals and to understand the relationship between current behavior and future behavior.

2.4.2 Characteristics of self-control

Self-control is considered as an important psychological variable, which can positively affect the cognition, emotion and behavior of individuals. Mofitt (2011) synonymous the term "self-control" with responsibility, a broad group of personality traits including responsibility, diligence and orderliness, and the common thread that runs through the various concepts of self-control is the idea of regulating the individual through self-effort.

People with high levels of self-control are better able to adjust their thoughts, behaviors and distractions to achieve long-term preferences than impulsive people. Self-control is an individual's ability to control their own internal reactions, suppress wrong or unacceptable behavior intentions in thought, and restrain their corresponding behavior performance in behavior (Tangney et al., 2004). It belongs to one of the psychological variables of self, which is very important for individual development.

Self-control is a necessary condition for the achievement of many goals, whether they are set by oneself or by society. People with high self-control engage in healthier behaviors, such as less substance abuse and a higher probability of exercising, than those with low self-control (Vohs & Baumeister, 2017). Self-control typically includes two abilities, namely, the ability of individuals to meet social expectations through self-regulation and the ability of individuals to inhibit impulsive psychology and behavior (Guan, 2018).

2.4.3 Concepts of self-control

Many theories are representative and explain the self-control in detail. The theory of self-control is very rich, such as the theory of self-control dual system, the theory of finite resources and the theory of self-control resource consumption.

1.Self-control dual-system theory: Hot-cool model.

Metcalfe and Mischel (1999) proposed a self-controlled cooling/heating system model, which considers that the execution process of self-control is performed

by a hot system and a cool system (De Ridder et al., 2012). Impulsive/reflective model. Hofmann et al. (2009) believe that the impulsive behavior of individuals originates from the impulsive system, which is a conditioned reflex to the instinctive needs and desires of individuals, without paying attention to the over-processing of resources. Impulsive model requires less planning and adjustment ability, and is less influenced by self-regulation. The reflective model relies more on cognitive resources and information processing and regulatory control (Hofmann, Friese, &Strack, 2009).

2. Self-control resource consumption theory

Individuals mobilize their own resources to resist temptation and thus improve negative emotions such as anxiety and depression (Kopp & Claire, 1982), while self-control relies on their own limited resources. Just as muscles can be fatigued by exertion, self-control behaviors cause short-term damage (self-wasting) in the process of self-control, even on unrelated tasks (Baumeister et al., 1998).

3. Self-control theory of limited resources

The theory of finite resource theory of self-control, proposed by Baumeister et al. (1994), explores the internal mechanism of self-control and holds that the energy of self-control is limited and fixed (Baumeiste et al., 2007), the more self-control is invested in a task, the more self-loss is. Self-controlled energy depletion has been found to lead to reduced prosocial performance (Osgood & Muraven, 2015).

2.4.4 Measurement of self-control

At present, the self-control measurement methods include observation and record method and questionnaire survey. The questionnaire used in the questionnaire survey is introduced here. Common questionnaires are as follows:

1) The Self-Control Scale (SCS)

Taneyet al. (2004) published the Self-Control Scale (SCS), which uses Likert5 rating score, and the topics include: healthy habits, work (study) performance, self-discipline, non-impulse behavior tendency, and reliability. The scale's alpha coefficient was 0.89.

2) The Self-Control Dual System Scale

Dvorak and Simons developed the Self-Control Dual System Scale in 2009. The scale is divided into two parts: control system and impulse system.

3) The Multidimensional Self-Control Scale

Nilsen (2020) proposed the Multidimensional Self-Control Scale, which consists of 29 questions, including primary and secondary factors (Li, 2022).

4) Self-Control Strength (EMA)

Self-Control Strength (EMA) developed by Anna Schondube et al.'s. This scale is based on the State Self-Control Scale and the Self-Control Theory (Tice & Baumeister, 1997) revision.

5) The Self-Control Scale for College Students

According to Tangney's research (Tan, 2008), Tan Shuhua published a new "Self-Control Scale for College Students" for China through translation and revision, which includes 19 questions in five areas: resisting temptation, impulse control, healthy habits, focus on work and moderation. A survey was conducted on 799 college students in Wuhan, and the scale was analyzed by confirmatory factor analysis, reliability and validity. The results of confirmatory factor analysis showed that the five-factor structure of SCS was well fitted. The internal consistency reliability of SCS was 0.862 and test-retest reliability was 0.850. Taking the subjects' average grade score, satisfaction with interpersonal relationship, satisfaction with life and mental health as the criterion, the correlation with SCS was 0.146, 0.280, respectively. 0.163; 0.317. SCS met the requirements of psychometrics. It can be used as a tool to measure the self-control ability of Chinese college students. Based on the survey data, Cronbach's α coefficient was used in this study to evaluate the reliability of the scale.The self-control scale showed good internal consistency, with an overall Cronbach's α of 0.84. The subscales "goal persistence" (α = 0.81) and "time management" (α = 0.77) were reliable, while the "impulse suppression" subscale had a lower α of 0.65, which is below the national norm (α = 0.70) reported by Tan Shuhua et al. (2020). This lower reliability may relate to stress reactions experienced by college students under heavy academic workloads. CFA

results for the five-factor model showed moderate model fit (CFI = 0.87, RMSEA = 0.075). A high correlation was observed between "temptation resistance" and "goal persistence" (ϕ = 0.69), which supports the high-order self-regulation construct proposed by Tan Shuhua et al. (2020), suggesting that these dimensions may form a broader factor of self-regulation.

This study uses Tan Shuhua's revised "College Student Self-Control Scale" as an assessment tool, many scholars use this questionnaire to measure the self-control ability, the research shows that the questionnaire has good reliability and validity.

2.4.5 Relationship between self-Control and academic procrastination

Self-control is an important predictor of procrastination (Piers, 2007). Improving self-control can reduce academic procrastination among college students (Yu et al., 2023). Self-control is negatively associated with academic procrastination, i.e., the stronger the self-control, the lower the probability of academic procrastination (Duckworth, 2019). The stronger the self-control, the lower the level of academic procrastination (Kim et al., 2017). For students, self-control reduces academic procrastination and improves academic performance (Chen et al., 2016).

Research has shown that academic procrastination is not only a widespread behavioral issue, but also involves complex cognitive, emotional, and motivational mechanisms (Piers, 2007); (J. & D., 1984b). Self-efficacy has been identified as a key factor in regulating students' learning behaviors, with higher levels of self-efficacy associated with a reduced tendency to procrastinate when facing academic tasks (Wendelien van et al., 2003; Haycock, 1998). Subjective well-being, by influencing individuals' emotional states and life satisfaction, has also been found to partially predict the extent of academic procrastination (Ed et al., 2018); (R. & C., 2018). In addition, self-control, as a self-regulatory mechanism, plays a crucial role in resisting temptation, managing time, and achieving academic goals, and is significantly negatively correlated with procrastination behaviors (Tangney et al., 2004; Steel, 2006). Some studies have further suggested potential interactive effects among these three psychological factors, which may jointly influence the manifestation of academic procrastination (Kim et al.,

2017). In summary, this chapter provides a theoretical foundation for the subsequent empirical analysis and establishes a research framework that investigates the predictive effects of self-efficacy, subjective well-being, and self-control on academic procrastination among Chinese college students

CHAPTER 3
METHODOLOGY

3.1 Population and sample

3.1.1 Population

The population of this study comprises 1,173 students enrolled in the Department of Electronics and Computer Science at the Yunnan Institute of Metallurgical Industry. These students are distributed across three academic years as follows: Freshmen: 364 students (31%) Sophomores: 414 students (35%) Juniors: 395 students (34%)

3.1.2 Sample

A total of 300 students were selected for the sample using Taro Yamane's formula, the required sample size was calculated to be 299 at a 95% confidence level with a 5% margin of error. To simplify the sampling process, the sample size was rounded to 300. Simple random sampling was used to ensure the representativeness of the sample across academic years distributed proportionally across academic years: Freshmen: 93 students Sophomores: 106 students Juniors: 101 students as Table 1.

Table 1 Population and sample distribution

Category	Total Population	Proportion of Total (%)	Calculated Sample Size	Actual Sample Size
Freshman	364	0.31	364÷1173×300≈93	93
Sophomore	414	0.35	414÷1173×300≈106	106

Table 1 (continued)

Category	Total Population	Proportion of Total (%)	Calculated Sample Size	Actual Sample Size
Junior	395	0.34	395÷1173×300≈101	101
Total	1173	1	-	300

3.2 Research tools

To measure the four indicators of academic procrastination, self-efficacy, subjective well-being, and self-control, the questionnaire in this study is divided into four sections, each corresponding to the measurement of one variable.

1. Academic Procrastination assessed by Academic Procrastination Assessment Scale (student version)
2. Self-efficacy assessed by General Self-Efficacy Scale (GSES)
3. The College Student Subjective Well-being Scale (CSSWS).
4. Self-Control assessed by College Students Self-Control Scale (SCS)

3.2.1 Academic Procrastination Assessment Scale (student version)

This study used the first part of the PASS scale revised by Gan (2009), which was adapted to measure the prevalence of academic procrastination in college students. The first part has a total of 6 items, a total of 18 sub-topics, 6 items are: writing term papers; Preparation and review; Complete weekly homework; Academic management tasks: Filling in forms, selecting courses, issuing lending cards, etc.; Participate in tasks. (e.g., meeting with mentors, learning to complete the tasks assigned by the college or mentors); Behaviors in school (such as learning tasks assigned to yourself). According to the situation of Chinese students, Gan (2009) replaced "weekly reading tasks with "complete the academic tasks assigned by the teacher". (Gan&Xu, 2009) The original assessment scale was divided into five situations from a to e, and the subject circled the options that fit their true situation. In this study, the score of this table is modified as

follows: each question has five options 1-5 points, corresponding to the original table a to e, the higher the score, the more serious the delay.

Examples:

I. Writing term papers						
Degree/Score (Minute)	Never / 1	Barely / 2	Sometimes / 3	Often / 4	Always / 5	Score (Minute)
0. To what extent have you delayed the task?						
00. To what extent do you think the delay in this task is a problem for you?						

3.2.2 General Self-Efficacy Scale (GSES)

This study uses the modified Ralf et al. (1997) General Self-efficacy Scale, which has 10 items, internal consistency coefficient 0.87 and retest reliability 0.83. The half-half reliability was 0.82, and the reliability and validity were good. In the test, let the subject according to their actual situation, evaluate the degree of conformity with each question, from "completely incorrect" to "completely correct" respectively give 1-4 points.

The following 10 sentences are about your general opinion of yourself. Please compare your actual situation and feelings with the various descriptions below, and fill in the appropriate number at the end of each item according to your actual situation. If your situation matches the description, 1 (completely incorrect) Compare match right at 2

(somewhat correct) Sort of match right at 3 (mostly correct) Completely don't match right at and 4 (exactly correct). There is no right or wrong answer. Answer it according to the actual situation.

Examples:

Subject	Totally incorrect	A little bit right	Mostly correct.	It's absolutely right
0. I can always solve the problem if I do my best.				
00. Even if others oppose me, I still have a way to get what I want.				

3.2.3 Subjective well-being scale

In this study, a Chinese scholar Ji Nan compiled The College Student Subjective Well-being Scale (CSSWS) in 2006, with 41 items, the internal consistency of the scale was 0.65-0.87, the internal consistency coefficient of the total scale was 0.937, and the retest reliability was 0.864. It has good reliability and validity. Responses are given on a 5-point Likert scale ranging from 1 (not at all) to 5 (fully).

Guidance: Please describe yourself according to your true situation. Your answer will never be leaked out and we will keep it strictly confidential. Please note: each question should be answered, and only one answer that best suits your situation, thank you for your cooperation! Please read each sentence below carefully and choose the option that best fits your real situation based on the situation in the past month, Totally conformity = 1, Non-conformity = 2, Not sure = 3, Conform = 4, Fully conformity = 5.

Examples:

Project	Totally conformity / 1	Non-conformity / 2	Not sure / 3	Conform / 4	Fully conformity / 5
0 I am eager to acquire new experience and knowledge.					
00 My life is in good shape					

3.2.4 College Students Self-Control Scale (SCS)

This study uses Tan Shuhua's revised "College Student Self-Control Scale" as the assessment tool, the scale includes five aspects: resisting temptation, impulse control, healthy habits, focus on work and temperance, with 19 questions in total.

Guidance: Dear students, hello! Please read each question carefully and grade it according to your actual situation.1 point, completely non-compliant; 2 points, nonconformity; 3 points, uncertain; 4 points, compliant; 5 points, very much in line.Please note: There is no right or wrong answer, as long as it fits your actual situation. Please answer questions one by one, do not miss any questions, thank you again for your cooperation!

Examples:

Subject	very much conforming to the	Complies with	Not sure.	Non-conformance	Totally out of line
0. I can resist temptation well.					
00. It is difficult for me to break the bad habit.					

Table 2 Score Ranges and Grade Classification Criteria for Core Variables

Variable	Low-Level Range	Medium-Level Range	High-Level Range
Total Score of Academic Procrastination	≥60 (Severe Procrastination)	47-59 (Moderate Procrastination)	≤46 (Mild Procrastination)
Total Score of Self-Efficacy	≤30 (Low Efficacy)	31 - 37 (Medium Efficacy)	≥38 (High Efficacy)

Table 2 (continued)

Variable	Low-Level Range	Medium-Level Range	High-Level Range
Total Score of Subjective Well-being	≤124 (Low Well-being)	125 - 145 (Medium Well-being)	≥146 (High Well-being)
Total Score of Self-Control	≤42 (Low Self-Control)	43 - 54 (Medium Self-Control)	≥55 (High Self-Control)

Based on 50 valid pretest questionnaires, this study examined the reliability and validity of four key scales (academic procrastination, self-efficacy, subjective well-being, and self-control). All scales demonstrated good internal consistency, with Cronbach's alpha coefficients exceeding 0.7. The corrected item-total correlation (CITC) values were all above 0.2, confirming adequate discriminant validity for all questionnaire items (as a table 3).

Table 3 Validity and Reliability of Scale

Variable Name	Number of Items	Cronbach's Alpha	CITC Range
Academic Procrastination	18	0.751	0.213 - 0.487
Self - Efficacy	10	0.774	0.234 - 0.509
Subjective Well - being	41	0.783	0.221 - 0.471
Self - Control	19	0.761	0.208 - 0.458

3.3 Data collection and analysis methods

3.3.1 Data collection

This study mainly collects data through questionnaire survey. Questionnaires are distributed online, and questionnaire links are released with the assistance of university teachers. Data were collected over a one-month period to ensure coverage of as many subjects as possible.

3.3.2 Data analysis

Excel (2021) and SPSS version 27.0 were used for data processing and statistics. All data were processed and statistically analyzed using Excel (2021), version 27.0 SPSS software. Descriptive analysis, statistical analysis were performed:

1. Descriptive statistic : mean, standard deviation ,percent
2. The study correlation use statistic : Pearson correlation
3. The study effecting use multiple regression analysis

3.4 Ethical considerations

This study strictly follows the ethical requirements of the research, and fully protects the privacy and informed consent of the subjects during data collection. All subjects volunteered to participate in the study and signed the informed consent form after being clearly informed of the purpose and procedures of the study. All personal information will be anonymized during data analysis and presentation to ensure that the subject's identity will not be disclosed.

CHAPTER 4
RESULTS

Symbols Used in Data Analysis

Data analysis and mean of result of data analysis researcher determine symbol used data analysis.

n Replace Sample Size

M Replace Mean

S.D. Replace Standard Deviation

Miv Replace Minimum Value

Mav Replace Maximum Value

β Replace Raw Scores Linear Regression

t Replace t – value

p Replace p – value

sr^2 Replace Partial R^2

SE Replace Standard Error

B Replace Standard Scores Linear Regression

R^2 Replace Square Multiple Correlation Coefficient

ε: Replace Error Term

Abbreviation Used in Data Analysis

Researcher determine abbreviation used data analysis.

X_1 Replace Self-efficacy

X_2 Replace Subjective well-being

X_3 Replace Self-control

Y Replace Academic procrastination

Phase1 The general data of college students.

Researcher analyzed number and percentage of the general data of college students as table 4.

Table 4 number and percentage of the general data of college students (n=300)

General data of college students	Number of Students	Percentage
1. Gender		
Male	135	45
Female	165	55
Total	300	100.00
2. 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.

The second phase of the study investigated the relationships between self-efficacy, subjective well-being, and self-control as potential factors influencing academic

procrastination among college students. This examination focused on determining the nature and strength of these psychological constructs' associations with procrastinatory behaviors in academic settings.

4.1 Descriptive statistical analysis

4.1.1 Descriptive statistics of core variables

Table 5 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

Standardized scales were used to measure four core variables: academic procrastination, self-efficacy, subjective well-being and self-control. Table 3 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.

4.2 Correlation analysis among variable

4.2.1 Overall correlation analysis

This study is based on the theoretical framework and hypothesis 1 : Self-efficacy, subjective well-being and self-control will correlate academic procrastination of college students.

Table 6 Pearson Correlation Coefficient Matrix of Variables (n=300)

Factors	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	-	-	-

Notes: ***p < 0.001, **p < 0.01; absolute values of correlation coefficients: 0.10–0.29 (low correlation), 0.30–0.49 (medium correlation), ≥0.50 (high correlation).

From table 6, 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 .

4.2.2 Multidimensional correlation analysis

Table 7 Partial Significant Results of Subscale Correlations

Dimension 1	Dimension 2	r	p
Academic Procrastination-Task Avoidance	Self-Efficacy-Difficulty Coping	-0.47***	<0.001
Academic Procrastination-Time Management Disorder	Self-Control-Goal Persistence	-0.56***	<0.001
Subjective Well-being-Life Satisfaction	Academic Procrastination Total Score	-0.28***	<0.001
Self-Control-Impulse Inhibition	Academic Procrastination-Emotional Regulation	-0.33***	<0.001
Self-Efficacy-Social Support	Academic Procrastination-Task Initiation	-0.17*	0.013

Notes: ***p < 0.001, *p < 0.05; abbreviations of dimension names correspond to the scale structure in the original text.

The "task avoidance" dimension of academic procrastination was significantly negatively correlated with the "difficulty coping effectiveness" dimension of self-efficacy ($r=-0.47$, $p<0.001$), with a moderate intensity. The "time management disorder" dimension of academic procrastination was significantly negatively correlated with the "goal persistence" dimension of self-control ($r=-0.56$, $p<0.001$), and the intensity was high.

The dimension of "life satisfaction" of subjective well-being was significantly negatively correlated with the total score of academic procrastination ($r=-0.28$, $p<0.001$), and the intensity was low. The dimension of "positive emotion" was significantly negatively correlated with the total score of academic procrastination ($r=-0.19$, $p<0.01$), and was of low intensity. The "impulse suppression" dimension of self-control was significantly negatively correlated with the "emotion regulation" dimension of academic procrastination ($r=-0.33$, $p<0.001$), with a moderate intensity. The "social support efficacy" dimension of self-efficacy was significantly negatively correlated with the "task initiation" dimension of academic procrastination ($r=-0.17$, $p=0.013$), with low intensity.

4.3 Results of regression analys

4.3.1 Construction of regression analysis model

This study is based on the theoretical framework and hypothesis 2 : Self-efficacy, subjective well-being and self-control will have the influence on academic procrastination. According to the research purpose, it aims to reveal the differences in the intensity and pathways of the effects of three types of psychological resources on academic procrastination among college students. The model incorporates self-efficacy, subjective well-being, and self-control as core predictive variables, and takes the total score of academic procrastination as the dependent variable. The stepwise regression method is used to test the independent contribution of each variable, and the incremental explanatory power of the variable combination is evaluated through hierarchical regression analysis. The analysis process strictly follows the logical chain of the research hypotheses.

4.3.2 Model fitting degree and explanatory power

Table 8 Results of the Multiple Linear Regression Model (Dependent Variable: Academic Procrastination)

Predictor Variables	β	t	p	95% CI	VIF	Partial R^2 (sr^2)
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

Model Summary: $R^2 = 0.32$, Adjusted $R^2 = 0.31$, $F(3,296) = 47.35$, $p < 0.001$, DW = 1.89

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.

Based on a multiple linear regression analysis of 300 Chinese college students, this study examines the predictive effects of self-efficacy (X_1), subjective well-being (X_2), and self-control (X_3) on academic procrastination (Y). The following standardized regression model was established:

$$Y = -0.22X_1 - 0.14X_2 - 0.48X_3 + \varepsilon$$

This regression model is based on standardized coefficients (β), indicating that all three independent variables significantly negatively predict academic procrastination ($p < .001$), when controlling for other factors. Among them, self-control ($\beta = -0.48$) shows the strongest predictive power, suggesting that enhancing self-control may be the most effective way to reduce academic procrastination among college students.

The model's coefficient of determination (R^2) is 0.31, which means that the three predictors collectively explain 31% of the variance in academic procrastination.

4.3.3 Variable independent contribution analysis

The standardized regression coefficient (β) showed that self-control (β=-0.48, $p<0.001$) had the strongest negative predictive effect on academic procrastination, with the effect size * $f^{*2}=0.29$ (moderate effect); Secondly, it is self-efficacy (β=-0.22, $p=0.002$, $f^2=0.11$, small effect); The predictive effect of subjective well-being (β=-0.14, $p=0.036$, $f^2=0.06$) was the weakest, and its partial correlation square ($sr^2=0.02$) indicated

insufficient independent explanatory power. The unique contribution of self-control (sr^2=0.29) was significantly higher than that of other variables, confirming its core moderating role in the procrastination behavior of college students.

4.3.4 Hierarchical regression incremental validity analysis

Table 9 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.

4.3.5 Interaction effect and covariate test

The interaction term between self-efficacy and self-control did not reach significance (β=0.08, p=0.12), indicating that the influence of the two on academic procrastination was a simple superposition relationship rather than a synergistic enhancement effect. This might be related to the highly deterministic and process-oriented characteristics of engineering tasks. Gender (β=-0.04, p=0.52) and grade (β=0.03, p=0.65), as covariates, did not show significant moderating effects, indicating that the procrastination behavior of college students tended to converge among different demographic groups, and individual differences were weakened by the consistency of professional backgrounds.

CHAPTER 5
CONCLUSION AND DISCUSSION

This study investigates the effects of self-efficacy, subjective well-being, and self-control on academic procrastination among Chinese college students. Utilizing quantitative data collected from 300 college students, correlation and regression analyses were conducted to identify psychological predictors of academic procrastination. The results indicate that self-efficacy, subjective well-being, and self-control all exhibit significant negative correlations with academic procrastination. Among these factors, self-control demonstrates the strongest inhibitory effect, followed by self-efficacy, while subjective well-being shows a comparatively weaker yet statistically significant association.

5.1 Brief summary of the study

This study addressed the research questions by examining the relationships between self-efficacy, subjective well-being, self-control, and academic procrastination among Chinese college students. Descriptive statistics were first employed to reveal the overall tendencies across these four variables. Subsequently, Pearson Product-Moment Correlation (PPC) analysis was conducted to assess the strength and direction of variable relationships, followed by multiple regression analysis to determine the predictive power of each psychological factor. Furthermore, multicollinearity diagnostics including tolerance and variance inflation factor (VIF) were performed to verify the stability of the regression model.

The correlation analysis yielded significant findings. All three independent variables demonstrated significant negative correlations with academic procrastination. Specifically, self-control exhibited the strongest correlation ($r = -0.52$, $p < 0.001$), followed by self-efficacy ($r = -0.42$, $p < 0.001$) and subjective well-being ($r = -0.31$, $p < 0.001$). These results confirmed Hypothesis 1.7.1 Self-efficacy, subjective well-being and self-control will correlate academic procrastination of college students.which posited

negative correlations between self-efficacy, subjective well-being, self-control and academic procrastination.

Regression analysis further supported Hypothesis 1 : Self-efficacy, subjective well-being and self-control will have the influence on academic procrastination. The regression model achieved statistical significance ($F(3,296) = 47.35$, $p < 0.001$), with the three predictors collectively accounting for 31% of the variance in academic procrastination. Among them, self-control emerged as the strongest predictor ($\beta = -0.48$, $p < 0.001$), indicating its dominant role in mitigating procrastination behaviors. Self-efficacy also showed significant predictive value ($\beta = -0.22$, $p < 0.001$), while subjective well-being demonstrated a relatively weaker yet statistically meaningful effect ($\beta = -0.14$, $p < 0.05$).

Multicollinearity diagnostics confirmed the model's robustness, with all tolerance values exceeding 0.70 and VIF values remaining below 5. These results indicate negligible multicollinearity concerns and demonstrate the independent contributions of each predictor to the outcome variable.

In conclusion, all experimental hypotheses were supported. Self-efficacy, subjective well-being, and self-control each exerted significant influences on academic procrastination, with self-control showing the most pronounced effect, followed by self-efficacy, and then subjective well-being with a modest yet statistically significant impact. These findings provide a theoretical foundation for developing targeted interventions to reduce academic procrastination, particularly for students in demanding technical disciplines.

5.2 Discussion of the results

This study examines the effects of three psychological variables - self-efficacy, subjective well-being, and self-control - on academic procrastination among Chinese college students through systematic data analysis. The statistical results demonstrate significant negative correlations between these psychological factors and academic

procrastination, with subsequent regression analyses further confirming their predictive effects. The detailed findings are presented as follows:

5.2.1 Correlation and regression analysis of self-control and academic procrastination

The Pearson correlation analysis revealed a highly significant negative correlation between self-control and academic procrastination ($r = -0.52$, $p < 0.001$). Among the three examined variables (self-efficacy, subjective well-being, and self-control), self-control demonstrated the strongest correlation coefficient, indicating its predominant role in predicting academic procrastination. This finding aligns with previous research by Tangney et al. (2004) and Steel (2006), supporting the conceptualization of self-control as a core self-regulatory resource that facilitates delay of gratification and task execution.

Regression analysis yielded a standardized coefficient of $\beta = -0.48$ ($p < 0.001$) for self-control, with a unique variance contribution of $sr^2 = 0.29$, representing a medium effect size ($f^2 = 0.29$). These results identify self-control as the most robust predictor of academic procrastination among the three variables, providing empirical support for Steel's (2007) self-regulatory failure model. The findings suggest that impaired self-control constitutes a key determinant of procrastination behaviors, particularly when students engage in cognitively demanding engineering coursework. Multicollinearity diagnostics confirmed the absence of collinearity concerns for the self-control variable (VIF = 1.43), thereby reinforcing the model's statistical robustness.

5.2.2 Correlation and Regression Analysis of Self-Efficacy and Academic Procrastination

The results demonstrate a moderate negative correlation between self-efficacy and academic procrastination ($r = -0.42$, $p < 0.001$), suggesting that enhancing self-efficacy may contribute to reducing procrastination behaviors to some extent. This finding aligns with Bandura's (1997) social cognitive theory regarding the influence of self-efficacy on task initiation and persistence, and is consistent with Haycock's (1998) empirical findings among university student populations.

Regression analysis revealed that self-efficacy yielded a standardized coefficient of β = -0.22 (p = 0.002), accounting for a unique variance of sr^2 = 0.11, which corresponds to a small effect size (f^2 = 0.11). Although less pronounced than the effect of self-control, these results indicate that self-efficacy still plays a significant role in motivation activation and task initiation processes.

These findings are echoed in the research of Klassen et al. (2008), who reported that students from secondary schools and universities in three different countries with stronger self-efficacy beliefs were less likely to engage in academic procrastination. Likewise, Steel (2007), through an extensive meta-analysis, consistently identified self-efficacy as a key negative predictor of procrastination across varied educational contexts. In a more recent study, Zhang et al. (2022) observed that for Chinese university students, higher levels of academic self-efficacy were significantly linked to lower procrastination tendencies, particularly in areas involving goal formulation and time organization. Collectively, these studies underscore the potential of self-efficacy enhancement as a practical approach for reducing procrastination in academic settings.

5.2.3 Correlation and Regression Analysis of Subjective Well-Being and Academic Procrastination

The correlation analysis revealed a significant yet modest negative association between subjective well-being and academic procrastination (r = -0.31, $p < 0.001$), indicating that individuals' emotional states and life satisfaction may contribute to mitigating procrastination behaviors to some degree. This finding corroborates Lai and Lin's (2018) research demonstrating the negative predictive effect of subjective well-being on procrastination.

In the regression model, subjective well-being showed a standardized coefficient of β = -0.14 (p = 0.036), accounting for a unique variance of sr^2 = 0.02. While statistically significant, this represents only a marginal effect size (f^2 = 0.06). These results suggest that although subjective well-being maintains predictive validity, its influence remains relatively limited compared to the effects of self-control and self-efficacy.

Further support for this result is provided by Sirois and Tosti (2012), who reported that individuals with higher levels of life satisfaction and more frequent positive emotional experiences were less inclined to procrastinate, which they linked to improved emotional self-regulation and stronger consideration of future outcomes. In a related study, Steel and Klingsieck (2016) argued that emotional well-being helps reduce habitual procrastination by decreasing the tendency to rely on avoidance as a coping strategy. Consistent with these findings, Yang et al. (2021) investigated Chinese university students and found that those who reported greater emotional balance and satisfaction with life showed significantly lower academic procrastination. Overall, these results imply that subjective well-being, while not the most influential factor, still plays a valuable role in lowering procrastinatory behavior by enhancing emotional and motivational resilience.

5.2.4 Summary of model and hypothesis testing

The analysis revealed that the overall regression model demonstrated good fit, $F(3,296) = 47.35$, $p < 0.001$, with an adjusted R^2 of 0.31. This indicates that the three predictor variables collectively accounted for 31% of the variance in academic procrastination, exceeding the average level (typically $R^2 = 0.25$-0.28) observed in related research domains. The VIF values were all below 1.5 and tolerance values exceeded 0.7, effectively ruling out multicollinearity concerns.

The study confirmed both research hypotheses: (1) self-efficacy, subjective well-being, and self-control all showed significant negative correlations with academic procrastination; and (2) all three variables significantly predicted academic procrastination, with self-control exhibiting the strongest predictive power, followed by self-efficacy, while subjective well-being demonstrated relatively weaker but still significant effects. These findings provide an empirical foundation for developing targeted interventions to reduce students' academic procrastination.

5.3 Suggestion

5.3.1 Suggestion for applying

1. The results of this study demonstrate that self-control capacity constitutes the core variable for inhibiting academic procrastination behaviors, with its influence being significantly greater than that of self-efficacy and subjective well-being. Therefore, in higher education practice, it is imperative to establish an intervention system centered on "enhancing students' self-regulation capacity," which should systematically incorporate self-regulation training into the talent cultivation program for engineering education. This includes offering specialized elective courses to systematically teach skills such as goal setting, task decomposition, and emotion regulation. It is recommended to embed functional modules like task tracking, progress reminders, and self-assessment in academic management platforms to facilitate real-time monitoring of learning progress and improve self-management capabilities. Concurrently, the establishment of "academic self-discipline groups" or "time management workshops" should be encouraged to enhance executive function through peer supervision and mutual assistance.

Instructors should consciously guide students to implement phased goal setting, task decomposition, and time management training in routine teaching practices. Positive behavior reinforcement should be implemented to strengthen students' motivation for self-control.

2. While college students possess considerable independence, family support remains essential. Families can provide effective support by making supportive inquiries about students' daily lives and academic progress without imposing pressured supervision. For students with weaker self-discipline, remote monitoring proves particularly beneficial, including assisting them in setting semester goals and conducting regular progress checks through phone and video communication - offering encouragement and support without excessive control, which is highly advantageous for college students.

3. Students should enhance their awareness of the importance of self-control capacity through cognitive restructuring, recognizing the long-term consequences of procrastination, such as accumulated academic stress and decreased sleep quality. Students can also proactively establish positive interpersonal relationships by participating in student organizations, course discussions, and collaborative projects to strengthen their sense of belonging and peer monitoring capacity. Regarding goal setting, it is recommended to break down long-term goals into short-term achievable sub-goals, thereby accumulating accomplishment experiences through continuous completion of smaller tasks, which consequently enhances self-efficacy and learning motivation. Additionally, maintaining visual progress tracking through methods like goal journaling and daily check-ins can effectively reinforce executive momentum.

5.3.2 Suggestion for Future Research

1. Future research should explore multiple dimensions to enhance understanding of academic procrastination among college students. The inclusion of additional theoretically and practically significant variables—including personality traits, future time perspective, achievement motivation, and social support—would facilitate the development of more comprehensive predictive models to better investigate the formation mechanisms of academic procrastination. Examining the interaction effects between self-efficacy, subjective well-being, and self-control with other psychological variables such as anxiety, perfectionism, and academic burnout could elucidate their potential mediating or moderating roles across different psychological pathways.

2. Future research should be given to investigating how family background factors—particularly parental education levels, parenting styles, and degree of family support—influence students' psychological and behavioral patterns. These factors may indirectly affect academic procrastination by modifying students' emotion regulation abilities and self-perceptions. Applying a social systems theory framework would enable examination of how multi-level variables (individual, family, and institutional) interact synergistically in the development of procrastination behaviors.

3. Furture research should also expand the range of outcome variables associated with academic procrastination, including its relationships with academic performance, academic burnout, career decision-making behaviors, and physical-mental health status. Such investigations would allow for deeper analysis of procrastination's potential impacts on students' comprehensive development, thereby providing stronger theoretical support for educational interventions. Incorporating well-being interventions and positive psychology education into college student development programs may help reduce academic procrastination indirectly by enhancing psychological resources, while simultaneously improving students' self-efficacy and goal achievement capabilities.

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APPENDIX

1. Academic Procrastination Assessment Scale (Student Version)

Guidance: Dear students, hello! For the following learning activities, please assess your degree of delay or procrastination, and divide the assessment scale into five situations from a to e, depending on how often you waited until the deadline to get started. Fill in the score where it fits your actual situation.

I. Writing term papers

Degree/Score (Minute)	Never / 1	Barely / 2	Sometimes / 3	Often / 4	Always / 5	score (Minute)
1. To what extent have you delayed the task?						
2. To what extent do you think the delay in this task is a problem for you?						
3. To what extent are you willing to reduce the tendency to procrastinate tasks?						

II Examination Preparation Review

4. To what extent have you delayed the task?						
5. To what extent do you think the delay in this task is a problem for you?						

Degree/Score (Minute)	Never / 1	Barely / 2	Sometimes / 3	Often / 4	Always / 5	score (Minute)
6. To what extent are you willing to reduce the tendency to procrastinate tasks?						

III. Complete weekly homework

7. To what extent have you delayed this task?						
8. To what extent do you feel the delay in this task is a problem for you?						
9. To what extent are you willing to reduce the tendency to procrastinate tasks?						

IV Academic management tasks: filling in forms, selecting courses, and applying for lending cards.

10. To what extent have you delayed this task?						
11. To what extent do you feel the delay in						

Degree/Score (Minute)	Never / 1	Barely / 2	Sometimes / 3	Often / 4	Always / 5	score (Minute)
this task is a problem for you?						
12. To what extent are you willing to reduce the tendency to procrastinate tasks?						

V Participate in tasks (e.g., meeting with the mentor, learning to complete tasks assigned by the Academy or the mentor)

13. To what extent have you delayed this task?						
14. To what extent do you feel the delay in this task is a problem for you?						
15. To what extent are you willing to reduce the tendency to procrastinate tasks?						

Degree/Score (Minute)	Never / 1	Barely / 2	Sometimes / 3	Often / 4	Always / 5	score (Minute)

VI's usual behavior in school (e.g., learning tasks assigned to yourself)

16. To what extent have you delayed this task?						
17. To what extent do you feel the delay in this task is a problem for you?						
18. To what extent are you willing to reduce the tendency to procrastinate tasks?						

This is the end of the questionnaire. Please check carefully if there are any missing or wrong selections. Thank you again for your support! Have a nice life!

2. General Self-Efficacy Scale(GSES)

The following 10 sentences are about your general opinion of yourself. Please compare your actual situation and feelings with the following descriptions. Fill in the appropriate number at the end of each item based on your actual situation. If your situation matches the description, score 1 point (completely incorrect). 2 (somewhat right), 3 (mostly right), 4 (exactly right). There is no right or wrong answer. Answer it according to the actual situation.

Subject	Totally incorrect	A little bit right	Mostly correct.	It's absolutely right
1. I can always solve the problem if I do my best.				
2. Even if others oppose me, I still have a way to get what I want.				
3. It is easy for me to stick to the ideal and reach the goal				
4. I am confident that I can cope with any sudden event effectively.				
5. With my intelligence, I can deal with the unexpected situation.				
6. I can solve most of the problems if I make the necessary effort.				

Subject	Totally incorrect	A little bit right	Mostly correct.	It's absolutely right
7. I can face difficulties calmly because I trust my ability to deal with problems				
8. When faced with a difficult problem, I usually find several solutions				
9. When I'm in trouble, I can usually think of some ways to deal with it.				
10. No matter what happens to me, I can cope with it.				

3. The College Student Subjective Well-being Scale (CSSWS)

Guidance: Please describe yourself according to your true situation. Your answer will never be leaked out and we will keep it strictly confidential. Please note: each question should be answered, and only one answer that best suits your situation, thank you for your cooperation! Please read each sentence below carefully and choose the option that best fits your real situation based on the situation in the past month, completely non-compliant = 1, non-compliant = 2, uncertain = 3, compliant = 4, fully compliant = 5.

Project	Totally conformity / 1	Non-conformity / 2	Not sure / 3	Conform / 4	Fully conformity / 5
1. I am eager to acquire new experience and knowledge.					
2. My life is in good shape					
3. I can help others when they need					
4. I often feel that I have great energy					
5. Other people don't seem to like me.					
6. My family's financial situation is very good at present					
7. I feel like a valuable person					
8. I have health and vitality					
9. I can help people when they need it, I can help them free of charge					

Project	Totally conformity / 1	Non-conformity / 2	Not sure / 3	Conform / 4	Fully conformity / 5
10. I'm full of strength					
11. I sometimes feel that the people I know are not very friendly					
12. I think the housing condition at home is very good					
13. I'm positive about myself					
14. I feel lonely					
15. I am satisfied with my life					
16. I would like to help people improve their living conditions					
17. I'm full of energy and energy					
18. I appear isolated and often frustrated in my interpersonal relationships					

Project	Totally conformity / 1	Non-conformity / 2	Not sure / 3	Conform / 4	Fully conformity / 5
19. My life is in good shape					
20. I understand my strengths and weaknesses and can accept them					
21. I feel depressed					
22. I have always maintained a healthy lifestyle.					
23. I'm willing to work hard for the better of society					
24. I'm energetic and passionate					
25. I have several close and trustworthy friends					
26. I think the future is bleak.					
27. I feel sad					

Project	Totally conformity / 1	Non-conformity / 2	Not sure / 3	Confor m / 4	Fully conformity / 5
28. After all, there are many happy people in the world.					
29. There are always things in life that interest me					
30. I can constantly surpass myself and achieve more					
31. Overall, I am satisfied with myself.					
32. So far, I am quite satisfied with life.					
33. I have a very clear direction in life.					
34. I am hopeful for the future					
35. I find life very comfortable.					

Project	Totally conformity / 1	Non-conformity / 2	Not sure / 3	Confor m / 4	Fully conformity / 5
36. Most of what I do is monotonous and tedious.					
37. I can express my thoughts and feelings freely.					
38. I feel nothing interesting in doing					
39. Generally speaking, I am satisfied with myself.					
40.For me, every day is a new start.					
41. I often feel that I am superfluous in this world.					

4. Self-Control Scale SCS for College Students

College Students Self-Control Scale SCS

Guidance: Dear students, hello! Please read each question carefully and grade it according to your actual situation.1 point, completely non-compliant; 2 points, nonconformity; 3 points, uncertain; 4 points, compliant; 5 points, very much in line Please note: There is no right or wrong answer, as long as it fits your actual situation. Please

answer questions one by one, do not miss any questions, thank you again for your cooperation!

Subject	very much conforming to the	Complies with	Not sure.	Non-conformance	Totally out of line
1. I can resist temptation well.					
2. It is difficult for me to break the bad habit.					
3. I'm lazy.					
4. I will do something that can bring happiness to myself but is harmful to myself.					
5. People believe I can stick to the action plan.					
6. It is difficult for me to get up in the morning.					
7. People say I'm impulsive.					

Subject	very much conforming to the	Complies with	Not sure.	Non-conformance	Totally out of line
8. I'm too good at spending money.					
9. I'm too emotional to control myself.					
10. Many of the things I do are due to impulse.					
11. People say I have steely self-control.					
12. Sometimes I get distracted by interesting things and can't finish the task on time.					
13. I have difficulty concentrating.					
14. I can work efficiently for a long-term goal.					

Subject	very much conforming to the	Complies with	Not sure.	Non-conformance	Totally out of line
15. Sometimes I can't help but do something, even if I know it's wrong.					
16. I often act without thinking well.					
17. I lose my temper too easily.					
18. I often disturb others.					
19. I sometimes drink (or surf the Internet) too much.					