THE EFFECTIVENESS OF SELF-REGULATED LEARNING MODEL ON ACADEMIC PROCRASTINATION OF COLLEGE STUDENTS

LIU FANGYUAN

Graduate School Srinakharinwirot University

2025

อิทธิพลของการเรียนรู้การกำกับตนเองที่มีต่อการผลัดวันประกันพรุ่งด้านวิชาการของนักศึกษามหาวิทยาลัย

LIU FANGYUAN

ปริญญานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตร
การศึกษาดุษฎีบัณฑิต สาขาวิชาจิตวิทยาการศึกษาและการแนะแนว
คณะศึกษาศาสตร์ มหาวิทยาลัยศรีนครินทรวิโรฒ
ปีการศึกษา 2568

THE EFFECTIVENESS OF SELF-REGULATED LEARNING MODEL ON ACADEMIC PROCRASTINATION OF COLLEGE STUDENTS

LIU FANGYUAN

A Dissertation Submitted in Partial Fulfillment of the Requirements

for the Degree of DOCTOR OF EDUCATION

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

Faculty of Education, Srinakharinwirot University

2025

THE DISSERTATION TITLED

THE EFFECTIVENESS OF SELF-REGULATED LEARNING MODEL ON ACADEMIC PROCRASTINATION OF COLLEGE STUDENTS

BY

LIU FANGYUAN

HAS BEEN APPROVED BY THE GRADUATE SCHOOL IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DOCTOR OF EDUCATION IN ED.D. (EDUCATIONAL PSYCHOLOGY AND GUIDANCE) AT SRINAKHARINWIROT UNIVERSITY

(Assoc. Prof. Dr. Chatchai Ekpanyaskul, MD.)

Dean of Graduate School

ORAL DEFENSE COMMITTEE

..... Major-advisor

(Assoc. Prof. Dr.Pasana Chularut)

..... Co-advisor

(Dr.Paradee Kambhunaayudhaya)

..... Chair

(Assoc. Prof. Dr.Ujsara Prasertsin)

..... Committee

(Dr.Narulmon Prayai)

..... Committee

(Dr.Thammachot Aeamtussana)

Title	THE EFFECTIVENESS OF SELF-REGULATED LEARNING MODEL ON ACADEMIC PROCRASTINATION OF COLLEGE STUDENTS
Author	LIU FANGYUAN
Degree	DOCTOR OF EDUCATION
Academic Year	2025
Thesis Advisor	Associate Professor Dr. Pasana Chularut
Co Advisor	Dr. Paradee Kambhunaayudhaya

Academic procrastination is a widespread challenge in higher education. Drawing on the context of undergraduate learning in China, this study aimed to: (1) examine the definition and components of academic procrastination among college students; (2) develop a Self-Regulated Learning (SRL) model to reduce academic procrastination; and (3) evaluate the effectiveness of the SRL model in reducing academic procrastination among undergraduates. The study was grounded in social cognitive theory and self-regulated learning theory. Participants were first-year undergraduates from Guangdong University of Science and Technology. Research instruments included semi-structured interview protocols, an academic procrastination questionnaire, and the SRL intervention model. Data were analyzed using repeated measures ANOVA. In the main phase, 90 students were randomly assigned to either the experimental group (n = 45) or the control group (n = 45). The experimental group received the SRL intervention, while the control group did not. The results revealed that: (1) academic procrastination among college students comprised six components—fear of failure, indecision, task aversiveness, resistance to control, dependency, and risk-taking; (2) the SRL model was structured around three phases—forethought, performance, and self-reflection—and implemented through systematic lesson plans; and (3) the SRL model significantly reduced students' academic procrastination, with improvements maintained at the one-month follow-up. Specifically: (3.1) post-intervention and follow-up scores were significantly lower than pre-intervention scores at the .01 level, and (3.2) the experimental group scored significantly lower than the control group at both time points at the .01 level.

Keyword : Academic Procrastination, Self-Regulated Learning Model, Undergraduate Student, Intervention Model

ACKNOWLEDGEMENTS

Writing these words marks the culmination of a journey that has been far longer and more profound than I ever anticipated. When I began this doctoral program with a Master's in Applied Psychology, I entered with confidence, supported by a foundation that felt both familiar and aligned with my professional experience. Yet, as I ventured deeper, I found myself in uncharted territory—a landscape that demanded more than I had ever imagined. What I once assumed would be a straightforward academic pursuit became the most enduring expedition of my life.

The most profound challenge coincided with the beginning of my dissertation—I learned I was expecting a child. My focus rightly shifted to the joyous anticipation of motherhood, and I made the decision to pause my studies. I believed I would resume with relative ease after my child's birth. The reality, however, was that the all-consuming demands of caring for a newborn presented a new set of challenges I had not fully anticipated. There were many moments of exhaustion and self-doubt, and I seriously considered abandoning this pursuit altogether. That I have reached this point is a testament not solely to my own perseverance, but to the village of support that carried me through.

I wish to express my deepest and most sincere gratitude to my supervisor, Professor Pasana. Your dedication to both scholarship and life has been a true inspiration. From the earliest stages of this dissertation to its final form, you provided unwavering guidance and intellectual clarity. You cared not only for the progress of my research but also for my well-being, always mindful of my physical and emotional state. Despite the distance between us, you made time for regular online meetings, patiently pointing out shortcomings and offering precise, thoughtful suggestions. Most importantly, you never doubted my ability to complete this work. Your faith in me, often when I had lost faith in myself, motivated me to revise, refine, and persist. Thank you for your generosity, your wisdom, and your kindness.

I am also profoundly thankful to my dear friend and colleague, especially Relene.

Despite having graduated herself, she never failed to check on my progress, offering encouragement, solace, and insightful answers to my many questions. Her companionship has been a beacon of light throughout this journey.

To my family, I owe an immeasurable debt of gratitude. To my parents—your support has been my anchor. At my lowest point, when I confessed my desire to quit, you responded not with pressure, but with profound understanding. You said, "We support whatever you decide, but would you consider trying one more time? Let's not leave room for regret." Your words gave me the courage for one more attempt, and then another.

My appreciation also goes to the students who participated in this study; your cooperation and understanding were fundamental to this research. I also extend my thanks to the experts and professors who provided valuable feedback during the review and defense stages, your insights have greatly strengthened this work.

Finally, I wish to thank my child. You have taught me the meaning of selfless love and have given me a reason to become stronger. You arrived in the midst of this arduous climb, and though your presence made the path more complex, it also made the summit infinitely more meaningful.

LIU FANGYUAN

TABLE OF CONTENTS

Page

LIST OF TABLES

Page

LIST OF FIGURES

Page

CHAPTER 1
INTRODUCTION

1.1 Background

In contemporary higher education, the adoption of credit systems and relatively flexible student management models has become widespread. However, this shift has also highlighted a pressing challenge: academic procrastination (Lu et al., 2022). Transitioning from the rigorous environment of high school, many university students experience a sense of relief or even burnout upon entering university. This often manifests as diminished patience for routine daily responsibilities and a heightened aversion to demanding academic workloads, ultimately resulting in procrastination (Yip & Chung, 2022). Additionally, the challenges associated with adjusting to university life further exacerbate this issue (Haider et al., 2022). A lack of effective time management skills and the inability to prioritize tasks often leave students uncertain about which tasks demand immediate attention, which can be deferred, and which must be completed. This uncertainty significantly contributes to the prevalence of procrastination (Limone et al., 2020).

University students are typically required to accomplish numerous academic tasks within constrained timeframes. While the majority succeed in meeting these deadlines, a substantial portion fail to do so, influenced by internal factors (e.g., laziness, task difficulty, and procrastination) and external factors (e.g., environmental or logistical challenges) (Rio & Tarin, 2015). Research indicates that academic procrastination is particularly pervasive among university students, with approximately 70% identifying as procrastinators and nearly 50% acknowledging persistent and problematic procrastination (Day et al., 2000; Solomon & Rothblum, 1984).

In China, the prevalence of procrastination among adolescents is approximately 40% (Syabilla et al., 2018), rising significantly to 70%-80% among university students (Geng et al., 2018). This rate is markedly higher than the 15%-20% observed in the general adult population (Ferrari et al., 2005). In Guangdong Province, a region with one of the highest concentrations of higher education institutions in China,

academic procrastination is particularly acute. Regional studies reveal that approximately 75% of university students in Guangdong exhibit varying levels of procrastination, with a significant proportion reporting negative impacts on their academic performance and mental health (Li et al., 2019). Key contributing factors include the highly competitive educational environment and the challenges students face in balancing newfound independence with academic responsibilities.

Academic procrastination is defined as the tendency to delay or postpone academic tasks, often leading to suboptimal academic performance, heightened stress levels, and diminished motivation. It is strongly associated with negative emotions such as anxiety, guilt, and shame. Yip and Chung (2022) identified six key components of academic procrastination: fear of failure, characterized by task avoidance to protect self-esteem; difficulty in deciding, marked by indecisiveness in task prioritization; task aversiveness, driven by the avoidance of monotonous or challenging tasks; rebellion against control, reflecting resistance to external authority; dependency, involving an overreliance on external support; and risk-taking, where procrastination creates urgency and motivation through time pressure (Bandura, 1986; Solomon & Rothblum, 1984; Yip & Chung, 2022).

The consequences of academic procrastination extend beyond academic underperformance, encompassing a wide range of psychological and physical health issues. These include anxiety, depression, feelings of shame, and fear of failure (Clark, 1994), as well as physical ailments such as immune system disorders and other stress-related symptoms. In an era where societal emphasis on efficiency is increasing, academic procrastination among university students not only undermines individual well-being and development but also poses challenges to societal progress. Therefore, comprehensive research on academic procrastination is essential, not only to mitigate its prevalence but also to enhance students' mental health and contribute to broader societal advancement.

Academic procrastination is a pervasive issue in higher education, negatively affecting students' academic performance and personal development. Prior research

highlights various strategies to mitigate procrastination, including goal-setting (Locke & Latham, 1990), time management (Macan et al., 1990), and reward mechanisms (Deci & Ryan, 1985). Among these, Zimmerman (2002b)'s self-regulated learning (SRL) model stands out as a particularly systematic and effective approach. This model incorporates goal-setting, self-monitoring, emotion regulation, and self-reflection, empowering learners to take control of their learning processes and adapt to diverse academic contexts. Empirical studies (Grunschel et al., 2018; Lee & Hall, 2020) demonstrate a significant negative correlation between self-regulated learning and procrastination, underscoring its potential to foster motivation, self-efficacy, and sustainable learning habits.

This study adopts Zimmerman (2002b)'s self-regulated learning model to address academic procrastination, aiming to explore its practical effectiveness and underlying mechanisms through empirical research. The findings are intended to contribute to evidence-based interventions in higher education. (Zimmerman, 2008)argues that self-regulated learning involves learners actively participating in, monitoring, and regulating various aspects of the learning process to achieve specific goals. Similarly, Pintrich (2000a) conceptualizes self-regulated learning as an active construction process in which learners set their own goals and regulate their cognition, motivation, and behavior in alignment with learning objectives and specific contexts. Combining these perspectives, self-regulated learning can be understood as a series of self-regulatory behaviors spanning from goal-setting to task completion. This process involves components such as goal setting, plan execution, self-motivation, strategy application, self-monitoring, self-assessment, and post-task reflection.

Despite extensive research on academic procrastination (Joda et al., 2018; Motie et al., 2012; Wang et al., 2017), several critical gaps remain in the existing literature. First, a clear and context-specific understanding of the components of academic procrastination among Chinese undergraduate students is still needed. While existing scales and definitions (Solomon & Rothblum, 1984) provide a foundation, they may not fully capture the unique manifestations and cultural nuances of procrastination

in the Chinese higher education context. This study fills this gap by systematically synthesizing literature and expert insights to define and identify the core components of academic procrastination specific to this population, providing a precise conceptual framework for subsequent intervention. Second, while numerous studies have examined the consequences of procrastination, structured and practical intervention models specifically designed to reduce it among Chinese college students are scarce. Most existing research in this context offers qualitative analyses or establishes correlations but falls short of providing educators with a concrete, actionable learning model for implementation (Lu et al., 2022). This study addresses this gap by developing a structured Self-Regulated Learning (SRL) model based on Zimmerman's framework, offering a clear and systematic tool for intervention. Third, there is a lack of empirical, intervention-based research within the specific Chinese educational context to validate the effectiveness of such models. Many studies identify contributing factors but do not rigorously test comprehensive theoretical models through quasi-experimental designs. This study directly addresses this by empirically evaluating the effectiveness of the developed SRL model, thereby contributing evidence-based practices tailored to this environment. By targeting these specific gaps, this study not only deepens the theoretical understanding of academic procrastination but also delivers a practical, validated tool for educators, ultimately aiming to improve students' academic experiences and outcomes.

The purpose of this study is to explore the definition and components of academic procrastination among college students, and to design an intervention based on the self-regulated learning (SRL) model to assess its effectiveness in addressing academic procrastination. A mixed-study approach is employed, integrating both quantitative and qualitative research. Through a comprehensive literature review and interviews, this study aims to define the concept and components of academic procrastination among college students, and to develop a theoretical framework for the intervention based on the SRL model. An experimental intervention is then designed to evaluate the impact of the SRL model on reducing academic procrastination. This

research not only deepens the understanding of academic procrastination but also extends the applicability of the SRL model. Moreover, by validating the intervention's effectiveness, the study contributes to the identification of feasible solutions for academic procrastination among college students, providing valuable insights for higher education.

1.2 Research Questions

1. What are the definitions and components of academic procrastination for undergraduate students in colleges?

2. How to develop self-regulated learning model to reduce academic procrastination?

3. What is the effectiveness of self-regulated learning in reducing academic procrastination among collge students?

1.3 Research Objectives

1. To study the definitions and components of academic procrastination for undergraduate students in colleges.

2. To develop a self-regulated learning model to reduce academic procrastination.

3. To evaluate the effectiveness of the self-regulated learning model in reducing academic procrastination.

1.4 Significance of the Study

Academic procrastination, a prevalent issue among students, has significant implications for academic performance, learning efficiency, and mental well-being. Research has shown that academic procrastination is closely linked with negative emotions such as anxiety, depression, and low self-esteem, which can, in turn, diminish students' self-efficacy and academic motivation (Pintrich, 2000b; Schunk & Ertmer, 2000). Understanding the phenomenon of academic procrastination is crucial for

identifying its underlying causes and the long-term impact on student learning, thereby providing a theoretical foundation for effective intervention strategies.

The self-regulated learning (SRL) model, a multidimensional framework, has been widely applied to enhance students' motivation and academic performance (Pressley et al., 1987; Weinstein et al., 1987). This study aims to extend the application of the SRL model by investigating how it can be utilized to address academic procrastination. By focusing on improving students' self-efficacy, learning planning abilities, and emotional regulation, the study seeks to develop intervention strategies that can effectively reduce academic procrastination (Butler & Winne, 1995; Pintrich & De Groot, 1990). In doing so, it will contribute to a deeper understanding of academic procrastination and offer new perspectives and strategies for addressing this issue among college students.

By validating the effectiveness of SRL-based interventions in reducing academic procrastination, this study aims to provide practical solutions for higher education institutions. The findings will offer theoretical and empirical support for the development of more effective intervention measures and support strategies, ultimately contributing to the improvement of students' academic achievements and mental well-being. Therefore, the significance of this study lies in its potential to expand the applicability of the SRL model and offer feasible pathways for addressing academic procrastination, thereby enhancing students' academic performance and overall learning experience.

1.5 Scope of the Study

1.5.1 Identifying Population and Sample

Population: The target population for this study includes first-year undergraduate students majoring in Management at Guangdong University of Science and Technology, totaling 524 students. Focusing on this specific population provides a manageable and contextually relevant scope while capturing meaningful variability in student learning behaviors.

Sample: The required sample size was estimated using G*Power 3.1 for a repeated measures ANOVA, with a medium effect size (f = 0.25), significance level α = 0.05, power $1-\beta$ = 0.80, two groups, and two measurements. The calculation indicated that each group requires approximately 34–36 students to achieve sufficient statistical power. To account for potential attrition and ensure robustness, two e-commerce classes from the 2022 cohort were selected using purposive sampling. One class was randomly assigned to the experimental group, and the other was randomly assigned to the control group. Each class consisted of 45 students. This sample size is sufficient for detecting the expected effects and ensures reliability of the results.

1.5.2 Variables

Independent variable: Self-regulated learning model

Dependent variable: Academic procrastination of college students

1.6 Definition of the Terms

1.6.1 Academic procrastination

Academic procrastination is defined as the tendency of students to unnecessarily delay the completion of academic tasks due to various psychological and behavioral factors, leading to a decline in academic performance and learning efficiency. In this study, academic procrastination was divided into six components as follows;

1.6.1.1 Fear of failure refers to the procrastinator's belief that they lack the ability to complete a task, leading to negative self-perception and self-denial. This fear often drives individuals to avoid tasks to reduce stress and protect self-esteem. Fear of failure lowers task engagement, making procrastination a strategy to evade potential failure.

1.6.1.2 Difficulty in deciding refers to the procrastinator's indecisiveness in task selection or prioritization, often re-evaluating decisions repeatedly. Social cognitive theory emphasizes the role of self-regulation and self-efficacy in decision-making

processes. This dimension captures the tendency to struggle when making judgments, particularly when faced with multiple choices.

1.6.1.3 Task aversiveness refers to the phenomenon where individuals, when confronted with boring or difficult tasks, develop a sense of aversion and choose to avoid them. This avoidance behavior offers short-term emotional relief from negative feelings. Social cognitive theory highlights how attitudes toward tasks are shaped by past experiences, environmental cues, and emotional responses.

1.6.1.4 Rebellion against control reflects an individual's resistance to external authority or rules. Social cognitive theory posits that individual behavior is shaped by reciprocal determinism, or the interaction between personal and environmental factors. Rebellion against control often manifests when students feel resentment toward expectations imposed by teachers or parents, expressed through procrastination as a form of passive resistance.

1.6.1.5 Dependency refers to an individual's reliance on others for guidance or support in completing tasks. Social cognitive theory links dependency to self-efficacy and the availability of environmental resources. Individuals with high dependency levels are prone to procrastination when external support is unavailable.

1.6.1.6 Risk-taking refers to procrastinators' tendency to delay tasks to create a sense of urgency, using the pressure of a tight deadline to enhance excitement and motivation. This dimension is linked to the theory of delayed gratification, wherein procrastinators deliberately postpone tasks to experience the thrill of working under time pressure. Under the framework of social cognitive theory, risk-taking behavior may stem from overconfidence in one's abilities or misjudgments about self-efficacy.

1.6.2 Self-regulated Learning

As general concept of self-regulated learning, it is to describes how learners control their thoughts, feelings, and actions in order to achieve academically. Self-regulated learning refers to the process and ability of learners to consciously identify

learning objectives, develop learning plans, apply learning strategies, regulate their emotional state, fully mobilize internal and external learning resources, and monitor and regulate the learning process in order to achieve the learning goals.

The Self-Regulated Learning (SRL) consists of three main phases: Forethought, Performance, and Self-Reflection.

1.6.2.1 Forethought Phase: In the Forethought Phase, learners engage in task analysis, which includes goal setting and strategic planning. They define specific learning objectives and devise plans to achieve them. Additionally, self-motivation plays a crucial role in this phase, influenced by factors such as self-efficacy, outcome expectations, intrinsic interest, and learning goal orientation. Self-efficacy refers to the belief in one's ability to succeed, while outcome expectations involve anticipating the results based on the effort put into the task. Intrinsic interest is driven by personal engagement with the learning material, and learning goal orientation focuses on mastering content rather than merely completing assignments.

1.6.2.2 Performance Phase: During the Performance Phase, learners exercise self-control by utilizing strategies like imagery, self-instruction, attention focusing, and task-specific strategies. Imagery involves mentally visualizing success, while self-instruction provides verbal guidance during task completion. Attention focusing helps learners direct their mental resources to relevant aspects of the task, minimizing distractions. Task strategies are employed to ensure efficient progress toward goals. In this phase, self-observation becomes essential, with learners engaging in self-recording and self-experimentation. Self-recording involves tracking progress, while self-experimentation enables learners to test and refine different strategies to optimize performance.

1.6.2.3 Self-Reflection Phase: In the Self-Reflection Phase, learners engage in self-judgment, which involves self-evaluation and causal attribution. Self-evaluation requires reflecting on the quality of performance and progress toward the established

goals, while causal attribution helps learners identify the reasons for their successes or failures, attributing them to factors such as effort or strategy. Finally, self-reaction occurs, where learners experience self-satisfaction when they feel a sense of accomplishment or make adaptive or defensive responses based on their evaluation. Adaptive responses involve modifying strategies to improve learning outcomes, while defensive responses often involve making excuses or attributing failure to external factors. Together, these phases and components interact to facilitate effective self-regulation of learning, enabling students to monitor, adjust, and enhance their learning processes.

1.7 Research Hypotheses

1. College students' academic procrastination after receiving the self-regulated learning model intervention and after the follow-up period will be significantly lower than before beginning the experiment.

2. Experimental group college students' academic procrastination after receiving the self-regulated learning model intervention and after the follow-up period will be significantly lower than those in the control group.

1.8 Conceptual Framework

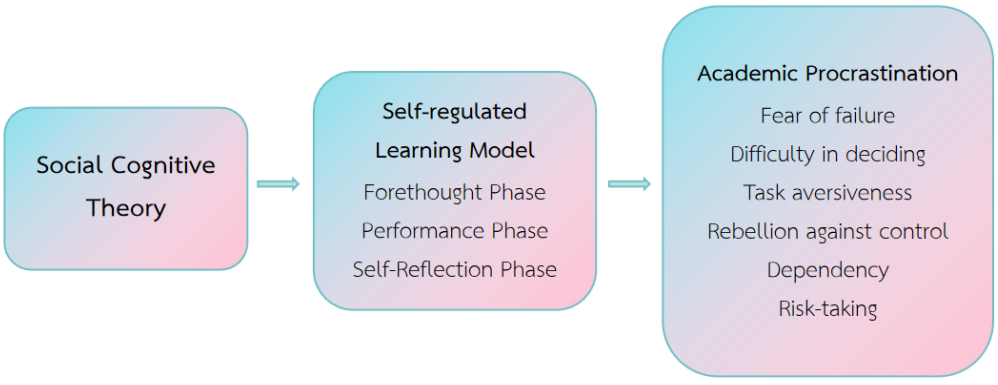


Figure 1 Conceptual Framework

The conceptual framework of this study is visually summarized in Figure 1. Grounded in Social Cognitive Theory, the framework posits that the interplay of personal, behavioral, and environmental factors influences learning outcomes. These factors collectively act upon the Self-regulated Learning (SRL) Model, which serves as the core mediating process. The SRL model, comprising the Forethought Phase, Performance Phase, and Self-Reflection Phase, functions as the key mechanism through which the aforementioned factors operate. Consequently, the effectiveness or breakdown of self-regulation within these phases directly predicts the manifestation of Academic Procrastination, conceptualized here through its specific dimensions: Fear of failure, Difficulty in deciding, Task aversiveness, Rebellion against control, Dependency, and Risk-taking. Thus, the SRL model phases are central explanatory variables that link the broader theoretical antecedents to the dependent variable of multi-dimensional academic procrastination.

CHAPTER 2
REVIEW OF THE LITERATURE

Academic procrastination is a common issue among college students, affecting learning efficiency and academic performance. Understanding this phenomenon requires examining self-regulated learning (SRL), which involves cognitive, metacognitive, motivational, and behavioral strategies that help learners manage their learning. This chapter reviews literature on academic procrastination (2.1), the theory and components of SRL (2.2), and related research on SRL and academic procrastination (2.3).

2.1 The Research Foundation of Academic Procrastination

2.1.1 Definition of Academic Procrastination

Milgram et al. (1998) describe procrastination as a behavioral flaw characterized by delays in task or decision execution, which can hinder academic progress. Ferrari and Tice (2000) conceptualize procrastination as a manifestation of self-regulation difficulties, particularly when individuals delay initiating or completing important tasks. van Eerde (2003) further defines procrastination as the act of deferring tasks or decisions, often in academic contexts. Beswick et al. (1988), based on (Janis & Mann, 1977)'s conflict model of decision-making, argue that procrastination serves as a coping strategy for individuals facing internal conflicts and indecision. Steel (2007) posits that procrastination is an irrational and voluntary action taken despite the awareness of potential negative consequences. (Klingsieck, 2013) further explains that procrastination involves the intentional delay of important tasks, even when individuals are aware that the delay will likely result in more negative than positive outcomes. Thus, most researchers contend that procrastination is a negative behavior and should not be considered as such if the delay is purposeful, functional, and ultimately beneficial (Steel, 2007).

Academic procrastination, a specific form of procrastination in educational contexts, is often referred to as "student procrastination" (Steel & Klingsieck, 2016). Solomon and Rothblum (1984) were among the first to introduce the concept of

academic procrastination, defining it as the tendency to postpone academic tasks, leading to incomplete or poorly executed assignments. More specifically, academic procrastination refers to the unnecessary delay of decisions or actions crucial for completing academic tasks or obligations (Cheng & Xie, 2021; Steel, 2007; Wolters, 2003). It is often viewed as a failure in self-regulation (Steel, 2007) and arises from students' difficulties in managing their learning processes (Cheng et al., 2023).

Based on Solomon and Rothblum (1984), Yip and Chung (2022) defined academic procrastination as to the intentional and unnecessary delay of academic tasks to a degree that induces subjective discomfort. This phenomenon is characterized by a deliberate postponement of task initiation or completion, despite the awareness of potential negative consequences. It is not merely a time management issue but a complex behavior that intertwines cognitive, affective, and behavioral components. Students who procrastinate often experience heightened anxiety and stress as deadlines approach, highlighting the adverse psychological impact of this behavior.

Academic procrastination is a common behavioral pattern, often considered a detrimental habit that manifests in the postponement of academic tasks. This behavior is widespread among students and is typically associated with negative academic outcomes (Chase, 2003; Janssen & Carton, 1999). (Knaus, 2002) adds that academic procrastination is an automatic habit that leads to the unnecessary delay of important and time-sensitive tasks, thus impeding students' academic progress. However, an alternative perspective exists regarding procrastination. Some scholars argue that procrastination can serve a functional role, introducing the concept of "active procrastination" as a positive cognitive behavior. According to this view, individuals may deliberately delay tasks under time pressure to achieve better results before deadlines (Chu & Choi, 2005; Schraw et al., 2007).

Additionally, Chu and Choi (2005) identified two types of academic procrastinators: passive and active. Active procrastinators intentionally delay tasks to achieve desired outcomes, as noted by (Kim et al., 2020). In some cases, academic

procrastination can be a strategic approach for students (Lee & Hall, 2020), where the pressure from looming deadlines enhances the motivation of active procrastinators. Unlike passive procrastinators, active procrastinators prefer to work under pressure and ensure task completion by the deadline, as observed by (Wolters et al., 2017).

In summary, academic procrastination is a pervasive behavioral pattern characterized by the unnecessary postponement of academic tasks, typically driven by psychological and behavioral factors. This tendency frequently leads to declines in academic performance and learning efficiency, making it a significant barrier to students' academic success (Steel, 2007; Chase, 2003; Knaus, 2002; Yip & Chung, 2022).

2.1.2 The Theory of Academic Procrastination

Academic procrastination is a pervasive issue in higher education, influenced by various psychological mechanisms and theories. From motivational deficiencies to failures in self-regulation, academic procrastination encompasses a range of cognitive, emotional, and behavioral factors. To better understand the nature and underlying causes of academic procrastination, different theoretical frameworks offer valuable insights. These include Self-Worth Theory, Temporal Motivation Theory, Reinforcement Theory, Cognitive Theory, and Self-Regulation Theory. This section systematically reviews these theories to provide a comprehensive understanding of their interpretations of academic procrastination and their interconnections.

Self-Worth Theory: The self-worth theory provides an interpretation of procrastination behavior. It views academic procrastination as a self-limiting behavior with motivational issues. Learners employ procrastination, avoidance, and a lack of effort to prevent being classified as incapable or worthless. This approach serves to provide excuses for failures that are not attributed to one's abilities (Covington, 1992). Many researchers believe that procrastination is related to the protection of self-worth. They perceive procrastination as a series of hesitant behaviors used to handle conflicts, aimed at avoiding others' perception of one’s incompetence. This intentional delay in

completing necessary learning tasks is adopted for certain purposes (Schraw et al., 2007; Thompson & Campling, 1996).

Temporal Motivation Theory: The Temporal Motivation Theory effectively explains procrastination (Gröpel & Steel, 2008; Steel & König, 2006). Firstly, procrastination behavior is influenced by an individual's subjective sensitivity to procrastination. Secondly, tasks that attract individuals and possess characteristics of high expectancy and high value are less likely to induce procrastination. Lastly, individuals are less likely to postpone tasks as the deadline approaches and when rewards or punishments are imminent.

Reinforcement Theory: This theory, proposed by (Skinner, 1953), suggests that a behavior occurs because it is reinforced. Students may procrastinate in academic tasks due to past experiences of successful procrastination or because they find other tasks more reinforcing, as suggested by (Schoenfeld, 1995). Experimental studies, like the one by Milgram et al. (1995), supports this view, showing that procrastinators recall more successful procrastination experiences and find alternative activities more reinforcing than studying. Procrastination can also be explained using behavioral concepts of avoidance and escape conditioning. Some scholars view procrastination as a means of avoidance or escape, where halting a task partway can be seen as an escape conditioning response. Avoidance conditioning occurs when the onset of a behavior prevents an aversive stimulus. Procrastination in this sense represents avoidance conditioning. However, behaviorist learning theories do not effectively explain or predict individual differences in procrastination behaviors.

Cognitive Theory: Emerging later than behaviorist theories but having a more significant impact, cognitive theory closely links human cognition with academic procrastination. Several cognitive factors, such as irrational beliefs, personal self-awareness, learned helplessness, and perfectionism, influence procrastination. The first to explain procrastination from a cognitive-behavioral perspective were Ellis (1991) and Knaus and McKeever (1977). They linked procrastination with irrational anxiety and self-criticism, as procrastinators often doubt their ability to complete tasks, leading to delays.

This irrational fear stems from an inability to reasonably perceive task standards. Setting too high standards makes failure inevitable, leading procrastinators to delay tasks to lessen the emotional impact of failure. They often attribute poor task performance to limited time or laziness rather than a lack of ability. In this view, procrastination serves as a form of self-defense.

Self-Regulation Theory: Personality psychology divides the "self" into four aspects: self-concept, self-evaluation, self-experience, and self-regulation, with the latter being the most crucial for completing tasks, coordinating relationships, and adapting to society. Self-regulation refers to how an individual uses internal or external resources to decide when to start, persist in, and cease goal-oriented behaviors. Scholars studying academic procrastination from a self-regulation learning perspective view it as a failure of self-regulation (Ferrari et al., 1998; Ferrari & Tice, 2000; Senécal et al., 1995; Tuckman, 1991; Wolters, 2003). Self-regulated learners have adaptive motivational beliefs and attitudes, such as high self-efficacy and mastery orientation. Students with higher self-regulation learning capabilities tend to procrastinate less in their studies. Coplan et al. (2002) combined motivational and cognitive factors to study academic procrastination from a self-regulation learning perspective. Wolters (2003) further explored the relationship between student procrastination, motivation, and cognitive functions, leading to a deeper understanding of academic procrastination. The study found a significant negative correlation between academic procrastination and motivation, and the use of learning strategies. This indicates that students with performance goal orientation or task avoidance orientation report higher procrastination, while those with higher self-efficacy and mastery motivation are less prone to procrastinate. The results confirm the close relationship between academic procrastination and self-regulation learning. Additionally, research in this area has explored the connection between motivational beliefs, goal orientation, self-efficacy, cognitive strategies, and metacognitive strategies in Self-Regulated Learning (SRL) with academic procrastination (Howell & Buro, 2009; Seo, 2009), grounded in the self-regulation theory.

In summary, academic procrastination is a multifaceted phenomenon shaped by various psychological mechanisms. From protecting self-worth to the influence of temporal perceptions and deficiencies in self-regulation, each theory sheds light on distinct aspects of procrastination's underlying causes. These theoretical frameworks not only deepen our understanding of academic procrastination but also lay the foundation for developing effective intervention strategies. Future research should aim to integrate these diverse theoretical perspectives to design more holistic and systematic interventions. Such efforts could enhance students' self-regulation capabilities and mitigate the negative impacts of academic procrastination on their academic performance and mental well-being.

2.1.3 The Component of Academic Procrastination

From the perspective of social cognitive theory, this study draws upon Solomon and Rothblum's (1984) development of the Academic Procrastination Scale and Yip and Chung's (2022) refinement of the concept in the Chinese higher education context. Academic procrastination is categorized into six dimensions: Fear of Failure, Difficulty in Deciding, Task Aversiveness, Rebellion Against Control, Dependency, and Risk-Taking. Below, each dimension is elaborated with an analysis of its mechanisms and interrelations.

1) Fear of Failure

According to social cognitive theory, individual behavior is influenced by outcome expectancy and self-efficacy. Fear of failure refers to the procrastinator's belief that they lack the ability to complete a task, leading to negative self-perception and self-denial (Yip & Chung, 2022). This fear often drives individuals to avoid tasks to reduce stress and protect self-esteem (Deniz et al., 2009; Solomon & Rothblum, 1984). Fear of failure lowers task engagement, making procrastination a strategy to evade potential failure (Solomon & Rothblum, 1984). For example, excessive worry about poor performance in academic tasks may prompt individuals to delay task engagement

temporarily. However, this avoidance behavior exacerbates self-doubt and anxiety, creating a vicious cycle (Steel, 2007).

2) Difficulty in Deciding

Difficulty in deciding refers to the procrastinator's indecisiveness in task selection or prioritization, often re-evaluating decisions repeatedly (Solomon & Rothblum, 1984). Social cognitive theory emphasizes the role of self-regulation and self-efficacy in decision-making processes. This dimension captures the tendency to struggle when making judgments, particularly when faced with multiple choices. Studies indicate that unclear goals or a lack of confidence in one's abilities can result in decision paralysis, delaying action (Ferrari, 1992). Bandura (1997) notes that individuals with low self-efficacy are less confident in tackling task challenges, leading to hesitation in making decisions. Difficulty in deciding not only contributes to procrastination but also imposes cognitive burdens, further hindering effective task planning and execution (Han & Zhang, 2011; Hen & Goroshit, 2014).

3) Task Aversiveness

Task aversiveness refers to the phenomenon where individuals, when confronted with boring or difficult tasks, develop a sense of aversion and choose to avoid them. This avoidance behavior offers short-term emotional relief from negative feelings (Steel, 2007).

Social cognitive theory highlights how attitudes toward tasks are shaped by past experiences, environmental cues, and emotional responses (Bandura, 1986). Klassen et al. (2008) found that individuals often prioritize more enjoyable activities when faced with aversive tasks. The emergence of task aversiveness is frequently linked to emotional regulation difficulties, such as a lack of intrinsic motivation or reward mechanisms, further reinforcing procrastination tendencies.

4) Rebellion Against Control

Rebellion against control reflects an individual's resistance to external authority or rules (Solomon & Rothblum, 1984). Social cognitive theory posits that individual

behavior is shaped by reciprocal determinism, or the interaction between personal and environmental factors. Yip and Chung (2022) observed that rebellion against control often manifests when students feel resentment toward expectations imposed by teachers or parents, expressed through procrastination as a form of passive resistance (Ferrari & Olivette, 1993; Frost et al., 1993). This behavior can be interpreted as an attempt to restore autonomy (Bandura, 1997). However, such defiance-driven procrastination may compromise academic performance and erode trust in relationships with authority figures (Steel & Klingsieck, 2016).

5) Dependency

Dependency refers to an individual's reliance on others for guidance or support in completing tasks (Yip & Chung, 2022). Social cognitive theory links dependency to self-efficacy and the availability of environmental resources (Bandura, 1997). Yip and Chung (2022) suggest that individuals with high dependency levels are prone to procrastination when external support is unavailable. Klassen et al. (2008) note that dependency may arise from a lack of trust in one's own abilities or a limited opportunity for autonomous learning. This dependency behavior is closely associated with low confidence and a lack of independence.

6) Risk-Taking

Risk-taking refers to procrastinators' tendency to delay tasks to create a sense of urgency, using the pressure of a tight deadline to enhance excitement and motivation. This dimension is linked to the theory of delayed gratification, wherein procrastinators deliberately postpone tasks to experience the thrill of working under time pressure (Solomon & Rothblum, 1984). Under the framework of social cognitive theory, risk-taking behavior may stem from overconfidence in one's abilities or misjudgments about self-efficacy (Bandura, 1997). Steel (2010) and Moonaghi and Beydokhti (2017)) found that procrastinators with risk-taking tendencies often justify their delays by claiming to perform better at the last minute. However, this behavior typically results in lower task

quality and a higher likelihood of academic failure (Ferrari, 1992; Ferrari & Olivette, 1993; Han & Zhang, 2011).

2.1.4 Measurements of Academic Procrastination

There are various methods to measure academic procrastination, the study mainly presents 4 methods.

1. Behavioral Observation Method: This method involves assigning tasks to participants and monitoring their time allocation and task completion to estimate academic procrastination. It offers an objective and comprehensive examination of student procrastination behavior, supplementing the subjective nature of questionnaire methods. However, its use is limited in current research due to its dynamic and continuous nature, requiring significant researcher involvement.

2. Diary Method: The diary method requires high cooperation from participants. Participants must create a plan and report their completion status at the end of each day, allowing for detailed investigation of procrastination. Researchers such as Ferrari and Scher (2000) and Lu et al. (2022) have utilized this method, offering high-precision insights into individual procrastination behavior. However, its requirement for participant engagement limits its large-scale application.

3. Qualitative Research Method: Proposed by Schraw et al. (2007), this method involves three steps: designing questions, disseminating surveys, and conducting individual interviews or group interviews to gather information about procrastination behavior. This approach focuses on analyzing and summarizing individual behaviors to derive conclusions, but it has limitations due to its reliance on non-empirical data.

4. Questionnaire Method:

1) Aitiken was the first to develop the Aitken Procrastination Inventory (API) in 1982. The API consists of 19 statements, and procrastination is measured by rating these statements on a 5-point scale, ranging from 'very agree' to 'very disagree'. This single-dimension approach focuses on the self-assessment of procrastination tendencies.

McCloskey (2011) developed the Academic Procrastination Scale (APS) as a tool to specifically measure academic procrastination behaviors among college students. The scale was designed based on five key characteristics of procrastinators: time management skills, patterns of procrastination behavior, susceptibility to distractions, "last-minute cramming" strategies, and the specific consequences of procrastination. Empirical research demonstrated that the APS possesses high reliability (Cronbach's α = .94) and strong validity, showing significant correlations with other established procrastination scales, such as the Tuckman Procrastination Scale. Moreover, the APS was found to be significantly negatively associated with academic performance, as evidenced by lower Grade Point Averages (GPAs) among individuals with higher procrastination scores. The scale outperformed other widely-used procrastination measures in predicting academic success, even accounting for variance beyond personality traits such as conscientiousness. The APS has proven to be a robust and precise instrument, offering educational researchers and institutions a valuable tool to identify academic procrastinators and implement targeted interventions aimed at mitigating procrastination and improving students' academic outcomes.

3) Solomon & Rothblum (1984) developed the Procrastination Assessment Scale-Students (PASS) to measure academic procrastination and its reasons. This scale consists of 38 questions divided into two parts. The first part assesses the prevalence of procrastination in six academic scenarios: writing term papers, studying for exams, keeping up with weekly reading assignments, academic administrative tasks, attendance tasks, and general school activities. Participants report the frequency of procrastination (1-never, 3-sometimes, 5-always), whether it's problematic (1-never, 3-sometimes, 5-always), and their desire to reduce procrastination on these tasks (1-not at all, 3-somewhat, 5-very much). Scores range from 12 to 60, with higher scores indicating higher levels of academic procrastination. Additionally, PASS measures the desire to decrease procrastination, with scores from 6 to 30 indicating the level of this desire (Ferrari, 1989). The PASS scale is currently the most widely used measure of academic procrastination.

4) Tuckman (1991) developed the Procrastination Scale (TPS), primarily designed for researching procrastination behavior in academic settings. This procrastination scale is based on a self-report approach and assesses an individual's tendency to procrastinate through a series of statements. The scale initially consisted of 35 items but was later reduced to 16 items through factor analysis by Tuckman. Each item presents a statement about procrastination behavior, such as "I often find myself starting important tasks at the last minute." Participants are required to rate these statements based on the frequency and consistency of their behavior, typically using a Likert-type scale (e.g., from 1 to 5, ranging from "Never" to "Always"). Tuckman's Procrastination Scale has been widely used in educational and psychological research, especially in exploring students' study habits and achievement motivation.

The following Table 1 presents the scale mentioned above.

Table 1 Scale for Measuring Academic Procrastination

Scale	Year	Developer	Items	Dimensions/Focus	Key Features
Aitken Procrastination Inventory (API)	1982	Aitken	19	Single-dimension: Self-assessment of procrastination tendencies	- Rated on a 5-point Likert scale ("very agree" to "very disagree"). - Focuses on the frequency and extent of procrastination through self-reported tendencies.

Academic Procrastination Scale (APS)	2011	McCloskey	25	Five dimensions: Time management, procrastination patterns, susceptibility to distractions, cramming strategies, consequences	- High reliability (Cronbach's α = .94) and validity. - Predicts academic performance (e.g., GPA) better than other scales. - Strong correlation with conscientiousness and other procrastination scales.
Procrastination Assessment Scale-Students (PASS)	1984	Solomon & Rothblum	38	Prevalence and reasons for procrastination across six academic scenarios: papers, exams, reading, admin tasks, attendance	- Uses three subscales: frequency, problematic nature, and desire to reduce procrastination. - Scores range: 12-60 for procrastination level, 6-30 for desire to reduce it.

					- Widely used for academic procrastination research.
Tuckman Procrastination Scale (TPS)	1991	Tuckman	16	Single-dimension: General procrastination tendencies	- Derived from 35 initial items through factor analysis. - Measures procrastination behaviors via self-reported frequency of delaying tasks. - Commonly used in educational research for motivation and study habits.
Academic Procrastination Scale (Yip & Chung)	2022	Yip & Chung	26	Six dimensions: Fear of Failure (7 items), Difficulty in Deciding (3 items), Task Aversiveness (5 items), Rebellion Against Control (2 items), Dependency (3 items), Risk-Taking (2 items)	- Specifically designed for Chinese students. - Rated on a 5-point Likert scale (1 = "strongly disagree," 5 = "strongly agree"). - Focuses on culturally relevant procrastination

					behaviors and emotional responses.

Since it can be challenging to track the behavior of college students, a modified version of the Academic Procrastination Scale developed by Yip and Chung (2022) based on Solomon and Rothblum (1984) was used to measure students' academic procrastination. This study selected this scale primarily due to its cultural relevance and theoretical foundation. The scale was specifically designed for Chinese students and is an adaptation of the widely used Solomon and Rothblum (1984) Academic Procrastination Scale, making it particularly suitable for understanding procrastination behaviors within the context of this study. The scale captures six key dimensions of procrastination—Fear of Failure, Difficulty in Deciding, Task Aversiveness, Rebellion Against Control, Dependency, and Risk-Taking—which reflect the unique challenges and tendencies faced by Chinese students. Additionally, the scale has been validated through expert feedback and pilot testing, ensuring its reliability and effectiveness. Its focus on academic procrastination and cultural specificity makes it an ideal tool for this study, aligning well with the research objectives.

2.1.5 Strategies to Reduce Academic Procrastination

Academic procrastination is a prevalent issue in higher education, significantly impacting students' academic performance and personal development. Previous research has demonstrated that targeted strategies can effectively mitigate procrastination, enhance learning efficiency, and improve self-efficacy. One such approach is the goal-setting strategy (Locke & Latham, 1990), which emphasizes establishing clear, specific, and challenging goals to drive intrinsic motivation and provide a sense of direction. By breaking down complex tasks into smaller, manageable goals and assigning deadlines to each, students can reduce anxiety and enhance their focus, thereby minimizing procrastination. The time management strategy (Macan et al.,

1990) focuses on the effective allocation of tasks and time. Developing a detailed study plan and adhering to priority-setting principles enables students to optimize their time and avoid task accumulation.

Another highly effective approach is the self-regulated learning model developed by Zimmerman (2002). Zimmerman (2002) proposed a three-phase model of self-regulated learning: the forethought phase, which involves goal setting and planning; the performance phase, which includes self-monitoring and emotion regulation; and the self-reflection phase, where learners evaluate their performance and adjust strategies. This process is dynamic, with learners continuously refining their approaches based on feedback to enhance learning efficiency and outcomes. The reward mechanism strategy complements these efforts by providing external incentives, such as small rewards for completing tasks, reinforcing positive learning behaviors, and resolving conflicts between short-term pleasure and long-term goals (Deci & Ryan, 1985). Meanwhile, Steel (2007) and Baumeister and Heatherton (1996) both proposed self-regulatory strategy. By managing students' negative emotions, such as anxiety and stress, and creating a distraction-free study environment, students can significantly reduce procrastination caused by emotional or environmental factors. From a social perspective, Schunk and Pajares (2009) highlight the role of peer support and collaborative learning in providing external motivation and accountability. Engaging in study groups or peer collaborations fosters a collective sense of responsibility, reducing the likelihood of procrastination. An alternative approach is the self-forgiveness strategy, which helps individuals overcome feelings of self-blame often associated with procrastination (Hall & Fincham, 2005). Research shows that self-forgiveness promotes self-worth and fosters positive emotions, which in turn supports academic performance by helping individuals move past previous procrastinatory behaviors and refocus on future tasks (Hall & Fincham, 2005; Sirois, 2014; Wohl et al., 2010). By shifting from self-punishment to self-acceptance, students can break free from negative cycles of procrastination (Wolters, 2003; Zimmerman & Schunk, 2011).

Clinical interventions also offer effective solutions for reducing academic procrastination. Cognitive Behavioral Therapy (CBT), a widely used treatment, targets the irrational thoughts and beliefs that underlie procrastination, helping individuals alter these behaviors (Ellis, 1991). Another intervention, Acceptance and Commitment Therapy (ACT), focuses on enhancing psychological flexibility to help individuals manage negative emotions and commit to value-driven behaviors, reducing procrastination in academic contexts (Hayes et al., 2006; Joda et al., 2018; Wang et al., 2017). These interventions are particularly beneficial when tailored to an individual's unique procrastination triggers and cognitive patterns (Hayes, 2008).

Among these strategies, Zimmerman's self-regulated learning model is particularly comprehensive and systematic, making it highly effective in addressing academic procrastination. Self-regulated learning emphasizes learners' active involvement in setting goals, monitoring progress, reflecting on outcomes, and adjusting their approaches (Zimmerman, 2002a). This strategy empowers students to take control of their learning behaviors, fostering both self-efficacy and metacognitive skills. Through consistent practice, learners can adapt to diverse tasks and learning contexts, ultimately developing an effective and sustainable learning model. For these reasons, this study chooses Zimmerman's self-regulated learning model as the focal approach for addressing academic procrastination. My aim is to explore its practical effectiveness and underlying mechanisms through empirical research, contributing to the development of evidence-based interventions. Research indicates a significant negative correlation between self-regulated learning and academic procrastination. Studies by Grunschel et al. (2018), Steel (2007), and Zhang et al. (2018) have found that students who practice self-regulated learning, characterized by clear learning objectives and effective study habits, exhibit lower levels of procrastination. Improving self-regulated learning abilities is vital in intervening in academic procrastination (Kandemir, 2014; Senécal et al., 1995). Self-regulated learning enhances learners' sense of responsibility, motivation, compliance, and internalization of learning norms (Eisenberg et al., 2014; Gustavson & Miyake, 2017).

Therefore, this study chose self-regulated learning model for reducing college students' acadmic procrastination.

2.1.6 Related Research of Academic Procrastination

In the study titled "Online Self-Regulated Learning and Academic Procrastination: A Moderated Mediation Model", conducted by Ma et al. (2022), the focus was on the relationship between online self-regulated learning and academic procrastination among Chinese college students. This was particularly relevant during the shift to online learning due to the COVID-19 pandemic. The study, involving a survey of 1,149 students from March 20 to March 30, 2020, found a significant negative correlation between online self-regulation and academic procrastination. The research highlighted that lower levels of online self-regulation were associated with higher degrees of procrastination.

Grunschel et al. (2018) conducted a study titled "I'll Stop Procrastinating Now!" which aimed to evaluate a group training program designed to reduce academic procrastination among collge students. The program, based on Zimmerman's cyclical model of self-regulated learning, consisted of five weekly sessions. The intervention was found to be effective in reducing procrastination and improving specific processes of self-regulated learning, such as time management and concentration.

The study "Examining the Relations of Time Management and Procrastination Within a Model of Self-Regulated Learning" by Wolters et al. (2017) explored how time management and procrastination interplay in the context of self-regulated learning. Through a self-report survey involving 446 college students, the research found that setting goals and prioritizing tasks were key strategies in reducing procrastination. The study emphasized the role of effective time management in mitigating procrastination behaviors.

In "Examining Procrastination Among Collge Students Through the Lens of the Self-Regulated Learning Model", Limone et al. (2020) investigated the relationship

between self-regulated learning strategies and procrastination, with a particular focus on gender differences. The study surveyed 450 collge students, finding that self-regulated learning strategies, including cognitive, metacognitive, and time management techniques, could predict the tendency to procrastinate.

Motie et al. (2012), in their research "Predicting Academic Procrastination During Self-Regulated Learning in Iranian First Grade High School Students", examined how self-regulated learning strategies relate to academic procrastination in high school students. The study, involving a survey of 250 students, revealed that strategies like goal setting and self-monitoring were inversely related to procrastination.

San et al. (2016), in their research "Relationship Between Self-Regulated Learning and Academic Procrastination", explored this link among undergraduate students at Universiti Putra Malaysia. The quantitative study with 100 students found a significant negative relationship between self-regulated learning and academic procrastination, indicating that higher engagement in self-regulated learning corresponded with lower levels of procrastination.

Razeghi et al. (2020) conducted a study titled "The Effectiveness of Teaching Self-Regulated Learning Strategies on Academic Procrastination and Its Components". This research adopted a quasi-experimental design with a pretest-posttest structure and included both an experimental and a control group. The study confirmed that training in self-regulation learning strategies significantly reduced academic procrastination among postgraduate students.

Haider et al. (2022), in "Self-Regulated Learning and Academic Procrastination Among Young Adult E-Learners", examined the relationship between self-regulated learning and procrastination in the context of e-learning. The study surveyed 381 adult e-learners from the Virtual Collge of Pakistan and found a negative correlation between self-regulated learning and academic procrastination.

Lastly, Park (2009), in their doctoral dissertation "Self-Regulation of Academic Procrastinators: A Mixed Method Study", investigated the antecedents and reasons for academic procrastination from a self-regulated learning perspective. The mixed-methods study involved 120 undergraduate students from a large public collge in the United States and found that higher levels of procrastination were associated with lower levels of self-regulated learning, self-efficacy, and task value.

These studies collectively highlight the significant impact of self-regulated learning on academic procrastination. They emphasize the effectiveness of interventions like group training programs, time management strategies, and self-regulation techniques in reducing procrastination. The findings underscore the importance of developing and implementing targeted programs to enhance self-regulated learning, which not only reduces procrastination but also improves overall academic performance and satisfaction.

Despite the substantial body of literature examining academic procrastination as an independent variable, influencing academic performance, motivation, and learning strategies, there remains a critical gap in research where academic procrastination is treated as a dependent variable. Most existing studies focus on how procrastination affects various academic outcomes, but there is a lack of exploration into how specific learning models or intervention strategies can directly reduce procrastination behavior. This omission limits our understanding of the precise mechanisms that underlie procrastination reduction, and more importantly, prevents the development of targeted interventions grounded in a comprehensive theoretical framework. In addition, while existing research has shed light on the factors contributing to procrastination, it has not yet sufficiently explored how to effectively alter or address procrastination through structured interventions within the context of learning models.

Furthermore, research in China has primarily focused on qualitative studies that summarize the causes and effects of academic procrastination, or quantitative studies

that establish causal relationships between procrastination and various academic variables. However, there is a notable absence of studies that provide concrete, actionable learning models or intervention guidelines that could serve as practical tools for educators. These gaps mean that educators lack clear, evidence-based strategies to mitigate procrastination and improve student engagement and academic outcomes. Without a well-established framework to guide intervention efforts, it becomes challenging to design systematic and effective approaches for reducing procrastination on a larger scale.

Filling these research gaps would provide significant contributions to both theoretical development and practical applications. It would not only deepen our understanding of procrastination's underlying dynamics but also provide educators with the necessary tools to implement targeted interventions, ultimately fostering improved learning outcomes, greater self-regulation, and better academic performance among students.

2.2 The Research Foundation of Self-regulated Learning

2.2.1 Definition of Self-regulated Learning

Understanding self-regulated learning necessitates a grasp of self-regulation. Initially, the term "self-regulation" emerged in biology, referring to an organism's process of self-adjustment to its external environment, ensuring stability (Kirschenbaum et al., 1985). As the field evolved, the concept expanded to include various facets like self-regulated learning, self-control, and self-management (Boekaerts, 2002). Most researchers concur that self-regulation involves processes and behaviors through which individuals' control, react to, and regulate their internal states (thoughts, feelings, motivations) and external behaviors to achieve desired outcomes(Baumeister et al., 2007; Bockmann & Yu, 2023; Carver & Scheier, 1998; Kuhl, 1984; Montroy et al., 2014).

While self-regulation spans all human behaviors, self-regulated learning is specific to academic contexts. Rooted in Bandura's social learning theory, Zimmerman

introduced the concept to education, leading to extensive research on cognitive, motivational, and affective aspects of learning (Panadero, 2017).

The concept of self-regulated learning with different emphasis by different researchers, and could be summarized in the following 3 main points:

1.Self-regulated learning as a process of mental processing or meta-cognitive regulation of the learner's activities. Self-regulated learning is defined as a process in which the learner actively engages and regulates multiple aspects of motivation, behavior, and metacognition, that is, the learner initiates and self-directs the process of acquiring knowledge and skills(Schunk & Zimmerman, 2007; Zimmerman & Schunk, 1989, 2011). According to this definition, self-regulated learning means that (A) students tend to achieve their own goals; (B) they generate thoughts, feelings, and actions to achieve those goals; and (C) they learn systematically to achieve those goals (Boekaerts, 2002). While Pintrich and Groot 1990 state that self-regulated learning (SRL) is a constructive process whereby the learner sets goals for learning and then seeks to plan, monitor, adjust, and control his or her motivation in order to achieve appropriate states, engage in cognitive activities, behaviors that will achieve the goals, and also adjust the environment to accommodate his or her own learning. Winne (1995) and Winne (1996) argues that self-regulated learning (SRL) is not just a learning outcome. Rather, it is a conscious process in which learners take action by strategically planning and reacting to learning tasks and situations. In addition, Simons and Vermunt (1986) defined self-regulated learning as a self-educational process that involves multiple behaviors such as self-orientation, planning, execution, monitoring, guiding, testing, reflecting and evaluating. Dettori and Persico (2008) stated that self-regulated learning is not a mental ability or an operational skill but rather a self-directed process in which students transform mental abilities into operational skills related to specific tasks and situations. The study of K. R. Muis et al. (2018) also revealed the unique nature of self-regulated learning (SRL), emphasizing that it is not merely an instantaneous snapshot during or at the end of a learning event. Rather, SRL is an ever-changing picture of learning and knowledge development that encompasses the learner's comprehensive

understanding of the content and process of learning. Synthesizing these process perspectives, self-regulated learning can be understood as a process in which learners engage in a series of self-regulated behaviors from developing a goal plan to completing a goal task.

2. Self-regulated learning is a psychological trait or ability of the learner. For example, Bandura (1978) early regarded self-regulated learning as the ability of learners to self-generate thoughts, feelings, and behaviors in the process of reaching self-imposed goals. Paris and Paris (2001), in an article on the application of self-regulated learning in classroom teaching, defined self-regulated learning as the ability of an individual to direct, monitor, and regulate his or her own actions in order to achieve a certain learning goal in terms of autonomy and control. This definition by Paris et al. has received much attention from researchers in recent decades (Panadero et al., 2017).

3. Self-regulated learning as an important learning strategy and behavior in the field of learning. Alvi and Gillies (2015) describe self-regulated learning as the metacognitive, motivational, and strategic behaviors of learners that occur in social contexts. SRL includes students' effective use of various strategies associated with metacognition, motivational regulation, time management, and environmental control (Pintrich, 2004). Besides, the motivational beliefs and attitudes as well as the strategic knowledge and skills necessary for self-learning competence are considered to be plastic (Cleary et al., 2015; Pintrich & Zusho, 2007; Zusho & Edwards, 2011).

In summary, self-regulated learning refers to the process and ability of learners to consciously identify learning objectives, develop learning plans, apply learning strategies, regulate their emotional state, fully mobilize internal and external learning resources, and monitor and regulate the learning process in order to achieve the learning goals.

2.2.2 Theory of Self-Regulated Learning

Self-regulated learning is a multi-faceted concept explored through various theoretical perspectives in educational psychology, including theory of self-regulation of knowledge acquisition and social cognitive theory.

1. Theory of self-regulation of knowledge acquisition

Simons and Vermunt (1986) proposed the theory of self-regulation of knowledge acquisition, which emphasizes that learners actively control and manage their own learning processes rather than passively receiving information. The theory identifies key components of self-regulated learning, including goal setting, strategic planning, monitoring of understanding and progress, evaluation of learning outcomes, and adjustment of strategies as needed.

This theory also distinguishes between internal and external regulation, highlighting that some learners rely more on self-directed strategies while others depend on external guidance or resources. Furthermore, self-regulation is closely linked to metacognition and motivation, as learners must reflect on their learning, monitor their progress, and adjust strategies to achieve their academic goals. The framework provides important insights for teaching, suggesting that educators can support students by fostering goal-setting, self-monitoring, and reflective practices to enhance self-regulated learning.

2. Social Cognitive Theory:

Social cognitive theory is an extension of Bandura's social learning theory. Self-regulated learning in social cognitive theory expands upon Bandura's theory of the triadic reciprocal interaction between personal, behavioral, and environmental fac-tors. It places a central emphasis on the construction of self-efficacy beliefs and three self-regulation processes: self-observation, self-judgment, and self-reaction, as pro-posed by(Zimmerman, 1989). Zimmerman (2000) argues that self-regulated learners, to a certain extent, actively engage in their own learning processes from three dimen-sions:

metacognition, motivation, and behavior. He particularly highlights the crucial role of metacognition in the self-regulated learning process. Metacognition refers to a student's ability to make informed decisions about various knowledge-related pro-cesses. To achieve self-regulated learning, three factors come into play: self-regulated learning strategies, self-efficacy beliefs, and achievement goals. In other words, self-regulated learners can set their own achievement goals, recognize their possession of effective self-regulated learning strategies, believe in the effectiveness of these strategies, and have the confidence in their ability to engage in self-regulated learning, demonstrating appropriate self-efficacy.

Self-regulated learning strategies encompass activities such as organizing and transforming information, acquiring new knowledge, and engaging in repeated practice or memorization. Social cognitive theory's perspective on self-regulated learning emphasizes that learners strive to attain their achievement goals and can flexibly apply self-regulated learning strategies based on their self-efficacy beliefs. Methods to promote self-regulated learning, as suggested by Schunk (1996), include enhancing students' self-efficacy, teaching goal setting and learning strategies, sys-tematic practice of strategy use, self-monitoring, providing feedback on learning at-tributions, and utilizing physical and social resources.

This paper aligns with the social cognitive theory due to its comprehensive and profound explanation of the factors affecting self-regulated learning, encompassing internal, behavioral, and environmental elements.

2.2.3 Component of Self-regulated Learning

Self-regulated learning (SRL) is a complex construct encompassing multiple elements, including cognitive, metacognitive, motivational, affective/emotional, and social aspects of learning (Muis, 2007; K. R. Muis et al., 2018; S. Muis et al., 2018; Panadero et al., 2017). It forms a broad conceptual framework shaping students' learning and academic motivation. These diverse domains can be summarized into

three key components: (a) metacognitive strategies for planning, monitoring, and modifying cognitive processes, (b) managing and controlling the effort exerted in classroom learning tasks, and (c) actual cognitive strategies used for learning, memorization, and comprehension of materials (Pintrich & De Groot, 1990). These three dimenstions prodivded theoretical foundation for self-regulated learning model constructed by the scholars.

Pintrich's (2004) model of self-regulated learning is organized into four interactive components: forethought, monitoring, control, and reflection (See Table 2). The forethought phase emphasizes setting goals, activating relevant prior knowledge, and strategic planning, focusing on cognitive readiness, motivational elements (such as self-efficacy and task value), and environmental factors. In the monitoring phase, learners actively observe their comprehension, evaluate the effectiveness of strategies, and track motivational and contextual conditions to inform adjustments. During the control phase, individuals regulate their learning by modifying strategies, sustaining motivation, and managing resources like time and effort. The reaction and reflection phase centers on assessing performance, attributing results to actionable causes, and evaluating the learning context for future improvements. These phases underscore the iterative and interconnected processes of self-regulation, incorporating cognitive, motivational, behavioral, and contextual dimensions to enhance learning outcomes.

Table 2 Components of self-regulated learning from Pintrich (2004)

Phase	Self-Regulated Area	Description
Forethought Phase	Cognition	Setting task goals, activating prior content knowledge, and metacognitive knowledge (declarative, procedural, and conditional).
	Motivation	Regulating goal orientation, self-efficacy, perceived task difficulty,

		task value, and interest.
	Behavior	Planning time and effort, and self-observation methods (e.g., progress tracking).
	Environment	Perceiving task and learning environment characteristics (e.g., classroom features, task type, grading criteria).
Performance Phase	Cognition	Making learning judgments and metacognitive awareness (e.g., feelings of knowing or tip-of-the-tongue phenomenon).
	Motivation	Monitoring self-efficacy, values, attributions, interest, and anxiety.
	Behavior	Managing time and effort, adjusting strategies (e.g., increasing engagement).
	Environment	Monitoring task conditions (e.g., changes in requirements).
Control Phase	Cognition	Adjusting and optimizing cognitive activities based on monitoring (e.g., selecting more effective strategies).
	Motivation	Enhancing self-efficacy through positive self-talk and self-reward, controlling anxiety.
	Behavior	Sustaining effort and selectively seeking help.
	Environment	Improving the learning environment (e.g., reducing distractions) and renegotiating task demands.
Reaction & Reflection	Cognition	Evaluating task performance and

Phase		conducting self-evaluation.
	Motivation	Regulating motivation by attributing success to ability and effort and failure to inappropriate strategy use.
	Behavior	Checking the effectiveness of time and effort allocation.
	Environment	Evaluating task demands and environmental support for learning, proposing adjustments for improvement.

Schraw et al. (2006) identified three widely accepted components of SRL: cognition, metacognition, and motivation, each encompassing various sub-components. The main components and their sub-components are as following table:

Table 3 Components of self-regulated learning from Schraw et al. (2007)

Main component	Sub-component	Description
Cognition	Encoding	Transforming information for long-term storage.
	Organization	Structuring information in long-term memory using schemata and scripts.
	Elaboration	Enhancing new information by associating it with existing knowledge.
	Inferencing	Deriving new information based on existing knowledge.
Meta-cognition	Knowledge of Cognition	Comprises declarative, procedural, and conditional knowledge.
	Regulation of	Involves planning, monitoring, and evaluation.

	cognition	
Motivation	Self-efficacy	Belief in one's ability to succeed.
	Attributions	Explanations assigned to events.
	Goal orientations	Beliefs about abilities influencing learning objectives
	Intrinsic Motivation	Driven by personal joy and satisfaction

Researchers also believe that SRL involves numerous integrated micro-processes, including goal setting, strategic planning, effective strategies for organizing information, monitoring and metacognition, action and volitional control, efficient time management, self-motivational beliefs (such as self-efficacy, goal orientations, interest, and attributions), self-evaluation and reflection, pride and satisfaction in one's effort, and establishing a conducive learning environment (Kryshko et al., 2022). Some scholars conceptualize self-regulation by categorizing it into different regulatory pathways (cognitive, emotional, motivational, behavioral), while most theorists adopt a phased model of self-regulation, categorizing constructs based on their emergence during the goal pursuit process (Diefendorff & Lord, 2008). In this paper, we advocate for the phased model approach to explain the SRL process.

Zimmerman, as one of the earliest researchers to propose the concept of self-regulated learning (SRL), identified three critical components of SRL: learning objectives, self-efficacy, and learning strategies (Zimmerman, 2008). He further proposed that SRL is a cyclical feedback process, comprising three cyclical phases: the forethought phase, the performance or volitional control phase, and the self-reflection phase (See Figure 2). The details were shown in Table 4. This model reveals the internal structure of self-regulated learning, involving cognitive, metacognitive, motivational, and emotional dimensions.

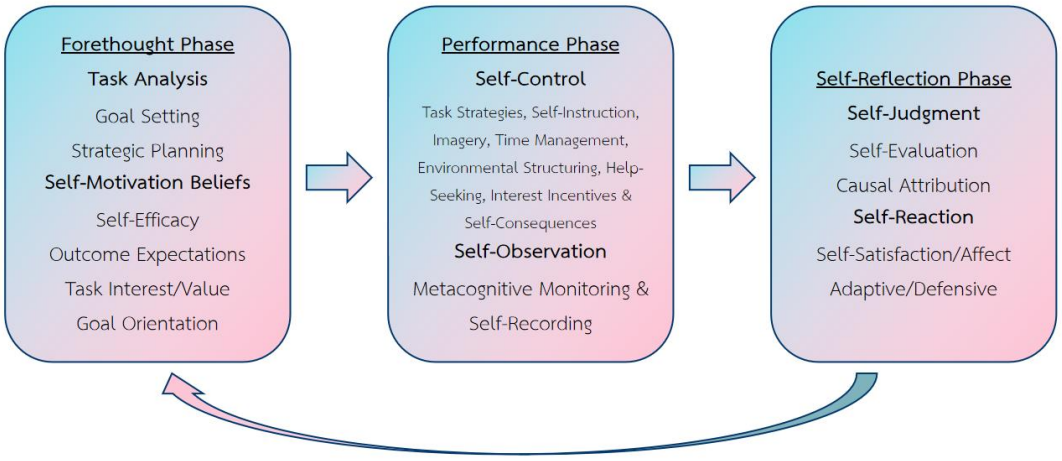


Figure 2 Self-regulated Learning Cyclic Model

Source: Created by author

Table 4 Components of Self-regulated Learning Model from Zimmerman (2002)

Phase	Components	Sub-Components	Examples/Descriptions
Forethought Phase	Task Analysis	Goal setting and strategic planning	Setting proximal goals (e.g., Memorizing key terms for a digital marketing quiz, such as Search Engine Optimization, Pay-Per-Click, and Click-Through Rate.) or using strategies (e.g., Using strategies such as breaking down complex e-commerce case studies into manageable sections for detailed analysis.).
	Self-Motivation	Self-efficacy, outcome expectations, intrinsic interest, and learning goal	Believing in one's ability (e.g., Confidently designing promotional strategies for an online store's Black Friday sales campaign.) or valuing a subject for its intrinsic

		orientation	merit (e.g., Valuing a course on supply chain management for its practical application in managing and optimizing e-commerce operations.).
Performance Phase	Self-Control	Imagery, self-instruction, attention focusing, and task strategies	Using imagery to remember the knowledge; studying in a distraction-free environment.
	Self-Observation	Self-recording and self-experimentation	Tracking study time; testing study methods (e.g., alone vs. with a friend).
Self-Reflection Phase	Self-Judgment	Self-evaluation and causal attribution	Comparing performance to standards; attributing errors to controllable processes (e.g., strategy, not ability).
	Self-Reaction	Self-satisfaction, adaptive/defensive responses	Feeling satisfaction with performance or adapting learning strategies to improve outcomes.

Specifically, the forethought and strategic planning phase of self-regulated learning (SRL) precedes the actual performance of tasks and encompasses processes that prepare the learner for future learning activities (Schunk, 2014). This planning phase involves preliminary preparation processes and actions, which include two main processes: task analysis and motivational beliefs. Task analysis primarily involves goal setting and strategy planning, while motivational beliefs include components such as self-efficacy, outcome expectations, intrinsic motivation, and goal orientation.

The performance phase entails self-regulatory processes that occur during actual learning and engagement with tasks. In this stage, students implement specific strategies chosen during the planning phase, while simultaneously monitoring their progress towards learning goals. This phase or volitional control stage also includes two processes: self-control and self-observation. Based on the monitoring of the learning process during this phase, students can decide whether to invest more time in learning, use different learning strategies, or stop learning if the learning objectives have been achieved (taking appropriate control measures).

Following performance control, the self-reflection phase involves students reflecting on their learning efforts and assessing the effectiveness of the strategies they used and their learning outcomes. This phase includes two processes closely related to self-observation: self-judgment and self-reaction. Self-judgment encompasses self-evaluation and causal analysis, where self-evaluation refers to judging the consistency between learning results and expected goals, and the importance of the learning outcomes. Causal analysis involves analyzing the reasons behind the achieved learning results. Self-reaction typically takes two forms: self-satisfaction, a positive evaluation in response to satisfactory learning outcomes, and adaptive or defensive responses, which are adjustments made in response to unsatisfactory learning outcomes to achieve success in subsequent learning. Additionally, since self-regulated learning is a cyclical feedback process, the self-reflection phase further influences the forethought planning phase.

Zimmerman's (2015) self-regulated learning model offers valuable insights for addressing academic procrastination by focusing on students' active participation and management of their learning. A central aspect of this model is goal setting, which directly counteracts procrastination. By setting clear, specific, and attainable short-term objectives, students gain a sense of direction, allowing them to stay focused and avoid delays. This goal-oriented approach also contributes to better time management, as students are more likely to plan and organize their time effectively when working toward concrete goals. Another critical factor in Zimmerman's (2020) model is self-efficacy, the

belief in one's ability to succeed, which helps mitigate procrastination stemming from a lack of confidence. Achieving smaller, manageable goals enhances students' confidence and motivation, reducing their tendency to postpone tasks. The model also emphasizes the importance of strategic planning and task analysis, advising students to decompose larger assignments into smaller, more manageable steps. This reduces the overwhelming nature of tasks and encourages students to initiate work, thus decreasing procrastination. Moreover, self-monitoring is essential for addressing procrastination. By tracking their progress, students can identify procrastination patterns and adjust their behaviors accordingly. This reflective process, combined with self-evaluation, enables students to pinpoint the causes of procrastination, such as inadequate time management or low motivation, and take corrective actions. Implementing these self-regulation strategies helps students develop effective learning habits, reduce procrastination, and cultivate self-management skills for the future.

Pintrich's (2004) self-regulated learning model (SRL) have been influential in the field, but their limitations have led many researchers to prefer Zimmerman (2002b)'s model. Pintrich (2004) model, while comprehensive in its inclusion of cognitive, motivational, behavioral, and environmental domains, can be seen as overly complex, making it difficult to apply practically in educational settings. The model's detailed categorization of the forethought, monitoring, control, and reflection phases may overwhelm learners or educators seeking simpler, more actionable strategies. Moreover, although it emphasizes the interconnectedness of SRL processes, it does not sufficiently highlight the iterative feedback loops that are central to the dynamic nature of SRL. Additionally, while Pintrich acknowledges environmental factors, the model does not give enough attention to the role of social interactions in SRL, which has become increasingly important in collaborative and online learning environments.

Similarly, the SRL model of Schraw et al.'s (2006), which condenses SRL into three core components—cognition, metacognition, and motivation—can be criticized for oversimplifying the complexities of SRL. By breaking SRL into static components, the model fails to adequately represent the dynamic, cyclical nature of self-regulation. It

does not provide a clear framework for how these components interact and evolve over time in response to changing tasks and contexts. Additionally, while motivation is treated as a central element, the model does not fully integrate it with cognitive and metacognitive processes, which limits its ability to offer a holistic view of how motivation influences and is influenced by cognitive strategies.

In contrast, Zimmerman's (2002) model is preferred by many researchers because it offers a more iterative and comprehensive approach to SRL. His cyclical model, with its emphasis on the forethought, performance, and reflection phases, better captures the continuous nature of self-regulation. It also highlights how motivation, cognition, and behavior interact, providing a more integrated perspective on how learners regulate their learning over time. Furthermore, Zimmerman's model accounts for environmental and social factors more explicitly, making it more adaptable to a wider range of educational contexts, including collaborative and online learning environments. For these reasons, Zimmerman's model is viewed as a more dynamic and applicable framework for studying self-regulated learning in diverse learning environments.

In summary, Zimmerman's (2002) self-regulated learning (SRL) model, with its three phases—forethought, performance, and self-reflection—proves to be an effective approach for reducing academic procrastination among college students. The SRL model encourages active participation and systematic management of one's learning, with a particular emphasis on setting clear goals, fostering self-efficacy, and employing effective learning strategies. Within the forethought phase, students engage in task analysis and motivational beliefs, such as goal setting and strategic planning, which help prevent procrastination by providing structure and clear objectives. The performance phase further supports this by promoting self-control and self-observation, allowing students to track their progress and adjust strategies as needed. Finally, the self-reflection phase involves evaluating the effectiveness of strategies and outcomes, enabling students to learn from their experiences and adapt their approaches accordingly. This cyclical process creates a dynamic feedback loop, encouraging students to reflect on and refine their learning strategies continuously, reducing the

likelihood of procrastination. The adoption of these three phases and their six sub-processes as an intervention strategy is critical, as they not only provide practical tools for time management and motivation but also address underlying emotional and cognitive factors that contribute to procrastination. By fostering goal-oriented behavior, boosting self-confidence, and encouraging strategic planning, this model empowers students to overcome procrastination and cultivate sustainable learning habits.

2.2.4 The Measurement of Self-regulated Learning

Researchers have measured SRL processes and strategies in a variety of ways, including self-report surveys and interviews, think-aloud protocols, tracking methods, error-detection tasks, microanalysis protocols, diaries, and direct observation (Cleary et al., 2015; Schmitz & Wiese, 2006; Winne & Perry, 2000). Despite the existence of various methods and approaches to assessing self-regulated learning, and despite the recognized limitations of the SRSI (Muis, 2007; Winne et al.,1997; Winne & Perry, 2000), the Self-Regulated Strategies Inventory-Self-Report (SRSI-SR) and other scales are still commonly used by researchers, likely due to their ease of use, ease of administration, and ability to report characteristics and findings concisely.

Common self-report scales include existing self-report inventories used to measure SRL strategies in college learners such as the Learning and Study Strategies Inventory (LASSI) (Weinstein et al., 1987) and the Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich et al.,1993) measure SRL broadly. Other measures such as the Patterns of Adaptive Learning Scales (PALS) (Midgley et al., 1996) and the Metacognitive Awareness Inventory (MAI) measure SRL broadly; Schraw and Dennison (1994) are used to measure specific subconstructs of SRL such as motivation and metacognition, respectively. The SRSI-SR also measures a subconstruct of SRL, but differs in many ways from the aforementioned measures.

1. Self-Regulated Learning Interview Schedule (SRLIS)

Measurement of self-regulated learning began with a study by (Zimmerman & Martinez-Pons, 1986, 1988) using structured interviews with the Self-Regulated Learning

Interview Schedule (SRLIS), an interview instrument used by Zimmerman and Martinez-Pons (1986).

Zimmerman interviewed college students in six learning situations (studying in class, studying at home, doing homework outside of school, doing math homework outside of school, preparing for a test, and being severely unmotivated). The researcher asked college students what coping strategies they would use in these six situations. Subjects' responses were classified into 14 self-regulation categories, which were categorized as motivational, metacognitive, and behavioral. Motivational responses included self-evaluation and self-consequences; metacognitive responses included goal setting and planning, organizing and transforming, seeking information, repeating, and remembering; and behavioral responses included constructing the environment, supervising and taking notes, reviewing notes, and asking for help.The Self-regulated Learning Interview Schedule (SRLIS) has established itself as an indispensable tool for those seeking a more intimate and detailed understanding of Self-regulated learning practices.

2. Learning and Study Strategies Inventory (LASSI)

The LASSI was conceived and constructed by Weinstein et al (1987). Recognizing a gap in the instruments available to understand college students' learning behaviors, this trio sought to create a comprehensive tool that captures not only the mechanics of learning but also the motivations and self-regulatory practices that accompany it. The LASSI focuses on investigating the skills, volition, and self-regulatory strategies used while studying. The LASSI is divided into 10 subscales with 80 items, of which attention, selection of topic ideas, and information processing in the skills subscale; motivation, attitudes, and anxiety in the volition subscale; and time management, learning goals, and self-testing in the self-regulation subscale can be used to measure self-regulatory learning strategies. The LASSI's individual scales generally show good internal consistency. Cronbach's alpha coefficients are generally

0.5 to 0.5. 's alpha coefficients typically range from .70 to .90, indicating satisfactory to high reliability.

3. Motivated Strategies for Learning Questionnaire (MSLQ)

The Motivated Strategies for Learning Questionnaire (MSLQ) developed by Pintrich et al. (1991), the MSLQ was constructed to specifically gauge college students' motivational orientations and their use of varied learning strategies.The MSLQ is a self-report instrument comprised of 81 items that encompass two primary sections: motivation and learning strategies. The motivation section contains 31 items which capture students' goals and values about the course material. These include intrinsic and extrinsic goal orientation, task value, control beliefs, self-efficacy for learning and performance, and test anxiety. The learning strategies section, consisting of 50 items, examines students' use of different cognitive and metacognitive strategies, as well as their management of different resources. Specifically, it addresses rehearsal, elaboration, organization, critical thinking, metacognitive self-regulation, time and study environment, effort regulation, peer learning, and help seeking. According to Pintrich et al. (1991), the internal consistency (Cronbach's alpha) values for the scales generally fall in the range of 0.52 to 0.93, with most above 0.70. Moreover, the MSLQ scales have exhibited predictive validity with course performance metrics, and they've shown consistency in their factorial structures across various student populations.

4. Adaptive Learning Scales (PALS)

The Patterns of Adaptive Learning Scales (PALS) developed by Midgley et al. 1996), is an instrument designed to assess students' academic motivation, beliefs about intelligence, perceptions of the classroom goal structure, and academic self-efficacy. In addition to student perceptions, PALS also measures teachers' instructional practices, beliefs about intelligence, and their perceptions of the classroom goal structure.The instrument uses Likert-scale items where students and teachers indicate their level of agreement or frequency with given statements.Many of the PALS scales have

demonstrated acceptable to high levels of internal consistency.The PALS has been widely used in educational research to understand the relationship between classroom environments, instructional practices, and student motivation and achievement.

5. Metacognitive Awareness Inventory (MAI)

This inventory developed by Schraw and Dennison (1994), serves as a tool to measure individuals' metacognitive awareness, encompassing both knowledge about cognition and regulation of cognition. The MAI consists of 52 Likert-scale items. Respondents indicate their agreement with statements on a Likert scale, with statements such as "I am aware of what strategies I use when I study." The MAI has demonstrated good internal consistency in various studies, often with Cronbach's alpha values exceeding 0.80. The MAI is often utilized in educational and psychological research to study metacognitive awareness and its relationships with learning, problem-solving, and academic performance.

Researchers have summarized the measurement methods related to self-regulated learning in Table 5 below, including the developers, purposes, key features, and reliability.

Table 5 Summary of the Measurements

Scale/Instrument	Developers	Purpose	Key Features	Reliability
Self-Regulated Learning Interview Schedule (SRLIS)	Zimmerman & Martinez-Pons (1986; 1988)	To assess SRL through structured interviews in six learning situations.	Classifies responses into 14 categories (motivational, metacognitive, behavioral). Examples: self-evaluation, goal setting, planning, organizing, reviewing notes, and	/

			help-seeking.	
Learning and Study Strategies Inventory (LASSI)	Weinstein et al. (1987)	To measure learning skills, motivation, and self-regulation strategies in college students.	Divided into 10 subscales (80 items): attention, motivation, time management, self-testing, anxiety, and learning goals. Focuses on skills, volition, and self-regulatory practices.	Cronbach's alpha: 0.70–0.90, indicating satisfactory to high reliability.
Motivated Strategies for Learning Questionnaire (MSLQ)	Pintrich et al. (1991)	To measure motivational orientations and learning strategies of college students.	Two main sections: **Motivation** (31 items) includes goal orientation, task value, and self-efficacy; **Learning Strategies** (50 items) includes rehearsal, organization, critical thinking, metacognitive self-regulation, and help-seeking.	Cronbach's alpha: 0.52–0.93, with most above 0.70. Predictive validity with course performance.

Patterns of Adaptive Learning Scales (PALS)	Midgley et al. (1996)	To assess academic motivation, beliefs about intelligence, classroom goal structure, and academic self-efficacy.	Measures both student perceptions (motivation, beliefs) and teacher practices (goal structure). Uses Likert-scale items to assess agreement with statements.	Acceptable to high levels of internal consistency.
Metacognitive Awareness Inventory (MAI)	Schraw & Dennison (1994)	To assess metacognitive awareness, including knowledge and regulation of cognition.	52 Likert-scale items, e.g., "I am aware of what strategies I use when I study". Frequently used in research on metacognition and its impact on problem-solving and academic performance.	Cronbach's alpha > 0.80, indicating good internal consistency.

2.2.5 Research Related Self-regulated Learning

In "Does Training on Self-Regulated Learning Facilitate Students' Learning With Hypermedia?" by Azevedo and Cromley (2004), the researchers employed a script based on Pintrich's (2000a) stage theory of self-regulated learning to train collge students in multimedia environments. Their findings indicated significant changes in the students' mental models, suggesting that the training effectively developed core processes and mechanisms of self-regulated learning and improved students' comprehension of knowledge.

Wolters (2003) in the study "Understanding procrastination from a self-regulated learning perspective" explored academic procrastination from a self-regulated learning viewpoint. The research findings indicate that procrastination is most prominently associated with students' beliefs in their ability to successfully complete academic tasks and their desire to avoid putting in effort or overexerting themselves when completing these tasks. When students perceive their academic tasks as requiring significant effort or time, and when they are unsure about their ability to successfully complete these tasks, they are more likely to engage in procrastination. Controlling for motivational beliefs, academic procrastination is moderately negatively correlated with the application of cognitive metacognitive strategies. Learners who frequently employ cognitive strategies such as planning, management, and monitoring tend to exhibit lower levels of academic procrastination. Additionally, students with higher self-efficacy may also initiate tasks more promptly. Therefore, the research results suggest that self-efficacy is a valuable component of self-regulated learning. In summary, these findings support the notion that self-regulated learners are less prone to procrastination compared to other students.

Schmitz and Wiese (2006) conducted a study titled "New Perspectives for the Evaluation of Training Sessions in Self-Regulated Learning: Time-Series Analyses of Diary Data." This study involved a time-series analysis and diary methods in a four-week intervention with 40 collge students. Training focused on self-regulated strategies such as goal setting, time management, and planning. The results showed significant improvements in self-regulated behaviors after the training.

Paris and Paris (2001) discussed the implementation of self-regulated learning in classroom settings in their article "Classroom Applications of Research on Self-Regulated Learning". The paper emphasized the multifaceted nature of SRL, including cognitive, metacognitive, motivational, emotional, and behavioral aspects, and the transition from controlled laboratory research to less controlled school-based research for effective educational practice.

"Relationship between Self-Regulated Learning and Academic Procrastination" by San et al. (2016) explored the relationship between motivational and learning strategy components of self-regulated learning and academic procrastination. The study involved 100 undergraduates from Universiti Putra Malaysia, finding significant negative correlations between several self-regulation components and academic procrastination, and a positive correlation between anxiety and procrastination.

Postholm (2011) focused on the impact of self-regulated learning on students' learning processes in the study "Self-Regulated Learning in Teaching: Students' Experiences". The research found that students' self-regulated learning capabilities improved when they implemented learning strategies and exerted more control over their learning process, motivating them for future learning tasks. The study emphasized the crucial role of teachers in guiding and supporting students, especially in integrating strategies into teaching practices.

Zhao (2012) conducted a study titled "Intervention Study on Academic Procrastination among Master's Students", focusing on academic procrastination interventions among master's students. The study involved a five-session group intervention and a four-week autonomous intervention with 15 master's students from Northeast Normal College. The study assessed self-regulation, time management, and self-control, finding that higher scores in these areas correlated with less procrastination.

In "Self-regulated learning: The Role of Motivation, Emotion, and Use of Learning Strategies in Students' Learning Experiences in a Self-Paced Online Mathematics Course", Cho and Heron (2015) conducted a survey with students enrolled in self-paced remedial online mathematics courses. The study emphasized the importance of self-regulation in online learning environments, highlighting that self-regulated learners set goals, plan, monitor their learning, manage time and resources effectively, and persist in challenging contexts.

Jansen et al. (2019) in their meta-analysis "Self-regulated learning partially mediates the effect of self-regulated learning interventions on achievement in higher

education" used structural equation modeling to test the mediating role of self-regulated learning activities in higher education achievement. The study found that self-regulated learning interventions positively impact self-regulated learning activities and academic performance.

Boyd (2022) conducted a study titled "Lifelong Learning in Medicine: A Two-Part Intervention to Encourage Self-Regulated Learning Skills Among First-Year Medical Students" at Harvard Medical School. This two-part educational intervention focused on developing self-regulated learning skills among first-year medical students through interactive classroom activities and one-on-one academic coaching sessions.

Academic procrastination is a significant issue that adversely affects students' learning efficiency and academic success. It is often viewed as a manifestation of deficiencies in self-regulated learning. Self-regulated learning is a dynamic, cyclical process involving three key phases: planning, execution, and reflection. This process requires individuals to effectively coordinate personal factors (e.g., motivation and emotions), contextual factors (e.g., task environment), and behavioral factors (e.g., time management and learning strategies). However, when disruptions occur in any phase of this process, academic procrastination is likely to arise.

Although previous studies have established a close relationship between academic procrastination and self-regulated learning, several gaps remain in the existing literature. First, most studies have focused on specific components of self-regulated learning, such as time management or task aversiveness, without examining self-regulated learning as a holistic model. Second, research has predominantly treated academic procrastination as an isolated phenomenon rather than exploring it as an outcome variable within the broader self-regulated learning process. Third, there is limited practical guidance on how to address academic procrastination through enhancements in self-regulated learning.

To address these gaps, this study adopts Zimmerman's (2002) self-regulatd learning model as the theoretical framework to systematically investigate the impact of the self-regulated learning process on academic procrastination. By analyzing the

interrelationships among the components of planning, execution, and reflection, this study aims to identify key pathways through which self-regulated learning influences procrastination behaviors. The findings will provide theoretical insights and practical strategies for developing interventions to mitigate academic procrastination.

2.3 Related Research

Academic procrastination is a prevalent issue among college students, adversely affecting learning efficiency, academic performance, and psychological well-being (Steel, 2007). Researchers have increasingly linked procrastination to deficiencies in self-regulated learning (SRL), a construct encompassing goal setting, strategic planning, monitoring, self-control, and reflection (Zimmerman, 2002; Panadero, 2017). SRL enables learners to actively manage cognitive, motivational, and emotional processes, thereby enhancing task engagement and reducing delays in academic tasks (Schunk & DiBenedetto, 2020).

Early studies emphasized the association between self-efficacy, time management, and procrastination. Bandura (1978) proposed that learners' beliefs in their ability to succeed influence their engagement in goal-directed behaviors. Wolters (2003) empirically demonstrated that students with higher self-efficacy and better time-management skills were less likely to procrastinate. Similarly, Pintrich and Groot (1990) highlighted the importance of monitoring, planning, and cognitive regulation in reducing task avoidance, suggesting that effective SRL components are critical in managing procrastination.

Intervention studies have further confirmed the role of SRL in mitigating procrastination. Zimmerman and Martinez-Pons (1986, 1988) introduced the Self-Regulated Learning Interview Schedule (SRLIS) to assess SRL strategies in multiple learning contexts, laying the groundwork for understanding specific self-regulatory behaviors. Weinstein et al. (1987) developed the Learning and Study Strategies Inventory (LASSI), enabling researchers to measure students' learning skills, motivation,

and self-regulatory practices systematically. Azevedo and Cromley (2004) conducted SRL training based on Pintrich's stage theory in multimedia environments, reporting significant improvements in students' cognitive and metacognitive strategies, which corresponded with reduced procrastination. Schmitz and Wiese (2006) used diary methods and time-series analyses to show that training in goal setting, planning, and time management enhanced SRL behaviors and decreased procrastination.

Theoretical frameworks provide deeper insight into the SRL–procrastination relationship. Zimmerman's (2002) cyclical model, comprising forethought, performance, and self-reflection phases, has been widely applied. In the forethought phase, students set specific goals, activate prior knowledge, and cultivate motivational beliefs such as self-efficacy and intrinsic interest, helping prevent task delay. The performance phase involves strategy implementation, self-control, and monitoring, allowing learners to adjust behaviors in real time. The self-reflection phase focuses on evaluating outcomes, analyzing causes of success or failure, and adapting strategies for future tasks. Pintrich (2004)'s model similarly emphasizes forethought, monitoring, control, and reflection, though researchers have noted that its complexity may limit practical application.

Motivational and emotional factors within SRL also play crucial roles in procrastination. Paris and Paris (2001) emphasized the importance of autonomy and self-direction in classroom learning, linking intrinsic motivation to proactive task engagement. Wolters (2003) found that learners' beliefs about competence and perceived task difficulty strongly influence procrastination. San et al. (2016) reported negative correlations between self-regulatory strategy use and academic procrastination, while anxiety and maladaptive attributions were positively correlated with procrastination. These findings underscore the need to consider cognitive, motivational, and affective dimensions in interventions.

Online and blended learning contexts further highlight SRL's importance. Cho and Heron (2015) found that self-regulated learners in self-paced online mathematics

courses effectively planned, monitored, and persisted in challenging tasks, reducing procrastination. Boyd (2022) implemented a two-part intervention for first-year medical students combining interactive classroom activities and individual coaching, demonstrating improvements in goal setting, strategic planning, and self-monitoring, with corresponding reductions in procrastination.

Despite substantial research, several gaps remain. Many studies examine isolated SRL components, such as time management or motivation, without considering SRL as an integrated process. Academic procrastination is often treated as a stand-alone outcome rather than an outcome variable embedded within the broader SRL framework. Moreover, there is limited practical guidance for systematically applying SRL interventions to reduce procrastination across diverse educational contexts. Addressing these gaps requires a holistic approach that considers the interplay of cognitive, motivational, and behavioral dimensions across the three SRL phases.

Although previous studies have established a close relationship between academic procrastination and self-regulated learning, several gaps remain in the existing literature. First, most studies have focused on specific components of self-regulated learning, such as time management or task aversiveness, without examining self-regulated learning as a holistic model. Second, research has predominantly treated academic procrastination as an isolated phenomenon rather than exploring it as an outcome variable within the broader self-regulated learning process. Third, there is limited practical guidance on how to address academic procrastination through enhancements in self-regulated learning.

To address these gaps, this study adopts Zimmerman's (2002) self-regulatd learning model as the theoretical framework to systematically investigate the impact of the self-regulated learning process on academic procrastination. By analyzing the interrelationships among the components of planning, execution, and reflection, this study aims to identify key pathways through which self-regulated learning influences

procrastination behaviors. The findings will provide theoretical insights and practical strategies for developing interventions to mitigate academic procrastination.

2.4 Summary

This chapter has systematically reviewed the theoretical foundations and empirical evidence concerning self-regulated learning (SRL) and its role in mitigating academic procrastination. Grounded in Social Cognitive Theory (Bandura, 1978), SRL is conceptualized as a dynamic and cyclical process encompassing forethought (planning), performance (execution), and self-reflection (evaluation) (Zimmerman, 2002; Panadero, 2017). Within this framework, learners actively regulate their cognitive, motivational, emotional, and behavioral processes to achieve academic goals. Across diverse educational contexts, students who demonstrate stronger SRL competencies—such as goal setting, strategic planning, self-monitoring, and adaptive reflection—consistently exhibit lower levels of academic procrastination (Wolters, 2003; San et al., 2016).

The literature reviewed in this chapter provides robust empirical support for a negative relationship between SRL and academic procrastination. Correlational studies indicate that higher self-efficacy, effective time management, and metacognitive regulation function as protective factors against task delay and avoidance (Bandura, 1978; Pintrich & Groot, 1990; Wolters, 2003). Intervention-based research further demonstrates that SRL-oriented training programs can significantly enhance learners' regulatory capacities and produce sustained reductions in procrastination across face-to-face, online, and blended learning environments (Azevedo & Cromley, 2004; Schmitz & Wiese, 2006; Cho & Heron, 2015; Boyd, 2022).

From a theoretical perspective, Zimmerman's (2002) cyclical SRL model and Pintrich's (2004) regulatory framework offer complementary explanations of how self-regulation operates across different phases of learning. In particular, deficiencies in the

forethought and performance phases—such as unclear goal setting, low self-efficacy, poor time management, and inadequate self-monitoring—are repeatedly identified as critical antecedents of academic procrastination (Pintrich & Groot, 1990; Wolters, 2003). In contrast, effective self-reflection processes support strategy adjustment and long-term improvement in learning behaviors, thereby reducing the likelihood of recurring procrastination.

Despite the substantial body of international research, this chapter also highlights clear gaps in the existing literature. Previous studies have predominantly focused on Western educational contexts and have often examined isolated components of SRL, such as time management or motivation, rather than conceptualizing SRL as an integrated process (Paris & Paris, 2001; San et al., 2016). Moreover, academic procrastination has frequently been treated as a stand-alone outcome rather than as a multidimensional behavioral manifestation embedded within the broader self-regulated learning cycle. Empirical research providing context-specific guidance for systematically applying SRL-based interventions, particularly in Chinese higher education settings, remains limited.

In summary, this chapter establishes a strong theoretical and empirical rationale for examining academic procrastination through the lens of self-regulated learning. By synthesizing key theoretical models and empirical findings, it provides a solid conceptual foundation for the present study, which adopts Zimmerman's (2002) cyclical SRL model to examine how planning, execution, and reflection jointly influence procrastination behaviors. This framework directly informs the research design and hypothesis development presented in the subsequent chapter.

CHAPTER 3
METHODOLOGY

The main purpose of the study was to develop and validate a learning model based on self-regulated learning strategies to effectively reduce academic procrastination among undergraduate students. The target population for this research was undergraduate freshmen, a group particularly susceptible to procrastination due to the transition from structured high school environments to the relatively autonomous nature of college life. The research objectives are as follows:

1) To study the definitions and components of academic procrastination for undergraduate students in universities.

2) To develop a learning model by using self-regulated learning to reduce academic procrastination.

3) To evaluate the effectiveness of the self-regulated learning model in reducing academic procrastination.

To achieve these research objectives, the research process was structured into three distinct phases:

Phase 1: Studying the definitions and components of academic procrastination for undergraduate students in universities

Phase 2: Developing a learning model by using self-regulated learning to reduce academic procrastination.

Phase 3: Evaluating the effectiveness of self-regulated learning in reducing academic procrastination.

3.1 Phase 1: Studying the definitions and components of academic procrastination for undergraduate students in universities

Phase1: In the first phase of this study, the researcher aimed to investigate the definitions and key components of academic procrastination specifically for undergraduate students in universities. This phase involved a thorough literature review

and expert interviews, which allowed to identify the various dimensons that contribute to academic procrastination in this demographic.

3.1.1 Literature review

1. Researchers reviewed the literature and studies related to academic procrastination. In the international context, academic procrastination is recognized as a prevalent phenomenon in higher education, negatively impacting learning outcomes and the quality of academic achievements (Steel, 2007). Studies suggest that academic procrastination arises not only from individual traits but also from the combined influence of external environments and task characteristics (Schraw et al., 2007). Today, education faces the challenge of addressing academic procrastination, requiring systematic interventions to enhance students' self-regulation and time management skills (Klassen et al., 2008). In the Chinese context, the Central Committee of the Communist Party of China and the State Council issued the Education Modernization 2035 Plan, which explicitly emphasizes optimizing the education system, strengthening the cultivation of students' autonomous learning abilities, and integrating the development of time management skills and overcoming procrastination as key components throughout educational reform.

2. This study also reviewed the Self-Worth Theory, Temporal Motivation Theory, Reinforcement Theory, Cognitive Theory, and Self-Regulation Theory, which collectively provide a robust theoretical foundation for understanding the definition and associated concepts of academic procrastination.

3. The researcher drew on literature and studies related to innovative thinking to develop a semi-structured interview. The interview questions were designed in an open-ended format to facilitate discussions with qualified individuals among professional education students.

3.1.2 Expert interview

To gain a more comprehensive understanding of the definition and components of academic procrastination, this study conducted expert interviews with five collge teachers specialized in Education psychology and Academic management (See appendix A).

Selection Criteria:

Participants were required to meet the following inclusion criteria: (1) a minimum of five years of experience in undergraduate education, and (2) possession of a doctoral degree in education management or psychology.

Interview Design and Implementation:

The interviews followed a semi-structured format (see Appendix B for the interview guide), allowing for flexible exploration of topics related to the definition and components of academic procrastination. Interviews were scheduled based on the teachers' availability and lasted approximately 30–45 minutes each. All interviews were conducted with prior consent from the participants, ensuring the anonymity and confidentiality of their responses.

Data Collection and Analysis:

The interview content was recorded and transcribed into text for analysis. Thematic analysis was employed to identify and summarize key definitions and critical constructs of academic procrastination that emerged during the interviews (see Appendix C for detailed findings).

3.1.3 Measurement of Academic Procrastination

Based on a comprehensive literature review and expert interviews, this study designed a questionnaire to measure academic procrastination among college students. The specific steps involved in the questionnaire design are as follows:

1. Defining academic procrastination and its components

The definition and components of academic procrastination were determined based on the theory and concepts of academic procrastination from Solomon and

Rothblum (1984) and supplemented by interview data from five experts. Academic procrastination was defined and categorized into specific components, including Fear of Failure, Difficulty in Deciding, Task Aversiveness, Rebellion Against Control, Dependency, and Risk-Taking.

2. Scale Items

The questionnaire items were adapted from the Academic Procrastination Scale proposed by Yip and Chung (2022), which was specifically designed for Chinese students and aligns closely with the context of the current study. Items were refined based on feedback from expert interviews. The final scale used in this study comprised 26 items across six dimensions. **Fear of Failure (FF)** includes 7 items, such as "You were concerned you wouldn't meet your own expectations". **Difficulty in Deciding (DD)** consists of 3 items, for example, "You couldn't choose among all the learning tasks". **Task Aversiveness (TA)** has 5 items, such as "You just felt too lazy to complete learning tasks." **Rebellion Against Control (RC)** includes 2 items, for instance, "You resented having to do things assigned by others". **Dependency (DP)** comprises 3 items, such as "You waited to see if the teacher would give you more information about the learning tasks". Lastly, **Risk-Taking (RT)** contains 2 items, for example, "You looked forward to the excitement of doing learning tasks at the last minute". Responses are rated on a five-point Likert scale, where 1 indicates "strongly disagree" and 5 indicates "strongly agree."

3. Reliability and Validity Test

Validity was evaluated through Item-Objective Congruence (IOC) testing by three experts (See appendix A). The Index of Item-Objective Congruence (IOC) was used to evaluate the research questionnaire. Experts rated each item on a scale ranging from -1 to +1, with scores indicating the following: +1 for congruent, 0 for questionable, and -1 for incongruent (Rovinelli & Hambleton, 1977). The average IOC score across all experts was calculated, with a score of $\geqslant 0.67$ considered acceptable (see table 6).

A pilot sample of 50 college freshmen majoring in e-commerce as well was selected to test the questionnaire's reliability using Cronbach alpha value. A Cronbach's alpha value of 0.70 or above is generally considered acceptable, though higher values (e.g., 0.80 or 0.90) are preferred for more robust reliability (see Table 7) (Cronbach, 1951).

Table 6 IOC Result of Academic Procrastination Scale for First-year Undergraduates

Item	Expert 1	Expert 2	Expert 3	Total	IOC	Rsult
1. You were concerned the teacher wouldn't like your work.	1	1	1	3	1	Pass
2. You were not worried you would get a bad grade.	1	1	1	3	1	Pass
3. You didn't think you knew enough to complete the learning tasks.	1	1	1	3	1	Pass
4. You didn't trust yourself to do a good job.	1	1	1	3	1	Pass
5. You were concerned you wouldn't meet your own expectations.	1	1	1	3	1	Pass
6. You were not concerned that if you got a good grade, people would have higher expectations of you in the future.	1	1	0	2	0.67	Pass
7. You set very high standards for yourself and	1	1	1	3	1	Pass

worried you wouldn't be able to meet them.						
8. You waited until a classmate did theirs, so they could give you some advice.	1	1	0	2	0.67	Pass
9. There was any information you needed to ask the teachers; you felt comfortable approaching them.	1	1	1	3	1	Pass
10. You couldn't choose among all the learning tasks.	1	0	1	2	0.67	Pass
11. You really disliked learning tasks.	1	1	1	3	1	Pass
12. You did not feel overwhelmed by the learning task.	1	1	0	2	0.67	Pass
13. You didn't have enough energy to begin the learning tasks.	1	1	1	3	1	Pass
14. You did not feel it just takes too long to learning tasks.	1	1	1	3	1	Pass
15. You just felt too lazy to complete learning tasks.	0	1	1	2	0.67	Pass
16. You resented having to do things assigned by others.	1	1	1	3	1	Pass

17. You did not resent people setting deadlines for you.	1	1	1	3	1	Pass
18. You had a hard time knowing what to include and what not to include in your learning task.	1	1	1	3	1	Pass
19. You did not have difficulty requesting information from other people.	1	1	1	3	1	Pass
20. You waited to see if the teacher would give you more information about the learning tasks.	1	1	1	3	1	Pass
21. You looked forward to the excitement of doing learning task at the last minute.	1	1	1	3	1	Pass
22. You do not like the challenge of waiting until the deadline.	1	0	1	2	0.67	Pass

Note: The IOC value is considered acceptable and usable if it meets or exceeds a value of 0.50.

Table 7 Reliability of Academic Procrastination Scale for First-year Undergraduates

Item	Cronbach's Alpha	Rsult
1. You were concerned the teacher wouldn't like your work.	0.893	Applicable

2. You were not worried you would get a bad grade.	0.893	Applicable
3. You didn't think you knew enough to complete the learning tasks.	0.892	Applicable
4. You didn't trust yourself to do a good job.	0.891	Applicable
5. You were concerned you wouldn't meet your own expectations.	0.887	Applicable
6. You were not concerned that if you got a good grade, people would have higher expectations of you in the future.	0.890	Applicable
7. You set very high standards for yourself and worried you wouldn't be able to meet them.	0.888	Applicable
8. You waited until a classmate did theirs, so they could give you some advice.	0.889	Applicable
9. There was any information you needed to ask the teachers; you felt comfortable approaching them.	0.888	Applicable
10. You couldn't choose among all the learning tasks.	0.888	Applicable
11. You really disliked learning tasks.	0.892	Applicable
12. You did not feel overwhelmed by the learning task.	0.886	Applicable
13. You didn't have enough energy to begin the learning tasks.	0.888	Applicable
14. You did not feel it just takes too long to learning tasks.	0.891	Applicable
15. You just felt too lazy to complete learning tasks.	0.892	Applicable
16. You resented having to do things assigned by others.	0.890	Applicable

17. You did not resent people setting deadlines for you.	0.898	Applicable
18. You had a hard time knowing what to include and what not to include in your learning task.	0.898	Applicable
19. You did not have difficulty requesting information from other people.	0.896	Applicable
20. You waited to see if the teacher would give you more information about the learning tasks.	0.895	Applicable
21. You looked forward to the excitement of doing learning task at the last minute.	0.894	Applicable
22. You do not like the challenge of waiting until the deadline.	0.896	Applicable

Note: Overall Cronbach's Alpha Value is 0.896

The results indicated strong evidence of reliability and validity, affirming the questionnaire's robustness as an effective tool for assessing academic procrastination among college students.

3.2 Phase 2: Developing a learning model by using self-regulated learning to reduce academic procrastination

The second phase of this study addresses the second research objective, which aims to create a self-regulated learning model designed to reduce academic procrastination in first-year students. This phase follows the steps outlined below:

3.2.1 Literature Review

Based on the literature review, the researcher confirmed the definitions and components of self-regulated learning, alongside an explanation of the model's characteristics and structure. The literature regarding the impact of self-regulated learning on reducing academic procrastination is also examined, confirming the potential benefits and the need for further exploration. In this study, the self-regulated

learning models proposed by Zimmerman (2002) served as theoretical foundations for model construction.

In combination with data from the Phase 1 interviews and supporting literature, the researchers developed a multi-phase self-regulated learning model tailored to first-year undergraduate student in China. The self-regulated learning model in this study consists of three phases: **(1) the Forethought Phase (Task Analysis and Self-Motivation), (2) the Performance Phase (Self-Control and Self-Observation), and (3) the Self-Reflection Phase (Self-Judgment and Self-Reaction)**. These elements form the core structure of the model, and learning activities were designed to provide first-year students with opportunities to practice self-regulation and reduce procrastination. The self-regulated learning model consists of 12 lessons, each lasting approximately 60 minutes (See Appendix G).

3.2.2 Expert interview

The researchers consulted 3 experts (see Table 8) in a formative manner to develop the self-regulated learning model aimed at reducing academic procrastination among first-year undegraduate students. These experts included two professors in the field of education and one associate professor in psychology. Based on the feedback and recommendations provided by the experts, the researchers evaluated and adjusted the content and activities of the model to ensure its content validity.

A pilot test of the self-regulated learning model, incorporating the experts' recommendations, was conducted with 10 first-year students from e-commerce major. The researchers assessed the consistency of the model by analyzing the three experts' ratings using the Item-Objective Congruence (IOC) index as well, with scores ranging from 0.67 to 1.00.

Table 8 IOC results of Self-regulated learning model

Learning Activity	Sections	Expert 1	Expert 2	Expert 3	IOC
1. Understanding	Content	1	1	1	1

academic procrastination and self-regulation	Objective	1	1	1	1
	Time	1	1	1	1
	Learning Materials	1	1	1	1
	Learning Activity Step	1	1	1	1
	Conclusion	1	1	1	1
	Evaluation	1	1	1	1
2. Task analysis and goal setting	Content	1	0	1	0.67
	Objective	1	1	1	0.67
	Time	1	0	1	1
	Learning Materials	1	1	1	1
	Learning Activity Step	1	0	1	0.67
	Conclusion	1	1	1	1
	Evaluation	1	1	1	1
3. Establish self-motivation belief	Content	1	1	1	1
	Objective	1	1	1	1
	Time	1	1	1	1
	Learning Materials	1	1	1	1
	Learning Activity Step	1	1	1	1
	Conclusion	1	1	1	1
	Evaluation	1	1	1	1

4. Coping with fear of failure and difficulty in deciding	Content	1	1	1	1
	Objective	1	1	1	1
	Time	1	1	1	1
	Learning Materials	1	1	1	1
	Learning Activity Step	1	1	1	1
	Conclusion	1	1	1	1
	Evaluation	1	1	1	1
5. Improve self-control	Content	1	0	1	0.67
	Objective	1	1	1	0.67
	Time	1	1	1	1
	Learning Materials	1	0	1	1
	Learning Activity Step	1	0	1	0.67
	Conclusion	1	1	1	1
	Evaluation	1	1	1	1
6. Coping with task aversiveness and rebellion against control	Content	1	1	1	1
	Objective	1	1	1	1
	Time	1	1	1	1

	Learning Materials	1	1	1	1
	Learning Activity Step	1	1	1	1
	Conclusion	1	1	1	1
	Evaluation	1	1	1	1
7. Coping with dependence and risk-taking behavior	Content	1	1	1	1
	Objective	1	1	1	1
	Time	1	1	1	1
	Learning Materials	1	1	1	1
	Learning Activity Step	1	1	1	1
	Conclusion	1	1	1	1
	Evaluation	1	1	1	1
8. Self-observation and behavior correction	Content	1	1	1	1
	Objective	1	1	1	1
	Time	1	1	1	1
	Learning Materials	1	1	1	1

	Learning Activity Step	1	1	1	1
	Conclusion	1	1	1	1
	Evaluation	1	1	1	1
9. Learn to judge yourself	Content	1	1	1	1
	Objective	1	1	1	1
	Time	1	1	1	1
	Learning Materials	1	1	1	1
	Learning Activity Step	1	1	1	1
	Conclusion	1	1	1	1
	Evaluation	1	1	1	1
10. Construct a positive self-reaction	Content	1	1	1	1
	Objective	1	1	1	1
	Time	1	1	1	1
	Learning Materials	1	1	1	1
	Learning Activity Step	1	1	1	1
	Conclusion	1	1	1	1
	Evaluation	1	1	1	1

11. Comprehensive exercises and feedback	Content	1	1	1	1
	Objective	1	1	1	1
	Time	1	1	1	1
	Learning Materials	1	1	1	1
	Learning Activity Step	1	1	1	1
	Conclusion	1	1	1	1
	Evaluation	1	1	1	1
12. Course review	Content	1	1	1	1
	Objective	1	1	1	1
	Time	1	1	1	1
	Learning Materials	1	1	1	1
	Learning Activity Step	1	1	1	1
	Conclusion	1	1	1	1
	Evaluation	1	1	1	1

3.3 Phase 3: Evaluating the effectiveness of self-regulated learning model in reducing academic procrastination

The third phase of this stuty aimed to examine the the effectiveness of self-regulated learning model in reducing first-year undegradua students' academic procrastination. To achieve this, a Quasi-Experimental design was implemented. The study employed a two-group structure (experimental group and control group) with assessments conducted at three points: pre-test, post-test, and follow-up. This approach is widely recognized for evaluating the long-term effectiveness of educational models. The experiment is organized as follows:

3.3.1 Quasi-Experimental design

The research design follows a quasi-experimental structure, as shown in Table 9. The design includes two groups: the experimental group (ERT) and the control group (CRT). Both groups undergo a pre-test (T1) to measure their baseline academic procrastination levels. The experimental group receives the treatment (X) in the form of the the Self-regulatd learning model, while the control group receives no intervention. After the treatment, both groups are assessed through a post-test (T2) to measure any changes in academic procrastination levels. Finally, a follow-up measurement (T3) is conducted to evaluate the long-term effects of the intervention

Table 9 Quasi-Experimental Design

Group	Pre-test (T1)	Treatment	Post-test (T2)	Follow-up (T3)
Experimental Group (EG)	O	X	O	O
Control Group (CG)	O	-	O	O

Note: X signifies the exposure of a group to an experimental variable or event, with the objective of measuring its effects; O indicates a measurement taken using an instrument.

3.3.2 Population and Sample

Population: The population of this study consisted of all first-year undergraduate students enrolled at Guangdong University of Science and Technology during the 2022 academic year. According to institutional enrollment records, the total number of first-year undergraduate students was 524. This population constituted the complete research population from which the study sample was drawn.

Sample: To ensure sufficient statistical power for the planned repeated measures ANOVA, G*Power 3.1 was used to estimate the required sample size, assuming a medium effect size (f = 0.25), α = 0.05, power ($1-\beta$) = 0.80, two groups, and two measurements (Faul et al., 2009). The calculation indicated that each group would require approximately 34–36 students. To account for potential attrition and ensure robustness, two e-commerce classes from the 2022 cohort were selected using purposive sampling. One class was randomly assigned to the experimental group, and the other was randomly assigned to the control group. Each class consisted of 45 students. This sample size meets the statistical requirements for hypothesis testing and is considered representative of the target student population within the selected institution.

3.3.3 Learning Model Implementation

The researchers carried out the test in strict accordance with the quasi-experimental design outlined in Table 6, which was divided into four stages as follows:

3.3.3.1 Pre-Test

Prior to the start of the implementation of learning model, academic procrastination levels were assessed in both the experimental group (EG) and the control group (CG) to ensure that there were no significant differences in academic procrastination levels between the two groups. Following the pre-test, the researcher held a meeting to provide the sample group with detailed instructions regarding their participation in the 12 learning activities.

3.3.3.2 Intervention Stage

The course selected for the intervention phase of this study was "Psychological Health Education for College Students". The researchers implemented the self-regulated learning model with the experimental group (EG), ensuring that the intervention process (X) was standardized and consistently applied to all participants in the experimental group. The intervention lasted for 12 weeks, with one learning activity per week, each lasting approximately 60 minutes. The control group (CG), on the other hand, continued with traditional teaching methods without any involvement in the self-regulated learning model. The course plan for the self-regulated learning model is shown in Table 10.

Table 10 Self-regulated Learning Model Lesson Plan

Stage	Week	Learning Activity
The first stage: self-starting stage	1	Understanding academic procrastination and self-regulation
	2	Task analysis and goal setting
	3	Establish self-motivation belief
	4	Coping with fear of failure and difficulty in deciding
The second stage: the execution control stage	5	Improve self-control
	6	Coping with task aversiveness and rebellion against control
	7	Coping with dependence and risk-taking behavior
	8	Self-observation and behavior correction
The third stage: self-reflection stage	9	Learn to judge yourself

10	Construct a positive self-reaction
11	Comprehensive exercises and feedback
12	Course review

3.3.3.3 Post-Test

Upon completion of the Self-Regulated Learning Model intervention, a post-test was administered to the experimental group (EG) to assess their academic procrastination levels, thereby evaluating the effectiveness of the learning model. Simultaneously, the post-test was also conducted for the control group (CG) to establish a baseline for comparison with the experimental group.

3.3.3.4 Follow-up

Four weeks after the intervention, a follow-up measurement was conducted to measure the academic procrastination levels in both the experimental group (EG) and the control group (CG). This follow-up measurement aimed to assess the sustained effectiveness of the intervention in reducing academic procrastination of first-year undergruaduate students.

3.3.4 Data Analysis

In Phase 3 of this study, statistical software instruments were employed to process and analyze the data, with the aim of measuring the effectiveness of the self-regulated learning model in reducing academic procrastination among collge students. Specifically, the data analysis will consist of two parts as follows:

1. Preliminary data analysis was conducted using descriptive statistical methods, such as means, standard deviations, and mean differences, to provide descriptive statistics for the research sample.

2. Repeated measures analysis of variance (Repeated measures ANOVA) was used to compare the mean differences in academic procrastination between the experimental and control groups both pre- and post-intervention, as well as at the end of

the follow-up period, in order to assess the effectiveness and persistence of the intervention.

CHAPTER 4
FINDINGS

This study aims to study the definitions and components of academic procrastination for undergraduate students in colleges, to develop a learning model by using self-regulated learning to reduce academic procrastination, and to evaluate the effectiveness of the self-regulated learning model in reducing academic procrastination.

To promote clear understanding and accurate interpretation, the following notations and abbreviations are applied during data analysis:

- **n**: Sample size or number of participants
- **M**: Average or mean value
- **MD**: Difference in means
- **S.D**: Standard deviation
- **p**: Level of statistical significance
- **t**: t-test statistic
- **ss**: Sum of squares
- **df**: Degrees of freedom
- **MS**: Mean squares

Evaluated Academic Procrastination

The study presents the results across three distinct phases, outlined as follows:

Phase 1: Studying the definitions and components of academic procrastination for undergraduate students in colleges.

Phase 2: Developing a self-regulated learning model to reduce academic procrastination.

Phase 3: Evaluating the effectiveness of the self-regulated learning model in reducing academic procrastination.

4.1 Studying the Definitions and Components of Academic Procrastination for Undergraduate Students in Colleges

4.1.1 Definition of Academic Procrastination

4.1.1.1 Definition of Academic Procrastination Drawn from Literature Review

After reviewing the literature, the researchers found several perspectives on the definition of academic procrastination. As a specific form of procrastination within educational contexts, academic procrastination refers to the unnecessary and often harmful delay of academic tasks. Solomon and Rothblum (1984) were among the first to introduce the term "academic procrastination", defining it as the postponement of academic tasks, which often results in suboptimal performance or failure to meet deadlines. This concept has been further refined to describe the unnecessary delay of decisions or actions essential for fulfilling academic responsibilities (Wolters, 2003; Steel, 2007; Cheng & Xie, 2021). Academic procrastination is widely recognized as a failure of self-regulation (Steel, 2007) and is closely linked to difficulties students face in managing their learning processes (Cheng et al., 2023). It is often viewed as a habitual pattern that impedes academic progress and is associated with negative academic outcomes (Chase, 2003; Janssen & Carton, 1999). Knaus (2002) characterizes academic procrastination as an automatic habit that undermines students' academic success.

In summary, academic procrastination is a pervasive behavioral pattern characterized by the unnecessary postponement of academic tasks, typically driven by psychological and behavioral factors. This tendency frequently leads to declines in academic performance and learning efficiency, making it a significant barrier to students' academic success.

4.1.1.2 Definition of Academic Procrastination Drawn from Expert Interview

The study synthesizes the definition and characteristics of academic procrastination by integrating insights from previous studies (Steel, 2007; Seo, 2009; Sirois, 2014) and semi-structured interviews with five domain experts. Academic procrastination is generally defined as the voluntary delay of academic tasks despite

expecting negative consequences. Prior studies emphasize that procrastination is influenced by emotional, cognitive, and motivational factors and is associated with reduced academic performance and psychological well-being. The experts who participated in this study largely support these findings, while also providing additional practical and nuanced perspectives.

All five experts agree that academic procrastination is a common behavioral tendency among students to postpone or avoid academic tasks. Expert 1 emphasizes the role of psychological avoidance, particularly fear of failure and lack of intrinsic interest:

"Sometimes students just keep putting things off because they're afraid of not doing it perfectly, or they simply find the topic boring. I have seen students who will spend hours preparing for something else trivial instead of starting an important assignment. They might even convince themselves that they work better under pressure, but often it just leads to last-minute panic." (Expert 1)

This aligns with Sirois (2014), who suggested that fear of failure and low task enjoyment are key antecedents of procrastination. Unlike prior studies that mainly focus on emotional triggers during task execution, Expert 1 highlights boredom as an equally important factor, suggesting that task engagement before initiation is critical.

Expert 3 highlights the academic consequences of procrastination, noting its effect on task completion and performance:

"When assignments pile up and time runs out, quality suffers — that's when grades start to fall. I often notice students submit incomplete or poorly structured work simply because they left it too late. It's not just laziness; they mismanage their time, underestimate the effort, and the stress makes it worse." (Expert 3)

This observation is consistent with Seo (2009) and Steel (2007), who reported that procrastination negatively impacts academic achievement. The expert's focus on time constraints and work quality extends prior research by emphasizing the situational mechanisms of procrastination in real-world academic settings.

Expert 4 points out the emotional barriers that hinder task initiation, including anxiety, self-doubt, and emotional overwhelm:

"They feel overwhelmed before they even begin, and that anxiety keeps them stuck. I've had students tell me they just freeze when they look at a long assignment. They worry about doing it wrong, about deadlines, about what others think. That emotional burden alone can stop them from starting anything at all." (Expert 4)

This resonates with Sirois (2014), highlighting negative affect as a central contributor to procrastination. A notable difference is that the expert stresses **pre-task emotional overwhelm**, whereas prior research mostly focuses on emotions experienced during task engagement.

Expert 2 discusses cognitive distortions as a factor contributing to procrastination, particularly misjudgment of time and underestimation of effort:

"Students often say, 'I've got plenty of time,' until it's too late. They underestimate how long tasks take, and when they finally start, they realize they can't finish everything properly. Some even plan to multitask, but it just ends in scattered work and more stress. Their confidence in managing time is often misleading." (Expert 2)

This is in line with Steel (2007), who noted that executive dysfunction and inaccurate time estimation are key cognitive mechanisms underlying procrastinatory behaviors. Expert 4's observation adds a practical dimension by highlighting students' verbal rationalizations, reflecting how cognitive misperceptions manifest in daily academic life.

Expert 5 emphasizes the broader psychological impact of chronic procrastination, particularly its effects on stress, motivation, and self-confidence:

"It's not just grades—constant procrastination wears down their confidence and energy. I see students who start avoiding tasks altogether because they're convinced they will fail. Their motivation drops, their stress levels go up, and over time, it affects how they approach even small tasks. The cycle of delay becomes almost a habit, and breaking it requires conscious effort and support." (Expert 5)

While previous studies acknowledge the link between procrastination and stress (Sirois, 2014; Steel, 2007), Expert 5 underscores the cumulative erosion of self-efficacy and energy, highlighting the long-term psychological toll.

4.1.1.3 Definition of Academic Procrastination Drawn from Literature Reivew and Expert Interview

In conclusion, academic procrastination is a multifaceted phenomenon shaped by emotional and cognitive factors. The expert interviews largely **confirm** existing research regarding the antecedents (fear of failure, low task enjoyment, cognitive distortions) and consequences (reduced academic performance, increased stress) of procrastination. At the same time, the interviews provide **nuanced insights**, including the role of boredom, pre-task overwhelm, verbal rationalizations, and long-term impacts on confidence and self-regulation. These findings suggest that understanding academic procrastination requires integrating empirical evidence with expert perspectives to capture both theoretical and practical dimensions.

Based on the literature review and experts' opinions, the researcher summarized the definition of academic procrastination as follows:

Academic procrastination refers to the tendency of students to unnecessarily delay the completion of academic tasks due to various psychological and behavioral factors, leading to a decline in academic performance and learning efficiency.

4.1.2 Components of Academic Procrastination

4.1.2.1 Components of Academic Procrastination Drawn from Literature Review

In the context of social cognitive theory, academic procrastination is conceptualized as a multifaceted behavior driven by six distinct dimensions: Fear of Failure, Difficulty in Deciding, Task Aversiveness, Rebellion Against Control, Dependency, and Risk-Taking. These dimensions constitute the academic procrastination of students, especially Chinese college students. The specific description is as follows:

Fear of Failure: According to social cognitive theory, the fear of failure arises when individuals lack confidence in their ability to complete a task, leading to negative self-perception and avoidance behavior. This fear fosters procrastination as a

strategy to avoid stress and protect self-esteem, ultimately exacerbating self-doubt and anxiety.

Difficulty in Deciding: Difficulty in making decisions stems from a lack of confidence and uncertainty in prioritizing tasks, often leading to decision paralysis. This dimension is deeply tied to self-regulation and self-efficacy, as individuals with low self-efficacy are more likely to struggle with decision-making and procrastinate.

Task Aversiveness: Task aversiveness occurs when individuals avoid tasks perceived as unpleasant or difficult, seeking temporary emotional relief (Steel, 2007). This avoidance is influenced by emotional regulation challenges and a lack of intrinsic motivation, further contributing to procrastination.

Rebellion Against Control: Rebellion against control reflects the tendency to resist external authority or expectations, which can manifest as procrastination in an attempt to restore autonomy. This form of passive resistance, often seen in students who resent imposed expectations, may damage academic performance and erode trust with authority figures.

Dependency: Dependency refers to an individual's reliance on external support for task completion. Those with high levels of dependency may procrastinate when such support is unavailable, often due to low self-efficacy and a lack of confidence in their own abilities.

Risk-Taking: Risk-taking in procrastination involves intentionally delaying tasks to heighten the sense of urgency and increase motivation under time pressure. This behavior can be attributed to overconfidence in one's abilities or misjudgments about task completion, but it often leads to lower performance and academic failure.

4.1.2.2 Components of Academic Procrastination Drawn from Expert Interview

4.2.1.2.1 Fear of Failure

Fear of Failure refers to students' avoidance of academic tasks due to lack of confidence in their ability to succeed, often accompanied by anxiety and

negative self-perception. This dimension was consistently highlighted by all five experts as one of the most influential contributors to academic procrastination.

"Students avoid tasks they find challenging or unfamiliar. Even when they know what to do, they hesitate because they're afraid of making mistakes. Sometimes they spend hours organizing notes or doing trivial things to avoid starting the real task. It's not laziness—it's fear, and it freezes them in place." (Expert 1)

"Anxiety about failing combines with boredom or frustration from the task itself. I've seen students sit in front of a blank document for hours, imagining all the ways they could fail, and end up doing nothing. The fear itself becomes overwhelming." (Expert 3)

"Fear of failure affects their self-esteem. Students don't just worry about grades; they fear being seen as incompetent. Avoiding tasks becomes a strategy to protect themselves from this negative self-perception, but in the long run, it reinforces their doubts and anxiety." (Expert 4)

"Some students are afraid of letting others down. They delay tasks because they worry that submitting late or imperfect work will disappoint peers or instructors. This social dimension intensifies procrastination." (Expert 2)

"When fear dominates, students' motivation drops before they even start. They may plan to start early, but the thought of failing drains their energy, and the cycle continues. Breaking this cycle requires deliberate emotional support and confidence-building." (Expert 5)

The experts' insights align with previous studies showing that low self-efficacy and fear of negative evaluation significantly predict procrastination (Sirois, 2014; Steel, 2007). However, the interviews provide additional nuance: fear is not only about grades or evaluation—it interacts with task aversiveness, social expectations, and energy levels, creating a complex emotional barrier that precedes task engagement. This practical, context-rich perspective adds depth beyond the generalized psychological explanations found in prior research.

In summary, Fear of Failure is a central dimension of academic procrastination. Students avoid tasks not merely out of laziness but to cope with anxiety,

protect self-esteem, or manage anticipated negative outcomes. Experts highlighted how this fear interacts with task difficulty, social expectations, and emotional energy, forming a feedback loop that exacerbates delay. Addressing Fear of Failure requires interventions targeting emotional regulation, self-confidence, and coping strategies.

4.2.1.1.2 Difficulty in Deciding

The study proposed Difficulty in Deciding as a key dimension of academic procrastination based on literature review, reflecting students' indecision when faced with multiple tasks or choices. This dimension is linked to low self-efficacy, uncertainty about priorities, and fear of making mistakes, which often result in task delay (Steel, 2007; Seo, 2009). All five experts interviewed agreed that this dimension accurately captures a critical psychological and behavioral mechanism underlying procrastination.

"When students have several assignments or deadlines, they keep going back and forth about which to start first. They make lists, rearrange priorities, and yet rarely start anything. Even when they try to prioritize, they second-guess every choice." (Expert 1)

"In group projects or collaborative tasks, indecision spreads. Students wait for someone else to make a decision, then change their minds repeatedly. This collective indecision slows down the group and increases procrastination." (Expert 2)

"The stress of making the 'wrong' choice is paralyzing. Some students delay even small tasks because they can't decide on the best approach. Over time, this uncertainty builds anxiety and reinforces the habit of delaying." (Expert 3)

"When you don't believe you can do it, even deciding what to do feels impossible. Every choice seems overwhelming. Students spend more energy deciding what to do than actually doing it, which adds mental fatigue and delays action." (Expert 4)

"Indecisiveness often amplifies Fear of Failure and Task Aversiveness. Students worry about making mistakes, which makes every decision feel riskier, so they delay even more. It's a feedback loop that can spiral quickly." (Expert 5)

The expert insights align with and extend previous research on procrastination. Both the literature (Steel, 2007; Seo, 2009) and the experts agree that low self-efficacy and uncertainty contribute to difficulty in deciding. Indecision is consistently linked to delayed task initiation and decreased academic performance.

Emotional strain, such as anxiety about making mistakes, is recognized as a key mechanism driving procrastination. However, experts highlighted real-life contextual factors not emphasized in prior quantitative studies, such as multitasking scenarios and collaborative group work. The interviews revealed feedback loops with other dimensions, like Fear of Failure and Task Aversiveness, showing how indecision interacts dynamically with other procrastination mechanisms. Experts noted behavioral patterns, such as repeated second-guessing and over-planning, which create cognitive fatigue—these details provide practical understanding beyond theoretical models.

In summary, Difficulty in Deciding is a significant dimension of academic procrastination. Experts highlighted how low self-efficacy, uncertainty, and fear of mistakes lead to repeated second-guessing, decision paralysis, and emotional strain. These observations are consistent with prior research (Ma et al., 2022; Yip & Chung, 2022) but provide richer contextual insight, including real-life scenarios like multitasking, group work, and repeated reevaluation. Understanding this dimension is crucial for designing interventions that improve students' decision-making skills, time management, and self-confidence.

4.2.1.1.3 Task Aversiveness

The study identified *Task Aversiveness* as one of the six core components of academic procrastination based on the literature. This dimension refers to students' tendency to delay tasks that are perceived as boring, difficult, tedious, or emotionally unpleasant (Steel, 2007). Tasks that trigger negative emotions—such as frustration, anxiety, or cognitive overload—are more likely to be postponed in favor of short-term emotional relief. All five experts interviewed agreed that Task Aversiveness is

one of the most common and visible mechanisms driving academic procrastination among college students.

"Students often avoid tasks they find boring or overwhelming just to get a break from the stress. Even if they know the task is important, they choose something easier just to feel better temporarily." (Expert 1)

"When a task triggers frustration, confusion, or anxiety, students automatically push it away. It's not the task itself, but the emotional reaction to the task that makes them delay." (Expert 3)

"If a task requires deep thinking or sustained mental effort, many students postpone it. They feel drained before they even start, especially with reading-heavy or theory-heavy assignments." (Expert 5)

"Students compare the unpleasant task with something more enjoyable—like scrolling on their phone or chatting—and naturally choose the more pleasant option. It's a reward-based decision, even though they know it leads to trouble later." (Expert 2)

"When students don't see meaning or personal value in a task, they feel resistant. Lack of intrinsic motivation makes even simple tasks feel unbearable, so delay becomes the default reaction." (Expert 4)

The expert insights align closely with prior research describing task aversiveness as one of the strongest predictors of procrastination (Lu et al., 2022; Stanton et al., 2020). Both literature and experts emphasize that unpleasant tasks trigger emotional avoidance, reduce intrinsic motivation, and lead students to prioritize short-term mood repair. The difference is that experts provided richer contextual detail, noting how academic workload, emotional overwhelm, and competing rewarding activities intensify task aversiveness in real-life settings. While literature frames aversiveness mostly as a cognitive-emotional predictor, experts highlighted additional nuances such as meaninglessness of tasks, emotional exhaustion, and the role of digital distractions, offering a more comprehensive practical perspective.

In summary, Task Aversiveness represents students' avoidance of tasks perceived as boring, difficult, or emotionally unpleasant. Expert interviews confirmed that this dimension is highly observable in practice and driven by emotional discomfort, low motivation, and competing rewarding activities. Integrating expert insights with previous research provides a more contextual and behaviorally grounded understanding of how aversiveness fuels academic procrastination, emphasizing the importance of motivation-enhancing and emotion-regulation strategies in intervention design.

4.2.1.1.4 Rebellion Against Control

The study proposed Rebellion Against Control as a dimension of academic procrastination based on literature review. This dimension refers to students' tendency to resist external authority, expectations, or imposed rules, often manifesting as delayed task initiation (Steel, 2007). All five experts interviewed agreed that Rebellion Against Control is a meaningful and observable aspect of procrastination, especially among students who value autonomy.

"It's their way of saying 'I won't be dictated to,' even if it hurts their grades. Students sometimes deliberately ignore instructions or postpone work to assert autonomy." (Expert 3)

"When students perceive demands as excessive or unfair, procrastination becomes a form of silent protest. They may submit work late or avoid communication, which affects both their grades and their relationship with instructors." (Expert 5)

"Some students thrive on independence. When they feel micromanaged, they resist even simple tasks. Procrastination is a way to reclaim control over their time and decisions." (Expert 2)

"Rebellion Against Control is often mixed with frustration or resentment. Students delay tasks not just to avoid work, but to express dissatisfaction with external demands." (Expert 1)

"This passive resistance can gradually affect academic performance and trust with authority figures. Students might think they are protecting autonomy, but in reality, it creates obstacles for learning." (Expert 4)

The expert interviews largely align with prior research. Limone et al. (2020) suggested that students may procrastinate as a response to perceived control, and autonomy-seeking is a known psychological factor. Experts confirmed this in practice, showing how rebellion can manifest as delayed task initiation or silent protest. Both literature and experts agree that Rebellion Against Control is a form of passive resistance to external demands. It is closely related to autonomy needs, affecting task completion and academic performance. However, experts highlighted more emotional and relational nuances, such as frustration, resentment, and damaged rapport with instructors, which are less emphasized in quantitative studies. The interviews show that rebellion may not only reflect autonomy but also strategic behavior to cope with perceived unfairness, adding context-specific insight (Jansen et al., 2019; Kim et al., 2020).

In summary, Rebellion Against Control captures students' passive resistance to authority and imposed expectations. Experts highlighted its emotional, behavioral, and relational aspects. This dimension complements other psychological explanations of procrastination by showing how autonomy-seeking motives can drive delay behavior. Integrating literature and expert insights provides a richer understanding of how control-related procrastination manifests and suggests that interventions may need to balance structure with autonomy to reduce its negative impact.

4.2.1.1.5 Dependency

The study proposed Dependency as a dimension of academic procrastination based on literature review. Dependency refers to students' reliance on external support or guidance for task completion, which can lead to procrastination when such support is unavailable (Steel, 2007; Sirois, 2014). All five experts interviewed

agreed that Dependency is an important factor contributing to students' delay in completing academic tasks.

"Many students wait for instructions or help from peers or teachers before starting a task. If nobody is around to guide them, they stall completely and postpone the work indefinitely." (Expert 2)

"Students who are highly dependent never learn to manage tasks independently. When they face something unfamiliar, they hesitate, unsure of how to proceed, which adds to procrastination." (Expert 4)

"Dependency creates anxiety when support is unavailable. Students feel stuck, and their self-confidence drops, reinforcing their procrastination habit." (Expert 1)

"Some students develop a habit of waiting for external cues. Over time, this becomes a cycle—they procrastinate because they depend on others, and dependence grows because they procrastinate." (Expert 3)

"Dependency can affect not only individual performance but also group work. If students rely too much on others, deadlines are missed and quality suffers. It's a problem that compounds over time." (Expert 5)

The expert insights align with prior research indicating that reliance on external support can exacerbate procrastination. Experts confirmed that low autonomy and dependence on peers or instructors are major contributors to task delay, similar to what has been reported in literature (Joda et al., 2018; Syabilla et al., 2018). However, experts added context-specific observations, emphasizing emotional effects, the development of habitual dependency, and its impact on collaborative tasks—nuances less highlighted in previous quantitative studies. These insights provide a richer understanding of how dependency contributes to procrastination and highlight the importance of fostering autonomy in students.

Dependency captures students' reliance on external support for completing academic tasks, which can amplify procrastination when support is unavailable. Experts highlighted behavioral patterns, emotional consequences, and the compounding effect of habitual dependence. Understanding this dimension is crucial

for designing interventions that develop student autonomy, promote independent problem-solving, and reduce procrastination caused by excessive reliance on others.

4.2.1.1.6 Risk-Taking

Based on the literature review, Risk-Taking is identified as a distinctive dimension of academic procrastination. This dimension refers to students' intentional delay of tasks in order to heighten time pressure, believing that the urgency created by last-minute deadlines will enhance focus, motivation, or performance. Prior studies suggest that such behavior is often associated with overconfidence, misjudgment of available time, and sensation-seeking tendencies (Steel, 2007; Sirois, 2014). All five experts interviewed agreed that Risk-Taking is an important but sometimes overlooked pattern of procrastination, particularly among students who believe they "perform better under pressure."

"Some students gamble on adrenaline. They delay everything until the last moment because they believe the pressure will boost their performance. But more often than not, they lose—the quality drops, and the stress skyrockets." (Expert 5)

"Students often think, 'I can finish this in one night.' They overestimate their ability and underestimate the workload. This confidence leads them to put things off until the deadline forces them to act." (Expert 2)

"Many students have gotten away with last-minute work in the past, so they think it will always work. It becomes a habit. They start believing that they don't need to start early because 'it always works out somehow'—until it doesn't." (Expert 1)

"For some students, the urgency gives them a sense of thrill or excitement. It's not just procrastination—they actually rely on the stress to feel motivated. But emotionally, this cycle is exhausting and unsustainable." (Expert 3)

"This kind of intentional delay backfires. Students rush through their work, skip steps, cut corners, and produce lower-quality outcomes. In the long run, it harms both learning and confidence." (Expert 4)

The expert observations closely reflect findings from previous research, which identifies risk-taking procrastination as stemming from overconfidence, sensation-

seeking, and misjudgment of time constraints (Wang et al., 2017). Both literature and experts agree that students often perceive time pressure as a performance enhancer. However, experts contributed deeper nuance by highlighting emotional thrill-seeking, the habitual nature of last-minute work, and the long-term erosion of learning quality—elements that are underrepresented in prior quantitative findings (Geng et al., 2018). The interviews also revealed that digital distractions and academic workload intensify the appeal of last-minute studying, adding situational complexity beyond what earlier models captured.

Risk-Taking represents a distinct pattern of procrastination in which students intentionally delay tasks to create time pressure, believing it will enhance performance. Expert interviews confirmed that this dimension is driven by overconfidence, emotional thrill, habitual last-minute behavior, and misjudgment of task demands. Although students may temporarily feel more focused under pressure, this strategy typically results in academic underperformance and heightened stress. Combining expert perspectives with existing research provides a deeper understanding of this dimension and emphasizes the need for interventions that address time-estimation skills, realistic planning, and sustainable motivation strategies.

4.1.2.3 Components of Academic Procrastination Drawn from Literature Review and Expert Interview

Drawing upon both the literature review and expert interviews, this study identifies six interrelated components that jointly constitute academic procrastination among college students: Fear of Failure, Difficulty in Deciding, Task Aversiveness, Rebellion Against Control, Dependency, and Risk-Taking. While these dimensions are grounded in prior theoretical frameworks—particularly social cognitive theory and the psychological mechanisms proposed by Steel (2007) and Yip and Chung (2022)—the expert interviews provide contextualized, practice-based insights that enrich and refine these conceptual understandings.

Fear of Failure consistently emerged as a central mechanism, with literature emphasizing low self-efficacy and avoidance of negative evaluation, while experts

highlighted additional layers such as social pressures, emotional exhaustion, and the cyclical interaction between fear and energy depletion. Difficulty in Deciding, widely recognized in previous studies as a byproduct of low self-efficacy and prioritization problems, was further elaborated by experts who described real-life scenarios of multitasking overload, collective indecision in group work, and repeated second-guessing that drains cognitive resources.

Task Aversiveness, identified in the literature as one of the strongest predictors of procrastination, was vividly illustrated by experts who described students' emotional reactions—frustration, confusion, meaninglessness, and preference for more rewarding alternatives—that intensify avoidance. Rebellion Against Control, framed theoretically as autonomy-related resistance, was depicted by experts as a form of passive protest driven by resentment, perceived unfairness, and relational tension with instructors.

The literature describes Dependency as reliance on external support inhibiting self-regulated action; experts expanded this definition by showing how habitual dependence, emotional insecurity, and collaborative burdens compound delay. Finally, Risk-Taking—conceptualized as intentional last-minute work driven by overconfidence or misjudgment—was further illustrated by experts who described thrill-seeking motivation, habitual crisis-working, and the long-term negative consequences of adrenaline-based performance strategies.

Overall, the integration of literature and expert insights demonstrates that academic procrastination is not a single behavior but a multidimensional construct, driven by emotional, cognitive, motivational, interpersonal, and behavioral mechanisms. The six dimensions interact dynamically—fear amplifies indecision, aversiveness encourages dependency, rebellion heightens avoidance, and risk-taking reinforces the cycle of delay—forming a complex psychological pattern. These combined findings provide a comprehensive and contextually grounded framework for understanding academic procrastination among Chinese college students and guide the development

of targeted interventions addressing emotional regulation, self-efficacy, autonomy, motivation, and time-management skills.

4.2 Developing a Self-regulated Learning Model to Reduce Academic Procrastination

In the first part of this phase, the definitions and components of both academic procrastinations were analyzed and synthesized, which included six components.

Secondly, to effectively address the issue of academic procrastination among college students, researchers developed a self-regulated learning model (SRL) based on a comprehensive literature review and expert interviews. This model targets the six components of academic procrastination, designing corresponding teaching plans and learning activities to help college students overcome the challenges associated with procrastination. Furthermore, it aims to enable them to maintain a positive academic motivation in their future studies.

The results from literature review showed that academic procrastination is widely recognized as a significant barrier to students' academic performance and productivity. Numerous studies have linked procrastination to deficiencies in self-regulated learning (SRL), identifying it as a key factor behind procrastinatory behaviors. Specifically, research by Azevedo and Cromley (2004), Schmitz & Wiese (2006), San et al. (2016), and Zhao (2012) underscores the effectiveness of SRL strategies, including goal-setting, time management, and self-monitoring, in addressing procrastination. Azevedo & Cromley (2004) found that SRL training led to notable improvements in students' mental models, while Schmitz & Wiese (2006) reported that goal-setting and planning enhanced self-regulation. Similarly, San et al. (2016) identified a negative correlation between SRL components and procrastination, suggesting SRL's role in reducing procrastination. Furthermore, Zhao (2012) demonstrated that interventions targeting self-regulation significantly lessened procrastination among graduate students. These studies collectively indicate that SRL-focused interventions can effectively mitigate procrastination and enhance academic performance.

In this study, the researchers chose Zimmerman's (2002) self-regulated learning (SRL) model as the learning model to reduce college students' academic

procrasitnation. Zimmerman's (2002) self-regulated learning (SRL) model includes three phases: forethought phase, performance phase, and self-reflection phase, forming a continuous cycle. In the forethought phase, learners set goals and plan strategies while building motivation through beliefs like self-efficacy. In the performance phase, they apply strategies, stay focused, and track progress. In the self-reflection phase, learners evaluate their results, analyze reasons for success or failure, and adjust strategies for future tasks. This model highlights how learners actively manage and improve their learning through ongoing feedback and adjustment. By comparing the models proposed by Pintrich (2004) and Schraw et al. (2006), the researcher determined that Zimmerman's model is more dynamic, iterative, and comprehensive, emphasizing its practical application in addressing academic procrastination, its clear cyclical structure, and its consideration of motivational, cognitive, and environmental factors.

Additionally, the researchers conducted interviews with five experts to explore how the self-regulated learning model can be developed within the Chinese context. The results of the expert interviews revealed unanimous agreement among the experts that Zimmerman's (2002) self-regulated learning model is effective in addressing academic procrastination among college students. Drawing from their own educational and academic experiences, the experts also provided valuable insights and perspectives on the model. The results were shown as follows:

1. Self-regulated learning is conceptualized as a multifaceted, dynamic process wherein learners actively and consciously identify learning objectives, formulate and implement learning plans, deploy a range of learning strategies, manage their emotional states, and mobilize both internal and external learning resources. This process is characterized by continuous monitoring and regulation of learning activities, ultimately aiming to achieve predefined learning goals. Importantly, self-regulated learning is not merely a set of behaviors but a cognitive, metacognitive, and motivational process that empowers learners to take ownership of their learning journey.

2. Experts recommended that the development of a self-regulated learning model to reduce academic procrastination of Chinese college students should be

grounded in Zimmerman's (2002) framework and Chinese context. This framework comprises three interconnected phases as the same as Zimmerman's (2002) SRL model: the forethought phase, the performance phase, and the self-reflection phase. Each phase plays a distinct yet complementary role in fostering self-regulated learning.

The forethought phase serves as the foundation of the self-regulated learning process. It begins with task analysis, where students dissect the learning task to set clear, specific, and achievable goals. Strategic planning is essential in this phase, as students outline the steps and resources needed to accomplish their goals. Self-motivation is a critical driver in this phase, encompassing factors such as self-efficacy, outcome expectations, intrinsic interest, and learning goal orientation. These motivational constructs not only initiate learning but also sustain students' engagement throughout the process.

During the performance phase, students actively engage in learning by employing self-control strategies. These strategies include imagery, self-instruction, attention focusing, and task strategies, which help students manage their learning effectively. Self-observation is another key component of this phase, where students monitor their progress through self-recording and self-experimentation. By evaluating the effectiveness of their strategies, students can make timely adjustments to optimize their learning outcomes.

The self-reflection phase is crucial for consolidating learning and fostering continuous improvement. In this phase, students engage in self-judgment, which involves self-evaluation and causal attribution. This process allows students to understand their learning outcomes and identify challenges encountered during the learning process. Self-reaction is another important aspect of this phase, where students experience self-satisfaction or adaptive/defensive responses. These emotional and behavioral adjustments help students prepare for future learning tasks. The cyclical nature of these three phases ensures that students continuously refine their learning strategies and enhance their overall learning outcomes.

3. Experts emphasized that a successful self-regulated learning model should prioritize the cultivation of intrinsic motivation and the fostering of students' autonomous learning interest. Key components of an effective model include:

Goal Setting: Encourage students to set specific, measurable, and realistic academic goals. Goals should be challenging yet attainable to maintain motivation and focus.

Self-Monitoring: Promote regular assessment of learning progress through structured reflection and feedback mechanisms. This helps students identify challenges and develop effective solutions.

Emotional Regulation: Provide strategies to help students manage anxiety, pressure, and perfectionism, which are common barriers to learning. Effective emotional regulation can significantly reduce procrastination and enhance learning outcomes.

Based on the findings from the literature review and expert interviews, the researchers developed a self-regulated learning model tailored to address the academic procrastination issue among Chinese college students, as depicted in Figure 3.

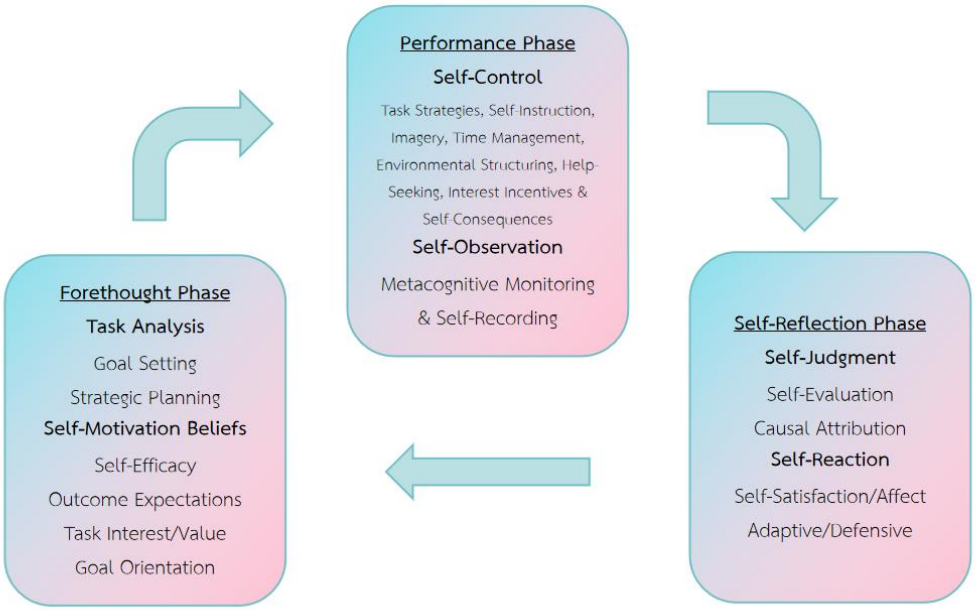


Figure 3 Self-regulated Learning Model

In the second part, a Self-Regulated Learning (SRL) model is developed to address the issue of academic procrastination among undergraduates. To tackle academic procrastination, researchers have drawn upon SRL models proposed by Zimmerman (2000, 2002), integrating insights from expert interviews to guide the design of targeted interventions. The intervention aims to reduce students' procrastination by strengthening their engagement in three core SRL phases: the Forethought Phase, the Performance Phase, and the Self-Reflection Phase (Zimmerman, 2000; Pintrich, 2000). By engaging in these cyclical self-regulatory processes, students can enhance their abilities in time management, goal setting, self-monitoring, and overall strategy use, thereby reducing academic procrastination and improving academic performance (Wolters, 2003).

(1) The purpose of developing the Self-regulated Learning Model

In this study, the Self-Regulated Learning Model is designed to enhance students' capacity to independently manage and optimize their learning through three distinct yet interconnected phases: the Forethought Phase, Performance Phase, and Self-Reflection Phase (Zimmerman & Moylan, 2009). The model aims to create a dynamic, iterative learning cycle that empowers students to become proactive, reflective, and self-directed learners (Schunk & Greene, 2018).

1.1 Forethought Phase

The Forethought Phase provides the foundation of the SRL process. In this phase, students learn to engage in Task Analysis and develop Self-Motivation Beliefs.

Task Analysis, which includes goal setting and strategic planning, serves as the initial step in preparing for effective learning (Zimmerman, 2002). Through task analysis, students break down complex assignments, organize time, and allocate necessary resources to meet academic demands (Pintrich, 2000a).

Additionally, Self-Motivation Beliefs—including self-efficacy, outcome expectations, task interest/value, and goal orientation—play a critical role in initiating and sustaining effort (Schunk & Pajares, 2009; Bandura, 1997). These beliefs energize students to engage actively in future tasks. Although the Forethought Phase precedes

performance, it is also revisited during later stages when learners adjust goals or plans based on self-reflection (Zimmerman & Campillo, 2003).

1.2 Performance Phase

The Performance Phase focuses on helping learners implement strategies through Self-Control and Self-Observation.

Self-Control strategies—such as task strategies, self-instruction, imagery, time management, environmental structuring, help-seeking, and using incentives or consequences—help students maintain focus and regulate their behaviors during task execution (Schunk, 2012; Zimmerman, 2000).

Meanwhile, Self-Observation, which involves metacognitive monitoring and self-recording, enables students to systematically track their progress and evaluate the effectiveness of their strategy use (Pintrich, 2004). Continuous monitoring increases awareness of learning behaviors and helps learners make timely adjustments (Cleary & Zimmerman, 2001). If students identify ineffective strategies or insufficient progress, they may need to return to the Forethought Phase to revise goals or plans.

1.3 Self-Reflection Phase

The Self-Reflection Phase plays a key role in helping learners evaluate their performance through Self-Judgment and Self-Reaction.

Self-Judgment includes self-evaluation and causal attribution, enabling students to assess task outcomes and understand the reasons behind their success or difficulties (Zimmerman, 2002; Weiner, 2010).

Self-Reaction may involve adaptive responses such as self-satisfaction, emotional reactions, or strategy modifications (Schunk & Greene, 2018). These reactions shape how students approach subsequent tasks—either reinforcing effective strategies or prompting necessary adjustments. Through effective reflection, learners strengthen self-efficacy and motivation for the next learning cycle (Zimmerman & Moylan, 2009).

In summary, the six dimensions of academic procrastination—Fear of Failure, Difficulty in Deciding, Task Aversiveness, Rebellion Against Control, Dependency, and Risk-Taking—can be systematically addressed through the sequential processes of the Self-Regulated Learning (SRL) model. Each SRL phase contains specific methods that

directly counteract the psychological and behavioral mechanisms underlying these six procrastination tendencies, ultimately supporting students in overcoming academic delay.

Forethought Phase: Targeting Fear of Failure, Difficulty in Deciding, and Task Aversiveness

The Forethought phase includes two major components—Task Analysis (goal setting and strategic planning) and Self-Motivation Beliefs (self-efficacy, outcome expectation, task value, goal orientation)—which directly weaken procrastination mechanisms rooted in fear, indecision, and emotional aversion.

Fear of Failure, driven by low self-efficacy and anxiety, is addressed through explicit goal setting and proximal sub-goals that reduce perceived task difficulty, paired with strategies designed to build confidence before task initiation.

Difficulty in Deciding, which arises from low self-efficacy and uncertainty about priorities, is mitigated by strategic planning; clear task breakdown, prioritization structures, and pre-selected strategies reduce cognitive overload and decision paralysis.

Task Aversiveness, linked to negative emotions and perceived unpleasantness, is reduced when learners generate task value, meaning, and intrinsic personal relevance during the motivation-building process. Increasing task value directly counters emotional avoidance and improves willingness to initiate.

Together, these forethought processes address the emotional, cognitive, and motivational triggers that typically prevent students from starting tasks, thereby reducing the intention–action gap that fuels procrastination.

Performance Phase: Targeting Task Aversiveness, Dependency, and Risk-Taking

During the Performance phase, Self-Control (attention focusing, time management strategies, self-instruction, environmental structuring) and Self-Observation (self-monitoring and self-recording) help counteract procrastination mechanisms that emerge during task execution.

Task Aversiveness is further reduced by attention-control strategies and environmental structuring, which minimize distractions and emotional discomfort.

Dependency, defined as reliance on external help, is weakened through self-instruction strategies and scaffolded time management tools that promote autonomy, enabling students to proceed without waiting for external guidance.

Risk-Taking, which involves intentionally delaying tasks to work under pressure, is countered by continuous self-monitoring. Recording progress increases awareness of time use and reduces overconfidence in last-minute performance, pushing students toward steady, earlier engagement.

By strengthening independent task execution and real-time regulation, the Performance phase blocks the behavioral manifestations of procrastination—including avoidance, dependence, and adrenaline-seeking crisis working.

Self-Reflection Phase: Targeting Fear of Failure, Rebellion Against Control, and Risk-Taking

The Self-Reflection phase involves Self-Judgment (self-evaluation and causal attribution) and Self-Reaction (self-satisfaction, affective responses, adaptive strategy adjustment), which reshape the emotional and attributional patterns that sustain procrastination.

Fear of Failure is reduced when students adopt adaptive attributions (e.g., effort-based rather than ability-based). Positive self-reaction reinforces self-efficacy and interrupts cycles of anxiety and self-protection that previously led to delay.

Rebellion Against Control is addressed when learners take ownership of their outcomes: internalized goals and self-evaluations increase autonomy, making tasks feel self-directed rather than imposed by authority. This reduces passive resistance expressed through procrastination.

Risk-Taking tendencies decrease when students reflect on the negative outcomes of last-minute work. Recognition of stress, reduced performance, and diminished satisfaction encourages more realistic self-judgment and promotes earlier engagement in future tasks.

Through emotional regulation, attribution corrections, and reflective learning, this phase prevents procrastination patterns from repeating across learning cycles.

Overall Integrative Mechanism

Across all three phases, the SRL model addresses the six dimensions of procrastination by targeting their core mechanisms:

Fear of Failure ⟶ enhanced self-efficacy & adaptive attribution

Difficulty in Deciding ⟶ structured planning & prioritization

Task Aversiveness ⟶ value enhancement & emotional regulation

Rebellion Against Control ⟶ autonomy-supportive self-regulation

Dependency ⟶ self-instruction & independent monitoring

Risk-Taking ⟶ time-awareness & realistic performance evaluation

The SRL model progressively builds students' autonomy, emotional resilience, and confidence, breaking the cognitive-emotional loops that sustain procrastination. By aligning forethought, strategic action, and reflective evaluation, the SRL model transforms procrastination from a reactive, avoidance-based behavior into a manageable, self-regulated learning challenge.

(2) The Learning Activity of the Self-Regulated Learning Model

The Self-Regulated Learning Model adopts a structured three-step approach to reduce students' academic procrastination. The specific activity process is as follows:

2.1 Activity Intervention Phase

In the initial phase, researcher explains the learning goals and learning outcome, establish rapport with students, and introduce the concept of academic procrastination and the concept and significance of self-regulated learning. The Self-Regulated Learning Model and its integration into the curriculum are elaborated to help college students build a foundational understanding and establish a sense of purpose in their learning learning process. This phase sets the stage for students to understand the importance of addressing academic procrastination and the benefits of developing self-regulation skills.

2.2 Activity Implementation Stage

This stage formally enters the phase of developing self-regulated learning through various activities and strategies. The specific implementation steps include the following aspects:

2.2.1 Task Analysis: This involves clarifying the learning objectives and understanding the requirements and challenges of the learning task. Students conduct learning tasks, analyze the tasks, and break it down into manageable components. The goal is to ensure that the learning plan fundamentally addresses the task's core requirements and solves any underlying problems. Students set specific, measurable, and challenging goals to guide their learning process.

2.2.2 Self-Motivation: In this phase, students focus on enhancing their self-efficacy, outcome expectations, intrinsic interest, and learning goal orientation. They engage in activities that boost their confidence and motivation, such as setting personal learning goals and visualizing successful outcomes. This step is crucial for fostering a positive mindset and driving students to persist in their learning tasks.

2.2.3 Self-Control: Students implement various self-control strategies, such as imagery, self-instruction, attention focusing, and task strategies, to manage their learning effectively. They create detailed action plans and project plans, outlining specific steps and timelines. This phase emphasizes the practical application of strategies to ensure that students stay on track and make steady progress toward their learning goals.

2.2.4 Self-Observation: Students monitor their learning progress through self-recording and self-experimentation. They document their learning activities, track their achievements, and evaluate the effectiveness of their strategies. This step allows students to identify any deviations from their plan and make necessary adjustments in real-time, ensuring that they stay focused and motivated throughout the learning process.

2.2.5 Self-Evaluation: Students objectively assess their learning outcomes and analyze the reasons for their success or failure through causal attribution. This step

helps students gain insights into their learning experiences, identify strengths and weaknesses, and understand the factors that influenced their performance.

2.2.6 Self-Reaction: Based on the results of their self-evaluation, students experience self-satisfaction from their achievements or engage in self-adjustment to improve their strategies for future learning. This step ensures that students not only learn from their experiences but also prepare themselves for future learning tasks by refining their approaches.

2.2.7 Summary and Feedback Stage

In the final stage, researchers and educators invite students to participate in reflective activities, such as group discussions and individual feedback sessions. These activities aim to summarize the learning experience, reinforce key concepts, and provide students with valuable feedback. Through this stage, students gain a deeper understanding of their learning process, recognize their achievements, and identify areas for further development. The ultimate goal is to enhance students' self-regulation skills and prepare them for addressing academic procrastination in the future learning.

(3) The Content of Learning Activity of the Self-Regulated Learning Model

In this study, the Self-Regulated Learning Model is designed to enhance college students' ability to manage their academic tasks effectively and reduce academic procrastination. The model focuses on developing cognitive competencies and self-regulation skills that enable students to define tasks clearly, generate effective strategies, and reduce academic procrastination. The learning activities of the Self-Regulated Learning Model primarily include the following phases: (1) the Forethought Phase (Task Analysis and Self-Motivation), (2) the Performance Phase (Self-Control and Self-Observation), and (3) the Self-Reflection Phase (Self-Judgment and Self-Reaction).

3.1 Intervention Period

The Self-Regulated Learning Model includes 12 lesson learning plans, with each session lasting approximately 60 minutes. These activities are integrated into the "Mental Health Education for College Students" for first-yeay undergraduate students.

3.2 Principles for Conducting Interventions

The learning activities in this study are organized according to the following principles: (1) Provide college students with opportunities to apply self-regulation strategies in real academic tasks, ensuring practical engagement and relevance. (2) Equip students with the skills to manage their learning processes based on the components of self-regulation learning model, enhancing time management and problem-solving abilities to address six dimensions of acadmemic procrastination (Fear of Failure, Difficulty in Deciding, Task Aversiveness, Rebellion Against Control, Dependency, and Risk-Taking). (3) Encourage active participation in learning activities to foster connections with academic content and consistent application of self-regulation strategies. (4) Promote a positive mindset toward academic tasks, stimulating students' potential to overcome academic procrastination. (5) Facilitate collaborative learning environments where students support each other in achieving shared academic goals, reinforced by positive feedback to nurture a growth mindset. (6) Emphasize the iterative nature of self-regulated learning by encouraging regular reflection on progress and continuous adjustments to learning strategies.

3.3 The Role of the Researcher

In the context of addressing academic procrastination among college students via the Self-Regulated Learning (SRL) Model, the researcher's role is pivotal in guiding students to master and utilize the three core phases of self-regulated learning: Forethought, Performance, and Self-Reflection.

To begin with, the researcher needs to have a comprehensive understanding of the SRL Model, especially its application in tackling academic procrastination, and the dimensions of academic procrastination. This entails a deep grasp of the model's theoretical framework and practical implementation, with a focus on assisting students in addressing Fear of Failure, Difficulty in Deciding, Task Aversiveness, Rebellion Against Control, Dependency, and Risk-Taking.

Prior to the initiation of learning activities, the researcher must undertake necessary preparations. This involves crafting lesson plans that integrate the three phases of the SRL Model, developing supportive materials, and establishing an

environment conducive to learning. Additionally, the researcher should build a positive rapport with students, creating a supportive atmosphere where they feel at ease sharing their experiences and challenges related to academic procrastination.

During the learning process, the researcher employs strategies such as observation, motivation, connection, and iteration to guide students. Observation enables the researcher to track students' progress and identify any procrastination-related issues or patterns. Motivation is crucial for keeping students engaged and committed to their learning objectives. Connection involves bridging students' experiences and challenges with the strategies and techniques of the SRL Model, thereby highlighting the relevance and applicability of these tools in overcoming procrastination. Iteration ensures that the learning process remains dynamic and responsive, with continuous reflection and adjustment by both the researcher and students.

Moreover, the researcher must closely monitor students' learning processes and behaviors, offering targeted feedback and support to help them refine their self-regulation strategies. By fulfilling these roles, the researcher empowers students to develop the skills needed to manage their academic tasks more effectively, ultimately reducing procrastination and enhancing their overall learning outcomes.

3.4 The Role of the Students

In the study addressing academic procrastination using the Self-Regulated Learning (SRL) Model, students play a central role by actively engaging in and applying the three key phases of self-regulated learning: Forethought, Performance, and Self-Reflection. During the Forethought Phase, students analyze their academic tasks, set clear and achievable goals, and develop self-motivation beliefs to overcome procrastination. In the Performance Phase, they implement self-control strategies, monitor their progress through self-observation, and adjust their approaches as needed. Finally, in the Self-Reflection Phase, students evaluate their performance, reflect on their learning experiences, and make adjustments to improve future learning outcomes. Throughout the process, students are expected to actively participate in discussions,

provide and receive feedback, and continuously refine their self-regulation skills to manage their academic tasks more effectively and reduce procrastination.

3.5 The Learning Plan

Based on the literature review and expert interviews, the researcher has developed a Self-Regulated Learning Model aimed at addressing academic procrastination among college students.

The following content is an explanation by the researcher of the learning plan based on the Self-Regulated Learning Model used in this study. The lesson plan is summarized in Table 8. For detailed information, please refer to Appendix G.

(1) Orientation to Self-Regulated Learning (Lesson 1): This lesson introduces students to the concept of academic procrastination and its six components, emphasizing the role of self-regulated learning and its connection to overcoming procrastination. The teacher uses icebreaker activities, video analysis, classical poetry, and personal anecdotes to engage students in reflecting on procrastination's causes and its relationship with mental health. Students participate in group discussions and complete an emotional record sheet to identify their procrastination triggers and coping strategies.

(2) Fear of Failure (Lesson 2): This lesson explores fear of failure as a core emotional driver of academic procrastination, explaining its psychological mechanisms and how cognitive restructuring can reduce procrastination. The teacher uses a film clip to evoke emotional awareness and guides students through role-playing exercises to practice overcoming fear of failure. Students actively engage in group role-play and vote anonymously to select the most creative and effective coping strategies, reinforcing peer learning and motivation.

(3) Fear of Failure (II) (Lesson 3): Building on the previous lesson, this session focuses on emotional healing and self-compassion to manage fear of failure. The teacher presents the shame cycle of failure and typical self-critical thoughts, introducing mindfulness, common humanity, and self-kindness as core components of self-compassion. Students practice rewriting negative self-talk, participate in gradual

exposure exercises related to personal failure experiences, and create “failure support cards” through guided meditation and reflective writing to enhance emotional resilience.

(4) Difficulty in Deciding (I) (Lesson 4): This lesson focuses on decision-making difficulties as a key factor contributing to academic procrastination. It aims to enhance students’ understanding of the cognitive overload and emotional stress that arise when confronted with multiple tasks, choices, or expectations, which impede task initiation and prioritization. Through practical activities such as task breakdown and priority setting using tools like the Eisenhower matrix and Pomodoro technique, students are trained to reduce choice overload and clarify goals, thereby improving their task planning skills.

(5) Difficulty in Deciding (II) (Lesson 5): Building on the lesson 4, this session examines how perfectionism intensifies decision-making difficulties and procrastination. It introduces the concept of minimal viable action (MVA) as a strategy to disrupt perfectionist cycles and encourages students to adopt a mindset prioritizing task completion over flawless performance. Students engage in time-bound tasks and reflective discussions to experience the benefits of focusing on progress rather than perfection and commit to applying MVA techniques in their academic work.

(6) Task Aversiveness (I) (Lesson 6): This lesson addresses task aversiveness, characterized by students’ emotional resistance to academic tasks perceived as boring, frustrating, ambiguous, or lacking immediate value. The objective is to help students identify triggers of task aversion, understand its psychological components—including low perceived control, high frustration expectancy, and lack of meaning—and acquire foundational cognitive restructuring skills based on the ABC model of emotion to reframe negative beliefs about tasks.

(7) Task Aversiveness (II) (Lesson 7): The focus of lesson 7 is on overcoming task aversiveness during task execution through mindfulness practices. Students learn to cultivate attentional stability and reduce avoidance behaviors by engaging in mindfulness exercises such as focused breathing and mindful reading. These practices are designed to help students maintain concentration, manage internal resistance, and

enhance learning efficiency by fostering non-judgmental awareness of their thoughts and emotions.

(8) Rebellion Against Control (I) (Lesson 8): This lesson explores rebellious procrastination, where students delay academic tasks as a response to perceived threats to their autonomy. It introduces self-determination theory's core psychological needs—autonomy, competence, and relatedness—and teaches students how to transform externally imposed demands into self-endorsed goals via task restructuring. Activities include personal reflection on control versus autonomy in self-talk and the creation of motivational self-dialogue cards to support autonomous task engagement.

(9) Rebellion Against Control (II) (Lesson 9): Continuing from the lesson 8, this session delves deeper into subtle resistance behaviors aimed at reclaiming autonomy through procrastination. It presents motivational reappraisal strategies—meaning reconstruction, goal integration, and method flexibility—to convert controlling self-talk into authentic self-directed motivation. Students participate in mapping emotional responses to tasks, reframe controlling statements, and engage in role-play to practice autonomous motivational language, thereby reducing rebellion-driven procrastination.

(10) Dependency (Lesson 10): This lesson investigates dependency-based procrastination, where individuals delay tasks awaiting external cues such as instructions, encouragement, or peer action. It elucidates the psychological underpinnings of dependency, differentiating between developmental and maladaptive forms, and links these behaviors to early experiences, perfectionism, fear of failure, and low self-efficacy. Through experiential activities including a dependency mapping game and writing self-dialogue letters, students learn to shift from external reliance toward internal task initiation by adopting self-directed motivational language and commitment strategies.

(11) Risk-taking (Lesson 11): Lesson 11 focuses on risk-taking procrastination, where students delay tasks to protect self-worth from potential failure. The lesson helps students recognize psychological mechanisms such as attribution avoidance, stimulus seeking, and cognitive distortions, and uses visual metaphors and peer-supported

commitment tools to build motivational strategies and accountability. Activities include comic analysis, emotional expression via OH cards, goal-setting with peer contracts, and collective reframing of procrastination excuses.

(12) Review & Reflec-tion (Lesson 12): Lesson 12 serves as a comprehensive review and reflection session, enabling students to consolidate their understanding of procrastination and effective strategies. Through timeline recall, guided symbolic drawing based on the House-Tree-Person method, group sharing, and affirmation exercises, students express personal growth, reinforce motivation, and celebrate their transformation, culminating in a communal closure ritual supported by instructor endorsement.

Table 11 Learning Activities of Self-regulated Learning Model

Times	Objective	Learning Activity	Technique/Strategy
Lesson 1: Orientation	1. Familiarize students with academic procrastination and its 6 components. 2. Introduce Self-regulated Learning (SRL) model. 3. Establish connection between mental health and procrastination.	- Warm-up: Teacher self-introduction, icebreaker (one-word emotion check). - Video analysis of procrastination behaviors. - Recitation of "Tomorrow Poem." - Group reflection on personal procrastination experiences. - Collaborative strategy	- Icebreaker & emotional awareness. - Multimedia demonstration. - Classical poetry reinforcement. - Group discussion & peer sharing. - Collaborative problem-solving.

		building (whiteboard sharing).	
Lesson 2: Fear of Failure (I)	1. Understand definition/significance of fear of failure. 2. Recognize psychological mechanisms linking fear to procrastination. 3. Reduce fear through activities.	- Movie clip analysis (*Inside Out*). - Guided imagination (submission stress scenario). - Group role-play (Inside Out emotions). - Anonymous voting for creative solutions.	- Media-assisted emotional identification. - Scenario-based imagination. - Role-playing therapy. - Peer evaluation & reinforcement.
Lesson 3: Fear of Failure (II)	1. Understand "failure tolerance" and "self-criticism." 2. Manage negative self-talk. 3. Develop emotional recovery strategies.	- Video: "They All Failed Before." - Writing task: Describe failure experiences. - Inner language rewriting training. - Step-by-step exposure to failure scenarios. - Self-compassion meditation.	- Vicarious learning (role models). - Reflective writing. - Cognitive restructuring. - Gradual exposure therapy. - Mindfulness meditation.
Lesson 4: Difficulty in Deciding (I)	1. Understand decision difficulty ⟶ procrastination. 2. Reduce choice overload/goal	- TED video analysis (decision paralysis). - Scenario activation: Psychology competition prep.	- Expert insight integration. - Real-world task framing. - Chunking &

	ambiguity. 3. Enhance task planning skills.	- Task decomposition & prioritization (Important-Urgent Matrix). - Pomodoro execution simulation.	prioritization tools. - Focused time-blocking technique.
Lesson 5: Difficulty in Deciding (II)	1. Understand perfectionism's role in decision difficulty. 2. Apply "minimum viable action" (MVA). 3. Cultivate "completion > perfection" mindset.	- Timed tasks: Draft essay intro, brainstorm self-care, plan study schedule. - Group reflection on progress vs. perfection. - MVA commitment cards.	- Time-constrained practice. - Incremental progress emphasis. - Behavioral commitment contract.
Lesson 6: Task Aversiveness (I)	1. Identify task aversion triggers. 2. Understand components (boredom/frustration/low value). 3. Master task restructuring.	- Emotional sticker self-assessment. - Movie clip analysis (*Inside Out* Disgust). - ABC Emotion Theory lecture. - Group cognitive transformation formula design.	- Emotional labeling. - Metaphorical media analysis. - Cognitive-behavioral reframing (ABC model). - Collaborative reframing exercises.
Lesson 7: Task Aversiveness (II)	1. Identify distraction patterns. 2. Understand	- Mindful breathing exercise. - Mindful reading	- Breath-focused attention training. - Concentrated reading

	mindfulness regulation. 3. Apply mindfulness techniques. 4. Compare strategy effectiveness.	experience. - Mindfulness task execution practice. - Group strategy analysis & voting.	immersion. - Real-time mindfulness application. - Peer-led experiential evaluation.
Lesson 8: Rebellion Against Control (I)	1. Recognize rebellious procrastination mechanisms. 2. Transform demands ⟶ self-endorsed goals. 3. Practice autonomy-supportive language.	- "Mini quiz" simulation with imposed rules. - Task reframing worksheet. - Motivational self-talk card creation.	- Controlled scenario elicitation. - Cognitive reappraisal (obligation ⟶ choice). - Visual motivational anchoring.
Lesson 9: Rebellion Against Control (II)	1. Link illusory freedom to procrastination. 2. Distinguish controlled vs. autonomous motivation. 3. Practice motivational reframing strategies.	- Video analysis of controlling language. - Motivation mapping (task positioning). - Reframing practice worksheet. - Role-play (avoidance ⟶ autonomy).	- Language deconstruction. - Spatial behavioral mapping. - Meaning/goal/method reframing paths. - Scripted behavioral rehearsal.
Lesson 10: Dependency	1. Understand dependency mechanisms. 2. Identify help-seeking delay triggers.	- Dependency positioning game (zones). - "Letter to Inner Assistant" writing.	- Self-categorization activity. - Compassionate self-dialogue. - Language pattern

	3. Shift from reliance ⟶ self-initiation.	- Self-initiation sentence practice.	restructuring.
Lesson 11: Risk-Taking	1. Understand risk-taking procrastination traits. 2. Identify self-handicapping behaviors. 3. Express resistance via visual metaphor. 4. Build feedforward motivation.	- OH card dialogue (visual emotion association). - Feedforward Motivation Contract. - Excuse-to-intention group reframing.	- Projective imagery technique. - Pre-commitment contracting (reward/consequence). - Collective rationalization dismantling.
Lesson 12: Review & Reflection	1. Synthesize procrastination components. 2. Identify effective personal strategies. 3. Express transformation visually/narratively. 4. Affirm growth.	- Group timeline warm-up. - HTP reflective drawing (House-Tree-Person). - Affirmation certificate completion. - Closing circle sharing.	- Collective memory recall. - Symbolic art therapy. - Formalized self-affirmation. - Ritualistic closure.

4.3 Evaluating the Effectiveness of Self-regulated Learning Model in Reducing Academic Procrastination

In order to evaluate the effectiveness of self-regulated learning model in reducing academic procrastination. This study proposed two research hypotheses as follows:

Hypothesis 1. College students' academic procrastination after receiving the self-regulated learning model intervention and after the follow-up period will be significantly lower than before beginning the experiment.

Hypothesis 2. Experimental group college students' academic procrastination after receiving the self-regulated learning model intervention and after the follow-up period will be significantly lower than those in the control group.

4.3.1 Overview of the Phase

Ninety participants were selected from 524 first-year undergraduate students enrolled in Guangdong University of Science and Technology. To ensure baseline equivalence, the study made use of a class-based allocation strategy, where two E-commerce classes (45 students each) were assigned to the experimental group (EG) and control group (CG), respectively, based on convenience and class structure. As a result, there are two groups involved in the experiment: experimental group (n = 45) and control group (n = 45).

As mentioned in Chapter 3, the experiment involved several major procedures lasting for 12 weeks:

1. Pre-test: Before conducting the intervention, a pre-test was launched to measure academic procrastination levels in both the experimental and control groups, ensuring that the groups were equivalent at baseline.

2. Intervention: The experimental group received the Self-Regulated Learning (SRL) Model intervention integrated into the course *"Psychological Health Education for College Students"*, consisting of 12 weekly learning activities, each lasting approximately 60 minutes. The control group continued with regular instruction without any exposure to the SRL model.

3. Post-test: At the end of the 12-week intervention, a post-test was conducted in both groups to assess changes in academic procrastination levels.

4. Follow-up test: Four weeks after the intervention, a follow-up measurement was administered to both groups to evaluate the sustained effectiveness of the SRL model.

Academic procrastination of first-year undergraduate students served as the dependent variable, while the Self-Regulated Learning Model was the independent variable. The research instrument was a standardized academic procrastination questionnaire, which assessed multiple dimensions of procrastination behaviors relevant to undergraduate learning contexts.

After data collection, the study employed both descriptive and inferential statistical analyses. Descriptive statistics were used to calculate mean values of academic procrastination for both the experimental and control groups. To test the research hypotheses, a General Linear Model Repeated Measures ANOVA was conducted, accounting for repeated measurements across three time points: pre-test, post-test, and follow-up test. The convergence of results across these analytical methods strengthens the reliability of the study and supports the empirical validity of the Self-Regulated Learning Model as an effective intervention for reducing academic procrastination, providing a solid foundation for future application and research.

4.3.2 Descriptive Analysis

The mean (M) and standard deviation (SD) of academic procrastination were calculated for both the experimental and control groups to verify baseline equivalence before the intervention. Following the 12-week implementation of the Self-Regulated Learning (SRL) Model, a post-test was conducted for both groups to assess the immediate impact of the intervention on reducing academic procrastination in the experimental group. A subsequent follow-up test, administered four weeks later, was used to evaluate the lasting effects of the SRL Model.

Table 12 presents the descriptive statistics across all stages of the study—pre-test, post-test, and follow-up—demonstrating the effectiveness of the SRL intervention in addressing academic procrastination among first-year undergraduate students.

Table 12 Overall Academic Procrastination and Six Dimensions Across Phases

Overall Academic Procrastination	Control Group (n= 45)			Experimental Group (n= 45)		
	M	S.D.	Interpretation	M	S.D.	Interpretation
Pre-test	3.98	0.42	High	3.88	0.87	High
Post-test	3.89	0.40	High	2.82	0.58	Moderate
Follow up	3.92	0.36	High	2.73	0.50	High
Fear of Failure	**Control Group (n= 45)**			**Experimental Group (n= 45)**		
	M	**S.D.**	**Interpretation**	**M**	**S.D.**	**Interpretation**
Pre-test	3.77	0.60	High	3.78	0.60	High
Post-test	3.78	0.37	High	2.68	0.42	Moderate
Follow up	3.81	0.42	High	2.63	0.50	Moderate
Difficulty in Deciding	**Control Group (n= 45)**			**Experimental Group (n= 45)**		
	M	**S.D.**	**Interpretation**	**M**	**S.D.**	**Interpretation**
Pre-test	3.76	0.67	High	3.76	0.67	High
Post-test	3.78	0.51	High	2.77	0.46	Moderate
Follow up	3.79	0.56	High	2.71	0.50	Moderate
Task Aversiveness	**Control Group (n= 45)**			**Experimental Group (n= 45)**		
	M	**S.D.**	**Interpretation**	**M**	**S.D.**	**Interpretation**
Pre-test	4.09	0.67	High	4.09	0.67	High
Post-test	4.05	0.44	High	2.89	0.47	Moderate
Follow up	4.02	0.50	High	2.89	0.67	Moderate
Rebellion against Control	**Control Group (n= 45)**			**Experimental Group (n= 45)**		
	M	**S.D.**	**Interpretation**	**M**	**S.D.**	**Interpretation**
Pre-test	3.81	0.68	High	3.81	0.68	High
Post-test	3.80	0.62	High	2.82	0.42	Moderate
Follow up	3.91	0.59	High	2.71	0.48	Moderate
Dependency	**Control Group (n= 45)**			**Experimental Group (n= 45)**		
	M	**S.D.**	**Interpretation**	**M**	**S.D.**	**Interpretation**

Pre-test	4.19	0.81	High	4.18	0.80	High
Post-test	4.13	0.52	High	2.76	0.46	Moderate
Follow up	4.03	0.47	High	2.56	0.54	Moderate
Risk-taking	**Control Group (n= 45)**			**Experimental Group (n= 45)**		
	M	**S.D.**	**Interpretation**	**M**	**S.D.**	**Interpretation**
Pre-test	4.19	0.81	High	4.19	0.81	High
Post-test	4.10	0.60	High	2.87	0.43	Moderate
Follow up	4.11	0.57	High	2.78	0.50	Moderate

Before the intervention, both the experimental group (M = 3.88, SD = 0.87) and the control group (M = 3.98, SD = 0.42) exhibited similarly high levels of overall academic procrastination. After the implementation of the SRL intervention, the experimental group showed a substantial decrease to a moderate level (M = 2.82, SD = 0.58), while the control group remained at a high level with minimal change (M = 3.89, SD = 0.40). At the follow-up stage, the experimental group further decreased slightly (M = 2.73, SD = 0.50), indicating a continued positive effect and maintenance of the intervention outcomes. In contrast, the control group still presented high procrastination levels (M = 3.92, SD = 0.36), demonstrating no meaningful improvement without the intervention.

Across the six dimensions of academic procrastination, the experimental group showed consistent declines from high to moderate levels after the intervention, whereas the control group remained stable at high levels throughout all measurements. For Fear of Failure, the experimental group initially presented high procrastination (M = 3.78, SD = 0.60), which decreased to moderate levels in both the post-test (M = 2.68, SD = 0.42) and follow-up stages (M = 2.63, SD = 0.50). The control group showed no reductions, maintaining high scores across all phases (post-test M = 3.78, follow-up M = 3.81)

A similar pattern emerged in Difficulty in Deciding, where the experimental group reduced from a high pre-test level (M = 3.76, SD = 0.67) to moderate levels in the

post-test (M = 2.77, SD = 0.46) and follow-up (M = 2.71, SD = 0.50). Meanwhile, the control group remained high at each stage (post-test M = 3.78, follow-up M = 3.79). For Task Aversiveness, the experimental group decreased markedly from high (M = 4.09, SD = 0.67) to moderate levels in both the post-test (M = 2.89, SD = 0.47) and follow-up (M = 2.89, SD = 0.67), while the control group again remained consistently high.

A similar intervention effect was seen in Rebellion against Control, where the experimental group dropped from high pre-test scores (M = 3.81, SD = 0.68) to moderate levels in the post-test (M = 2.82, SD = 0.42) and follow-up (M = 2.71, SD = 0.48). The control group, however, showed no meaningful change (remaining around M $\approx$ 3.80–3.91). For Dependency, the experimental group declined from high scores (M = 4.18, SD = 0.80) to moderate levels in both the post-test (M = 2.76, SD = 0.46) and follow-up (M = 2.56, SD = 0.54), again contrasting with the stable high levels found in the control group. Lastly, for Risk-taking, the experimental group shifted from high pre-test scores (M = 4.19, SD = 0.81) to moderate levels in the post-test (M = 2.87, SD = 0.43) and follow-up (M = 2.78, SD = 0.50). The control group remained high with negligible variation (post-test M = 4.10, SD = 0.60; follow-up M = 4.11, SD = 0.57).

Overall, the consistently decreasing trends across all six dimensions among the experimental group—but not the control group—demonstrate the effectiveness and sustained impact of the SRL intervention in reducing academic procrastination.

4.3.3 Analysis of Academic Procrastination Using General Linear Model with Repeated Measures

This section reports the findings from the General Linear Model with repeated measures, analyzing academic procrastination across all stages to offer a thorough perspective on the effects of the intervention.

4.3.3.1 General Linear Model with Repeated Measures on Overall Academic Procrastination

A General Linear Model (GLM) with repeated measures was conducted to examine the effects of the Self-Regulated Learning (SRL) Model on first-year students' academic procrastination across time and groups. Three measurement points (pre-test, post-test, follow-up) were included, with Time as a within-subjects factor and Group (experimental vs. control) as a between-subjects factor. This analysis assessed potential interactions between Time and Group, providing a precise evaluation of the intervention's impact. Table 12 shows Mauchly's Test of Sphericity for overall academic procrastination to verify the assumption of sphericity across the three measurements.

Table 12 Results of Mauchly's Sphericity Test for Within-Subjects Effects

Measure: Overall Academic Procrastination

Measure	Mauchly's W	Approx. Chi-Square	df	p	Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Time	0.937	5.736	2	0.061	0.97	0.985	0.53

According to Table 16, the Mauchly's W value is 0.937. As a statistical measure for assessing the sphericity assumption, Mauchly's test evaluates whether the covariance matrix of the measurements meets the sphericity assumption, which requires that the variances of the differences between all pairs of repeated measures are equal. The results indicate that the significance level associated with Mauchly's W ($p = 0.061$) exceeds the selected threshold (0.05), suggesting insufficient evidence to reject the sphericity assumption. This implies that the assumption of sphericity is met, and therefore, the use of repeated measures ANOVA without correction (e.g., Greenhouse-Geisser or Huynh-Feldt) is appropriate.

After performing Mauchly's Test, tests of within-subjects effects were conducted to examine whether academic procrastination in the experimental group was

significantly reduced. Between-group differences were also assessed through a between-subjects effects analysis (Table 13).

Table 13 Mixed Design Repeated Analysis of Variance for the tests of Within-subjects Effect and between-subjects Effects of the Intervention

Within-Subjects Effects Analysis

Measure: Academic procrastination

Source		III Sum of Squares	df	MS	F	p	η^2
Time	Hypothesized Sphericity Assumed	22.427	2	11.214	77.415	0.000	0.468
Time * group	Hypothesized Sphericity Assumed	20.63	2	10.315	71.212	0.000	0.447
Error - Time	Hypothesized Sphericity Assumed	25.494	176	0.145			

Between-Subjects Effects Analysis

Measure: Academic procrastination

Source	III Sum of Squares	df	MS	F	p	η^2

Intercept	18.092	1	18.092	107.751	0.000	0.55
Group	16.591	1	16.591	98.815	0.000	0.529
Error	14.775	88	0.168			

Note: η^2 = effect size

A mixed-design repeated-measures ANOVA was conducted to examine the effects of the intervention on academic procrastination across time and between groups.

1. Within-Subjects Effects

The analysis indicated a significant main effect of Time, $F(2, 176) = 77.415$, $p < .001$, $\eta^2 = 0.468$, showing that overall academic procrastination scores varied significantly across the three measurement points. The Time × Group interaction was also significant, $F(2, 176) = 71.212$, $p < .001$, $\eta^2 = 0.447$, suggesting that the patterns of change over time differed between the experimental and control groups. Specifically, the experimental group exhibited a more substantial decrease in academic procrastination compared with the control group.

2. Between-Subjects Effects

For the between-subjects analysis, a significant main effect of Group was found, $F(1, 88) = 98.815$, $p < .001$, $\eta^2 = 0.529$, indicating that the experimental group had lower overall academic procrastination scores than the control group across all time points. Additionally, the Intercept effect was significant, $F(1, 88) = 107.751$, $p < .001$, $\eta^2 = 0.550$, confirming notable differences in overall procrastination levels among participants.

Overall, the findings demonstrate that both time and group had significant impacts on academic procrastination, with a pronounced interaction between time and group. These results highlight that the intervention effectively produced a substantial and sustained reduction in academic procrastination for the experimental group, while the control group remained relatively stable across the measurement period.

Table 14 Pairwise Comparison between Groups (The overall Academic Procrastination)

Measure: Academic Procrastination

(I) Group	(J) Group	Mean Difference (I-J)	Standard Error	p	95% Confidence Interval for Difference	
					Upper	Lower
CG	EG	.780*	0.068	0.000	0.645	0.916
EG	CG	-.780*	0.068	0.000	-0.916	-0.645

Note: * $p < 0.05$

Post-hoc pairwise comparisons (see Table 14) were conducted to examine differences in overall academic procrastination between the experimental group (EG) and the control group (CG). The results revealed a significant difference between the two groups, with the experimental group exhibiting a lower mean procrastination score than the control group. Specifically, the mean difference between CG and EG was 0.780 (SE = 0.068, p < .001, 95% CI [0.645, 0.916]), indicating that participants in the experimental group reported significantly reduced academic procrastination compared with those in the control group. Conversely, the mean difference from EG to CG was -0.780 (SE = 0.068, p < .001, 95% CI [-0.916, -0.645]), further confirming the robust effect of the intervention.

Table 15 Pairwise Comparison among Different Measurements (The overall Academic Procrastination)

Measure: Academic Procrastination

(I) Time	(J) Time	Mean Difference (I-J)	Standard Error	Significance (p)	95% Confidence Interval for Difference
1	2	.586*.	0.061	0.000	[.449, .723]
	3	634*	0.069	0.000	[.513, .755]
2	1	-.586*	0.061	0.000	[-.723, -.449]
	3	-0.048	0.034	0.165	[-.020, 117]
3	1	-.637*	0.069	0.000	[-.755, -.513]
	2	0.048	0.034	0.165	[-117, 020]

Based on estimated marginal means

*. The mean difference is significant at the .001 level.

Post-hoc pairwise comparisons (see Table 15) with Bonferroni adjustment were conducted to further examine changes in overall academic procrastination across the three measurement points. The results showed a significant decrease in procrastination from Time 1 (pre-test) to Time 2 (post-test), with a mean difference of 0.634 (SE = 0.061, p < .001, 95% CI [0.513, 0.755]). A similar significant reduction was observed from Time 1 to Time 3 (follow-up), with a mean difference of 0.586 (SE = 0.069, p < .001, 95% CI [0.449, 0.723]). However, the comparison between Time 2 and Time 3 revealed no significant difference (mean difference = -0.048, SE = 0.034, p = 0.165, 95% CI [-0.117, 0.020]), indicating that the decrease in academic procrastination achieved at the post-test was largely maintained at follow-up.

These results demonstrate that the intervention had a substantial immediate effect on lowering academic procrastination, which was maintained over time. Figure X presents the estimated marginal means of academic procrastination scores for each group across the three measurement points, visually illustrating the interaction effect.

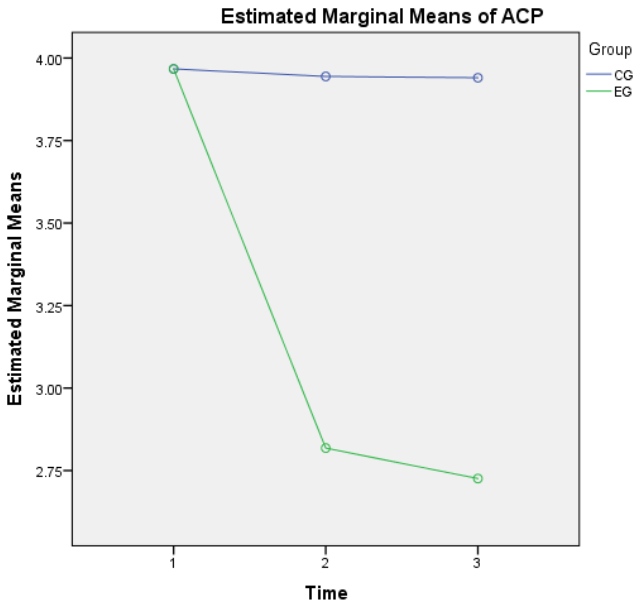


Figure 4 Estimated Marginal Means of Academic Procrastination

Figure 4 illustrates the effects of the self-regulated learning model intervention on academic procrastination. The X-axis represents the three measurement points, and the Y-axis shows the estimated marginal means. The Control Group's scores remained relatively stable across all measurements, showing little change over time. In contrast, the Experimental Group demonstrated a marked reduction in academic procrastination from pre-test to post-test, which was largely maintained at follow-up. These results indicate that the intervention effectively lowered academic procrastination among college students.

4.3.3.2 General Linear Model with Repeated Measures on Fear of Failure (Dimension 1)

Table 16 Results of Mauchly's Sphericity Test for Within-Subjects Effects (Fear of Failure)

Measure: Fear of Failure

Measure	Mauchly's W	Approx. Chi-Square	df	p	Greenhouse-Geisser	Huynh-Feldt	Lower-bound

Time	0.734	65.511	2	0.077	0.65	0.67	0.5

To examine whether the repeated-measures data met the sphericity assumption, Mauchly's Test of Sphericity was first conducted on the within-subjects factor Time for the dimension of Fear of Failure. The test result was non-significant, W = 0.937, $\chi^2(2) = 65.511$, p = .077, indicating that the variances of the differences among measurement occasions were equivalent. Therefore, the assumption of sphericity was satisfied, and the subsequent analyses were performed using the unadjusted degrees of freedom (see Table 16).

Table 17 Mixed Design Repeated Analysis of Variance for the tests of Within-subjects Effect and between-subjects Effects of the Intervention (Fear of Failure)

Within-Subjects Effects Analysis							
Measure: Fear of Failure							
Source		**III Sum of Squares**	**df**	**MS**	**F**	**p**	η^2
Time	Hypothesized Sphericity Assumed	17.737	2	8.868	54.947	0.000	0.384
Time * group	Hypothesized Sphericity Assumed	19.490	2	9.745	60.381	0.000	0.407
Error - Time	Hypothesized Sphericity Assumed	28.406	176	0.161			
Between-Subjects Effects Analysis							

Measure: Fear of Failure

Source	III Sum of Squares	df	MS	F	p	η^2
Intercept	3132.868	1	3132.868	7736.546	0.000	0.989
Group	38.966	1	38.966	96.226	0.000	0.522
Error	35.635	88	0.405			

Note: η^2 = effect size

Analysis of Fear of Failure (Table 17) revealed a highly significant main effect of time, $F(2, 176) = 54.947$, $p < .001$, partial $\eta^2 = .384$, indicating that participants' Fear of Failure changed substantially across measurement occasions. Moreover, the Time × Group interaction was also significant, $F(2, 176) = 60.381$, $p < .001$, partial $\eta^2 = .407$, suggesting that the intervention group exhibited a markedly greater reduction in Fear of Failure over time compared to the control group.

Further analysis of the Between-Subjects Effects showed a significant main effect of group, $F(1, 88) = 96.226$, $p < .001$, partial $\eta^2 = .522$, demonstrating a clear overall difference between the two groups, with the experimental group consistently reporting lower levels of Fear of Failure.

Together, these findings provide strong evidence for the effectiveness of the intervention in reducing Fear of Failure among participants in the experimental group.

Table 18 Pairwise Comparison among Different Measurements (Fear of Failure)

Measure: Fear of Failure

(I) Time	(J) Time	Mean Difference (I-J)	Standard Error	Significance (p)	95% Confidence Interval for Difference
1	2	.525*	0.073	0.000	[.381, .670]
	3	.560*	0.067	0.000	[.428, .693]
2	1	-.525*	0.073	0.000	[-.670, -.381]
	3	0.035	0.032	0.278	[-.693, -.428]
3	1	-.560*	0.067	0.000	[-.693, -.428]
	2	-0.035	0.032	0.278	[-.099, .029]

Based on estimated marginal means

*. The mean difference is significant at the .001 level.

Post-hoc pairwise comparisons with Bonferroni adjustment showed that the pre-test score (Time 1) was significantly higher than both the post-test (Time 2) and follow-up (Time 3) scores, with mean differences of 0.525 ($p < .001$) and 0.560 ($p < .001$), respectively. No significant difference was found between the post-test (Time 2) and follow-up (Time 3), $p = .278$, indicating that the major reduction occurred from the pre-test to the post-test, after which Fear of Failure remained stable through the follow-up (see Table 18).

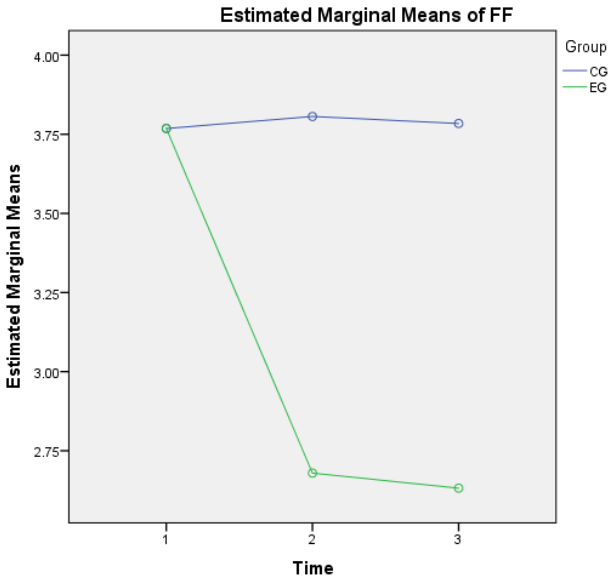


Figure 5 Estimated Marginal Means of Fear of Failure

Figure 5 illustrates that the Fear of Failure scores in the experimental group experienced a pronounced decline following the intervention, indicating a substantial immediate effect. This reduced level kept stable in follow-up phase, suggesting that the impact of the intervention was not only significant but also maintained over time. In contrast, the control group's scores showed minimal variation across the pre-test, post-test, and follow-up measurements, highlighting the stability of their Fear of Failure levels in the absence of the intervention.

4.3.3.3 General Linear Model with Repeated Measures on Difficulty in Deciding (Dimension 2)

Table 19 Results of Mauchly's Sphericity Test for Within-Subjects Effects (Difficulty in Deciding)

Measure: Difficulty in Deciding							
Measure	Mauchly's W	Approx. Chi-Square	df	p	Greenhouse-Geisser	Huynh-Feldt	Lower-bound

Time	0.787	51.166	2	0.098	0.69	0.71	0.5

To assess whether the repeated-measures data met the assumption of sphericity, Mauchly's Test of Sphericity was conducted for the within-subjects factor Time on the dimension of Difficulty in Deciding. The test result was non-significant, W = 0.787, $\chi^2(2) = 51.166$, p = .098 (see Table 19), suggesting that the variances of the differences among the three measurement occasions did not significantly deviate from equality. Consequently, the assumption of sphericity was satisfied, and the subsequent repeated-measures analyses were conducted using the unadjusted degrees of freedom.

Table 20 Mixed Design Repeated Analysis of Variance for the tests of Within-subjects Effect and between-subjects Effects of the Intervention (Difficulty in Deciding)

Within-Subjects Effects Analysis

Measure: Difficulty in Deciding

Source		III Sum of Squares	df	MS	F	p	η^2
Time	Hypothesized Sphericity Assumed	14.719	2	7.359	37.559	0	0.299
Time * group	Hypothesized Sphericity Assumed	16.277	2	8.139	41.536	0	0.321
Error - Time	Hypothesized Sphericity Assumed	34.486	176	0.196			

Between-Subjects Effects Analysis

Measure: Difficulty in Deciding

Source	III Sum of Squares	df	MS	F	p	η^2
Intercept	3168.981	1	3168.981	5499.375	0.000	0.984
Group	32.494	1	32.494	56.39	0.000	0.391
Error	50.709	88	0.576			

Note: η^2 = effect size

Analysis of Difficulty in Deciding using mixed-design repeated measures ANOVA (see Table 20) revealed a highly significant main effect of time, $F(2, 176) = 37.559$, $p < .001$, partial $\eta^2 = .299$, indicating that participants' Difficulty in Deciding scores changed significantly across the three measurement points.

In addition, a significant Time × Group interaction was found, $F(2, 176) = 41.536$, $p < .001$, partial $\eta^2 = .321$, suggesting that the pattern of change over time differed between the experimental and control groups.

The analysis of Between-Subjects Effects further showed a significant main effect of group, $F(1, 88) = 56.390$, $p < .001$, partial $\eta^2 = .391$, demonstrating that the experimental group exhibited a substantially lower overall level of Difficulty in Deciding compared to the control group across measurement points.

Together, these results provide strong evidence that the intervention effectively reduced Difficulty in Deciding among participants in the experimental group, both over time and in comparison, to the control group.

Table 21 Pairwise Comparison among Different Measurements (Difficulty in Deciding)

Measure: Difficulty in Deciding

(I) Time	(J) Time	Mean Difference (I-J)	Standard Error	Significance (p)	95% Confidence Interval for Difference
1	2	.478*	0.08	0.000	[.318, .637]
	3	.511*	0.071	0.000	[.370, .652]
2	1	-.478*	0.08	0.000	[-.637, -.318]
	3	0.033	0.04	0.402	[-.045, .112]
3	1	-.511*	0.071	0.000	[-.652, -.370]
	2	-0.033	0.04	0.402	[-.112, .045]

Based on estimated marginal means

*. The mean difference is significant at the .001 level.

Post-hoc pairwise comparisons with Bonferroni adjustment were conducted to further examine the differences in Difficulty in Deciding across the three measurement points. The results showed that the pre-test score (Time 1) was significantly higher than both the post-test (Time 2) and follow-up (Time 3) scores, with mean differences of 0.478 ($p < .001$) and 0.511 ($p < .001$), respectively (see Table 21).

No significant difference was found between the post-test (Time 2) and follow-up (Time 3), $p = .402$, indicating that most of the reduction occurred from pre-test to post-test, after which the scores remained relatively stable.

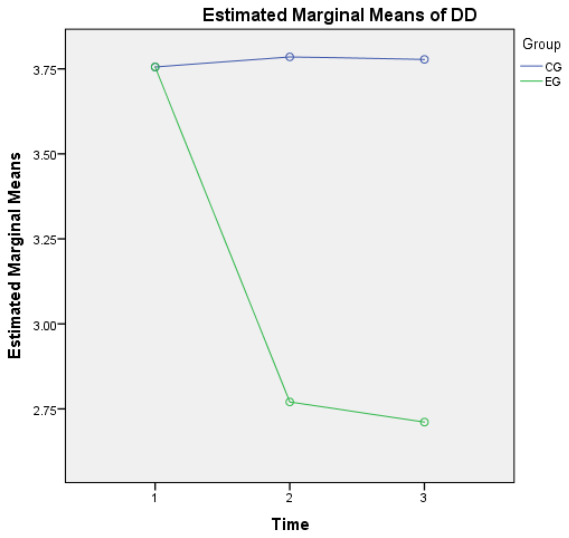


Figure 6 Estimated Marginal Means of Difficulty in Deciding

Figure 6 demonstrates that the Difficulty in Deciding scores in the experimental group decreased markedly after the intervention, reflecting a strong immediate effect. This lower level was maintained during the follow-up phase, indicating that the intervention's impact was both significant and sustained over time. In contrast, the control group exhibited little change across the pre-test, post-test, and follow-up assessments, underscoring the stability of their Difficulty in Deciding levels in the absence of the intervention.

4.3.3.4 General Linear Model with Repeated Measures on Task Aversiveness (Dimension 3)

Table 22 Results of Mauchly's Sphericity Test for Within-Subjects Effects (Task Aversiveness)

Measure: Task Aversiveness

Measure	Mauchly's W	Approx. Chi-Square	df	p	Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Time	0.700	31.033	2	0.000	0.77	0.79	0.5

To examine whether the repeated-measures data met the assumption of sphericity, Mauchly's Test of Sphericity was conducted for the within-subjects factor Time on the dimension of Task Aversiveness. The test was significant, W = 0.700, $\chi^2(2) = 31.033$, $p < .001$ (see Table 22), indicating that the variances of the differences across the three measurement occasions significantly deviated from equality. Therefore, the assumption of sphericity was violated, and subsequent repeated-measures analyses were conducted using the Greenhouse-Geisser correction to adjust the degrees of freedom.

Table 23 Mixed Design Repeated Analysis of Variance for the tests of Within-subjects Effect and between-subjects Effects of the Intervention (Task Aversiveness)

Within-Subjects Effects Analysis							
Measure: Task Aversiveness							
Source		**III Sum of Squares**	**df**	**MS**	**F**	**p**	η^2
Time	Greenhouse-Geisser	26.42	1.538	17.173	70.747	0.000	0.446
Time * group	Greenhouse-Geisser	22.371	1.538	14.541	59.904	0.000	0.405
Error - Time	Greenhouse-Geisser	32.863	135.38	0.243			
Between-Subjects Effects Analysis							

Measure: Task Aversiveness

Source	III Sum of Squares	df	MS	F	p	η^2
Intercept	3600.726	1	3600.72	6355.657	0.000	0.986
Group	44.165	1	44.165	77.956	0.000	0.470
Error	49.855	88	0.567			

Note: η^2 = effect size

A mixed-design repeated-measures ANOVA (see Table 23) was conducted to assess changes in Task Aversiveness over time and between groups. The results revealed a significant main effect of Time, $F(1.538, 135.38) = 70.747$, $p < .001$, partial $\eta^2 = .446$, indicating that participants' Task Aversiveness scores varied significantly across the three measurement occasions.

Moreover, the Time × Group interaction reached significance, $F(1.538, 135.38) = 59.904$, $p < .001$, partial $\eta^2 = .405$, demonstrating that the temporal pattern of change differed between the experimental and control groups.

Regarding the Between-Subjects Effects, a significant main effect of Group was observed, $F(1, 88) = 77.956$, $p < .001$, partial $\eta^2 = .470$, showing that the experimental group maintained consistently lower levels of Task Aversiveness than the control group across all measurement points.

Overall, these findings indicate that the intervention was effective in reducing Task Aversiveness, with notable improvements over time in the experimental group compared to the control group.

Table 24 Pairwise Comparison among Different Measurements (Difficulty in Deciding)

Measure: Task Aversiveness

(I) Time	(J) Time	Mean Difference (I-J)	Standard Error	Significance (p)	95% Confidence Interval for Difference
1	2	.638*	0.076	0.000	[.487, .789]
	3	.687*	0.069	0.000	[.550, .823]
2	1	-.638*	0.076	0.000	[-.789, -.487]
	3	0.049	0.044	0.273	[-.039, .137]
3	1	-.687*	0.069	0.000	[-.823, -.550]
	2	-0.049	0.044	0.273	[-.137, .039]

Based on estimated marginal means

*. The mean difference is significant at the .001 level.

Post-hoc pairwise comparisons with Bonferroni adjustment were conducted to examine changes in Task Aversiveness across the three measurement points. The results showed that the pre-test scores were significantly higher than both the post-test, mean difference = 0.638, $p < .001$, 95% CI [0.487, 0.789], and the follow-up, mean difference = 0.687, $p < .001$, 95% CI [0.550, 0.823]. No significant difference was observed between the post-test and follow-up, mean difference = -0.049, $p = .273$, 95% CI [-0.137, 0.039] (see Table 24). These findings indicate that the major reduction in Task Aversiveness occurred between the pre-test and post-test, after which the scores remained relatively stable at follow-up, suggesting that the intervention effect was largely maintained over time.

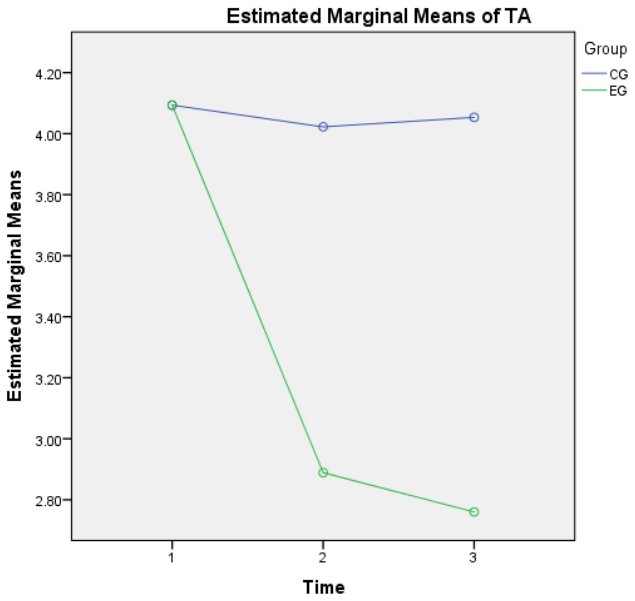


Figure 7 Estimated Marginal Means of Task Aversiveness

Figure 7 depicts the changes in Task Aversiveness over time for both groups. Participants in the experimental group showed a substantial reduction in scores immediately following the intervention, demonstrating a pronounced short-term effect. This decreased level persisted through the follow-up assessment, suggesting that the benefits of the intervention were not only significant but also enduring. By contrast, the control group's scores remained largely unchanged across the pre-test, post-test, and follow-up measurements, highlighting the relative stability of their Task Aversiveness in the absence of the intervention.

4.3.3.5 General Linear Model with Repeated Measures on Rebellion against Control (Dimension 4)

Table 25 Results of Mauchly's Sphericity Test for Within-Subjects Effects (Rebellion against Control)

Measure: Rebellion against Control

Measure	Mauchly's W	Approx. Chi-Square	df	p	Greenhouse-Geisser	Huynh-Feldt	Lower-bound

Time	0.790	20.486	2	0.000	0.83	0.85	0.5

To assess whether the repeated-measures data met the assumption of sphericity, Mauchly's Test of Sphericity was conducted for the within-subjects factor Time on the dimension of Rebellion against Control. The test was significant, W = 0.790, $\chi^2(2) = 20.486$, $p < .001$ (see Table 25), indicating that the variances of the differences across the three measurement occasions significantly deviated from equality. Therefore, the sphericity assumption was violated, and subsequent repeated-measures analyses were conducted using the Greenhouse-Geisser correction to adjust the degrees of freedom.

Table 26 Mixed Design Repeated Analysis of Variance for the tests of Within-subjects Effect and between-subjects Effects of the Intervention (Rebellion against Control)

Within-Subjects Effects Analysis							
Measure: Rebellion against Control							
Source		**III Sum of Squares**	**df**	**MS**	**F**	**p**	η^2
Time	Greenhouse-Geisser	15.556	1.653	9.41	39.879	0.000	0.312
Time * group	Greenhouse-Geisser	17.785	1.653	10.758	45.595	0.000	0.341
Error - Time	Greenhouse-Geisser	34.326	145.48	0.236			
Between-Subjects Effects Analysis							

Measure: Rebellion against Control

Source	III Sum of Squares	df	MS	F	p	η^2
Intercept	3265.633	1	3265.63	5074.653	0.000	0.983
Group	35.57	1	35.57	55.275	0.000	0.386
Error	56.63	88	0.644			

Note: η^2 = effect size

A mixed-design repeated-measures ANOVA was conducted to examine the effect of the intervention on Rebellion against Control across pre-test, post-test, and follow-up measurement points (see Table 26). The within-subjects analysis (Greenhouse-Geisser corrected) revealed a significant main effect of Time, $F(1.653, 145.48) = 39.879$, $p < .001$, partial $\eta^2 = .312$, indicating that participants' Rebellion against Control scores changed significantly over the three measurement points. In addition, the Time × Group interaction was also significant, $F(1.653, 145.48) = 45.595$, $p < .001$, partial $\eta^2 = .341$, suggesting that the pattern of change over time differed between the experimental and control groups.

The between-subjects analysis showed a significant main effect of Group, $F(1, 88) = 55.275$, $p < .001$, partial $\eta^2 = .386$, demonstrating that the experimental group exhibited consistently lower overall levels of Rebellion against Control compared to the control group. The intercept was also significant, $F(1, 88) = 5074.653$, $p < .001$, $\eta^2 = .983$, confirming substantial variance in the dependent variable.

Overall, these findings provide strong evidence that the intervention effectively reduced Rebellion against Control, with reductions occurring over time and maintained in the experimental group relative to the control group.

Table 27 Pairwise Comparison among Different Measurements (Rebellion against Control)

Measure: Rebellion against Control

(I) Time	(J) Time	Mean Difference (I-J)	Standard Error	Significance (p)	95% Confidence Interval for Difference
1	2	.444*	0.076	0.000	[.293, .596]
	3	.556*	0.069	0.000	[.419, .692]
2	1	-.444*	0.076	0.000	[-.596, -.293]
	3	.111*	0.049	0.027	[-.013, .209]
3	1	-.556*	0.069	0.000	[-.692, -.419]
	2	-.111*	0.049	0.027	[-.209, .013]

Based on estimated marginal means

*. The mean difference is significant at the .001 level.

Post-hoc pairwise comparisons with Bonferroni adjustment were conducted to examine changes in Rebellion against Control across the three measurement points. The results indicated that the pre-test scores (Time 1) were significantly higher than both the post-test (Time 2), mean difference = 0.556, $p < .001$, 95% CI [0.419, 0.692], and the follow-up (Time 3), mean difference = 0.444, $p < .001$, 95% CI [0.293, 0.596], reflecting a substantial reduction following the intervention. The comparison between the post-test and follow-up showed a smaller but still significant difference, mean difference = 0.111, $p = .027$, 95% CI [-0.013, 0.209], suggesting that most of the decrease occurred immediately after the intervention, with a slight further reduction maintained at follow-up (see Table 27).

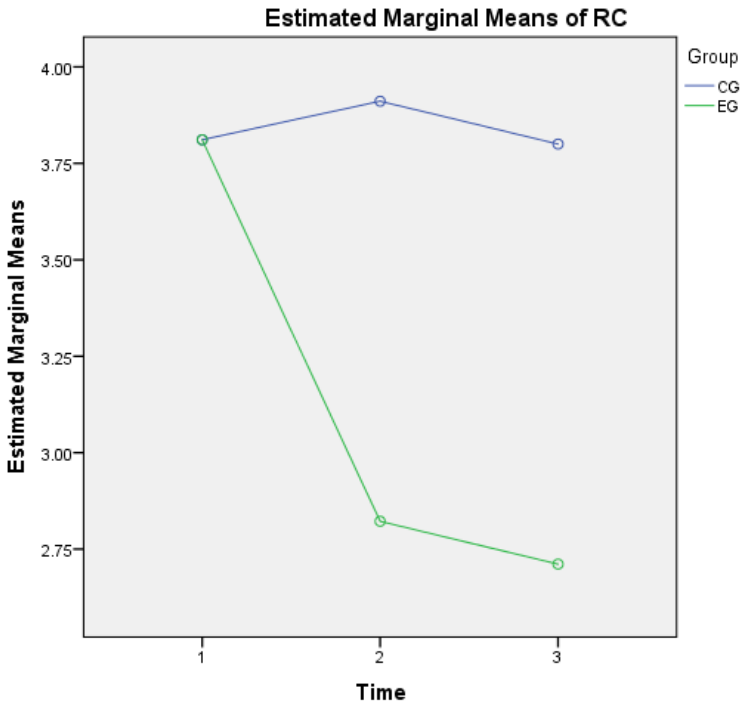


Figure 8 Estimated Marginal Means of Rebellion against Control

Figure 8 depicts the changes in Rebellion against Control over time for both groups. Participants in the experimental group showed a substantial reduction in scores immediately following the intervention, demonstrating a pronounced short-term effect. This decreased level persisted through the follow-up assessment, suggesting that the benefits of the intervention were not only significant but also enduring. By contrast, the control group's scores remained largely unchanged across the pre-test, post-test, and follow-up measurements, highlighting the relative stability of their Rebellion against Control in the absence of the intervention.

4.3.3.6 General Linear Model with Repeated Measures on Dependency (Dimension 5)

Table 28 Results of Mauchly's Sphericity Test for Within-Subjects Effects (Dependency)

Measure: Dependency

Measure	Mauchly's W	Approx. Chi-	df	p	Greenhouse-Geisser	Huynh-Feldt	Lower-bound

		Square					
Time	0.660	36.133	2	0.000	0.75	0.77	0.5

To examine whether the repeated-measures data met the assumption of sphericity, Mauchly's Test of Sphericity was conducted for the within-subjects factor Time on the dimension of Dependency. The test was significant, W = 0.660, $\chi^2(2) = 36.133$, $p < .001$ (see Table 28), indicating that the variances of the differences across the three measurement occasions significantly deviated from equality. Therefore, the sphericity assumption was violated, and subsequent repeated-measures analyses were conducted using the Greenhouse-Geisser correction to adjust the degrees of freedom.

Table 29 Mixed Design Repeated Analysis of Variance for the tests of Within-subjects Effect and between-subjects Effects of the Intervention (Dependency)

Within-Subjects Effects Analysis

Measure: Dependency

Source		III Sum of Squares	df	MS	F	p	η^2
Time	Greenhouse-Geisser	40.825	1.493	27.35	80.982	0.000	0.479
Time * group	Greenhouse-Geisser	30.148	1.493	20.197	59.803	0.000	0.405
Error - Time	Greenhouse-Geisser	44.363	131.36	0.338			

Between-Subjects Effects Analysis

Measure: Dependency

Source	III Sum of Squares	df	MS	F	p	η^2
Intercept	3581.251	1	3581.3	5495.993	0.000	0.984
Group	60.054	1	60.054	92.163	0.000	0.512
Error	57.342	88	0.652			

Note: η^2 = effect size

A mixed-design repeated-measures ANOVA was conducted to examine the effect of the intervention on Dependency across pre-test, post-test, and follow-up measurement points (see Table 29). The within-subjects analysis (Greenhouse-Geisser corrected) revealed a significant main effect of Time, $F(1.493, 131.36) = 80.982$, $p < .001$, partial $\eta^2 = .479$, indicating that participants' Dependency scores changed significantly across the three measurement occasions. In addition, the Time × Group interaction was also significant, $F(1.493, 131.36) = 59.803$, $p < .001$, partial $\eta^2 = .405$, suggesting that the pattern of change over time differed between the experimental and control groups.

The between-subjects analysis showed a significant main effect of Group, $F(1, 88) = 92.163$, $p < .001$, partial $\eta^2 = .512$, demonstrating that the experimental group exhibited consistently higher levels of Dependency compared to the control group across all measurement points. The intercept was also significant, $F(1, 88) = 5495.993$, $p < .001$, $\eta^2 = .984$, confirming substantial variance in the dependent variable.

Overall, these results indicate that the intervention had a strong and statistically significant effect on Dependency, with marked changes over time in the experimental group relative to the control group.

Table 30 Pairwise Comparison among Different Measurements (Dependency)

Measure: Dependency

(I) Time	(J) Time	Mean Difference (I-J)	Standard Error	Significance (p)	95% Confidence Interval for Difference
1	2	.741*	0.078	0.000	[.585, .896]
	3	.889*	0.09	0.000	[.710, 1.068]
2	1	-.741*	0.078	0.000	[-.896, -.585]
	3	.148*	0.051	0.004	[.048, .249]
3	1	-.889*	0.09	0.000	[-1.068, -.071]
	2	-.148*	0.051	0.004	[-.249, -.048]

Based on estimated marginal means

*. The mean difference is significant at the .001 level.

Post-hoc pairwise comparisons with Bonferroni adjustment were conducted to examine changes in Dependency across the three measurement points. The results showed that the pre-test scores (Time 1) were significantly higher than both the post-test (Time 2), mean difference = 0.741, $p < .001$, 95% CI [0.585, 0.896], and the follow-up (Time 3), mean difference = 0.889, $p < .001$, 95% CI [0.710, 1.068], indicating a substantial reduction following the intervention. The comparison between the post-test and follow-up also reached significance, mean difference = 0.148, $p = .004$, 95% CI [0.048, 0.249], suggesting that most of the decrease occurred immediately after the intervention, with a further modest reduction maintained at follow-up (see Table 30).

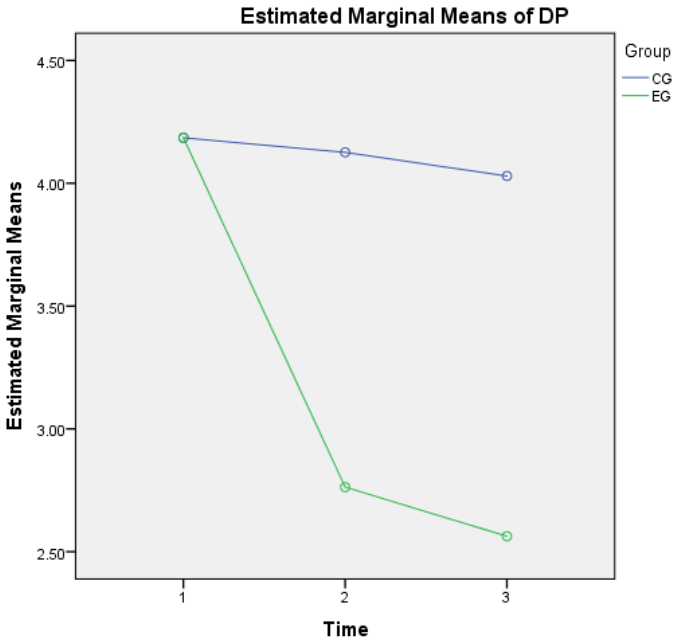


Figure 9 Estimated Marginal Means of Dependency

Figure 9 illustrates the trajectory of Dependency across the three measurement points for both groups. The experimental group showed a substantial decrease in scores immediately following the intervention, indicating a strong initial effect. This lower level was maintained at the follow-up assessment, suggesting that the intervention had a lasting impact. In contrast, the control group exhibited minimal change across the pre-test, post-test, and follow-up, demonstrating that their Dependency scores remained stable in the absence of the intervention.

4.3.3.7 General Linear Model with Repeated Measures on Risk-taking (Dimension 6)

Table 31 Results of Mauchly's Sphericity Test for Within-Subjects Effects (Risk-taking)

Measure: Risk-taking							
Measure	Mauchly's W	Approx. Chi-Square	df	p	Greenhouse-Geisser	Huynh-Feldt	Lower-bound

Time	0.688	32.544	2	0.000	0.76	0.78	0.5

To assess whether the repeated-measures data met the assumption of sphericity, Mauchly's Test of Sphericity was conducted for the within-subjects factor Time on the dimension of Risk-taking. The test was significant, W = 0.688, $\chi^2(2) = 32.544$, $p < .001$ (see Table 31), indicating that the variances of the differences across the three measurement occasions significantly deviated from equality. Therefore, the sphericity assumption was violated, and subsequent repeated-measures analyses were conducted using the Greenhouse-Geisser correction to adjust the degrees of freedom.

Table 32 Mixed Design Repeated Analysis of Variance for the tests of Within-subjects Effect and between-subjects Effects of the Intervention (Risk-taking)

Within-Subjects Effects Analysis							
Measure: Risk-taking							
Source		**III Sum of Squares**	**df**	**MS**	**F**	**p**	η^2
Time	Greenhouse-Geisser	31.65	1.524	20.764	61.109	0.000	0.41
Time * group	Greenhouse-Geisser	24.772	1.524	16.251	47.829	0.000	0.352
Error - Time	Greenhouse-Geisser	45.578	134.1	0.34			
Between-Subjects Effects Analysis							
Measure: Risk-taking							

Source	III Sum of Squares	df	MS	F	p	η^2
Intercept	3707.408	1	3707.4	5225.605	0.000	0.983
Group	49.408	1	49.408	69.641	0.000	0.442
Error	62.433	88	0.709			

Note: η^2 = effect size

A mixed-design repeated-measures ANOVA was conducted to examine the effect of the intervention on Risk-taking across pre-test, post-test, and follow-up measurement points (see Table 32). The within-subjects analysis (Greenhouse-Geisser corrected) revealed a significant main effect of Time, $F(1.524, 134.1) = 61.109$, $p < .001$, partial $\eta^2 = .410$, indicating that participants' Risk-taking scores changed significantly over the three measurement points. In addition, the Time × Group interaction was also significant, $F(1.524, 134.1) = 47.829$, $p < .001$, partial $\eta^2 = .352$, suggesting that the pattern of change over time differed between the experimental and control groups.

The between-subjects analysis showed a significant main effect of Group, $F(1, 88) = 69.641$, $p < .001$, partial $\eta^2 = .442$, demonstrating that the experimental group exhibited consistently higher levels of Risk-taking compared to the control group across all measurement points. The intercept was also significant, $F(1, 88) = 5225.605$, $p < .001$, $\eta^2 = .983$, confirming substantial variance in the dependent variable.

Overall, these findings indicate that the intervention had a strong and statistically significant effect on Risk-taking, with notable changes over time in the experimental group relative to the control group.

Table 33 Pairwise Comparison among Different Measurements (Risk-taking)

Measure: Risk-taking

(I) Time	(J) Time	Mean Difference (I-J)	Standard Error	Significance (p)	95% Confidence Interval for Difference
1	2	.700*	0.09	0.000	[.521, .879]
	3	.750*	0.08	0.000	[.591, .909]
2	1	-.700*	0.09	0.000	[-.879, -.521]
	3	0.05	0.052	0.339	[-.053, .153]
3	1	-.750*	0.08	0.000	[-.909, -.591]
	2	-0.05	0.052	0.339	[-.153, .053]

Based on estimated marginal means

*. The mean difference is significant at the .001 level.

Post-hoc pairwise comparisons with Bonferroni adjustment were conducted to examine changes in Risk-taking across the three measurement points. The results indicated that the pre-test scores (Time 1) were significantly higher than both the post-test (Time 2), mean difference = 0.700, $p < .001$, 95% CI [0.521, 0.879], and the follow-up (Time 3), mean difference = 0.750, $p < .001$, 95% CI [0.591, 0.909], reflecting a substantial reduction following the intervention. No significant difference was observed between the post-test and follow-up, mean difference = 0.050, $p = .339$, 95% CI [-0.053, 0.153], suggesting that most of the decrease occurred immediately after the intervention, with participants' scores remaining stable thereafter (see Table 33).

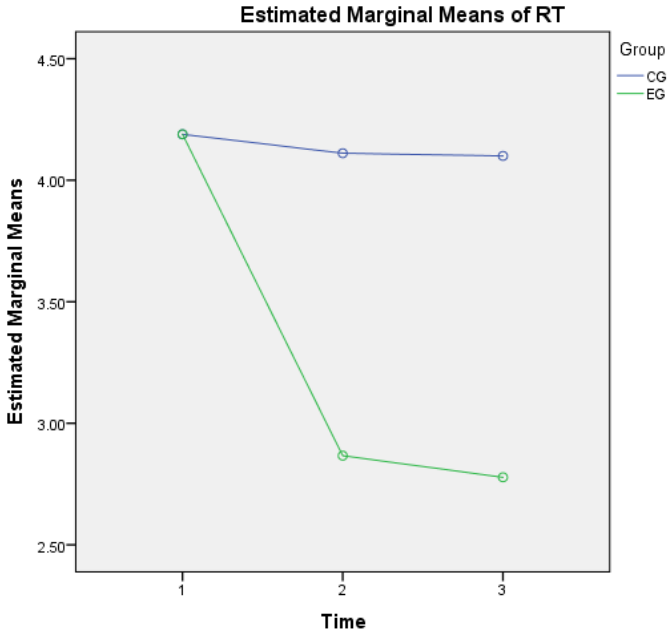


Figure 10 Estimated Marginal Means of Risk-taking

Figure 10 presents the changes in Risk-taking over the three measurement points for both the experimental and control groups. Participants in the experimental group showed a substantial reduction in scores immediately following the intervention, reflecting a pronounced short-term effect. This lower level persisted through the follow-up assessment, indicating that the intervention had a durable impact. By contrast, the control group's scores remained largely unchanged across the pre-test, post-test, and follow-up measurements, highlighting the relative stability of their Risk-taking behaviors in the absence of the intervention.

In summary, this study applied a rigorous, multi-method statistical framework, combining paired-samples t-tests, independent-samples t-tests, and mixed-design repeated-measures ANOVA, to explore the immediate, between-group, and longitudinal effects of the intervention on academic procrastination. The results demonstrated that participants in the experimental group exhibited significant reductions in overall academic procrastination, reflected across multiple underlying dimensions including Fear of Failure, Task Aversiveness, Rebellion against Control, Dependency, and Risk-taking. Importantly, these reductions were largely maintained during the follow-up period, indicating the sustained efficacy of the intervention. By

employing this layered analytical approach, the study strengthened the validity, reliability, and interpretive power of the findings, providing compelling evidence for the intervention's effectiveness in reducing academic procrastination and fostering self-regulatory capacities.

CHAPTER 5
CONCLUSION, DISCUSSION AND RECOMMENDATION

This study aims to study the definitions and components of academic procrastination for undergraduate students in colleges, to develop a learning model by using self-regulated learning to reduce academic procrastination, and to evaluate the effectiveness of the self-regulated learning model in reducing academic procrastination. To achieve these research objectives, the study was divided into three phases: first, studying the definitions and components of academic procrastination for undergraduate students in universities; second, developing a learning model by using self-regulated learning to reduce academic procrastination; third, evaluating the effectiveness of self-regulated learning in reducing academic procrastination. This chapter summarizes and discusses the findings from the three research phases and provides corresponding recommendations based on the results.

5.1 Conclusion

In the first phase **[Studying the definitions and components of academic procrastination for undergraduate students in universities]**, this study investigated the definitions and components of academic procrastination among undergraduate students through a comprehensive literature review and expert interviews. By integrating existing research and expert insights, the study provides a refined understanding of academic procrastination and its core dimensions.

Based on the literature review, academic procrastination is defined as the unnecessary and often harmful delay of academic tasks due to psychological and behavioral factors, leading to decreased academic performance and learning efficiency. Early scholars, such as Solomon and Rothblum (1984), described it as the postponement of academic responsibilities, often resulting in missed deadlines and suboptimal outcomes. Later research further emphasized its connection to self-

regulation failure and emotional challenges, framing it as a habitual behavior detrimental to students' academic success (Cheng et al., 2023; Cheng & Xie et al., 2021).

The expert interviews reinforced these findings, highlighting academic procrastination as a common tendency among students to delay academic tasks. Experts pointed out that procrastination is often driven by emotional factors such as anxiety and fear of failure, cognitive biases in task evaluation, and external influences like perceived control or dependency on external support. The experts collectively agreed on the impact of academic procrastination on students' mental well-being, motivation, and academic performance.

Combining the insights from previous studies and experts, this study identified six key components of academic procrastination, drawn from both literature and expert opinions:

1) Fear of failure - the procrastinator's belief that they lack the ability to complete a task, leading to negative self-perception and self-denial.

2) Difficulty in deciding - the procrastinator’s indecisiveness in task selection or prioritization, often re-evaluating decisions repeatedly.

3) Task aversiveness - the phenomenon where individuals, when confronted with boring or difficult tasks, develop a sense of aversion and choose to avoid them. This avoidance behavior offers short-term emotional relief from negative feelings.

4) Rebellion against control - an individual’s resistance to external authority or rules.

5) Dependency refers to an individual’s reliance on others for guidance or support in completing tasks.

6) Risk-taking – the procrastinators' tendency to delay tasks to create a sense of urgency, using the pressure of a tight deadline to enhance excitement and motivation.

The expert interviews validated these six components, with specialists emphasizing the interconnection among these factors and their contributions to students' academic procrastination. By confirming the relevance of these dimensions,

the study provides a structured framework for understanding academic procrastination and its underlying mechanisms.

In conclusion, academic procrastination is a multidimensional behavioral pattern that affects students' academic performance and emotional well-being. Addressing this issue through targeted interventions, such as improving self-regulation skills and fostering intrinsic motivation, may help students mitigate procrastination tendencies and enhance their academic success.

In the second phase **[developing a self-regulated learning model (SRL) to reduce academic procrastination]**, the researcher designed a culturally grounded and experientially structured SRL intervention based on insights from the literature review and expert interviews, aiming to reduce academic procrastination among first-year undergraduate students in China.

The model was designed based on Zimmerman's (2002) SRL framework, which includes three phases: Forethought, Performance, and Self-Reflection. These phases were systematically aligned with six core components of academic procrastination identified in the first phase of the research: fear of failure, decision-making difficulty, task aversiveness, resistance to control, dependency, and risk-taking.

The results from literature review highlighted that academic procrastination is a multidimensional barrier to students' academic engagement and emotional well-being, with numerous studies linking it to deficits in self-regulated learning (SRL). Research by Azevedo & Cromley (2004), Schmitz & Wiese (2006), San et al. (2016), and Zhao (2012) demonstrated the efficacy of SRL strategies such as task decomposition, motivational reframing, and emotional regulation in addressing procrastination.

Moreover, five experts in the interview process unanimously agreed that Zimmerman's (2002) SRL model is particularly suitable for designing dynamic and adaptive interventions for college students. They provided valuable insights regarding the necessity of integrating emotional awareness, motivational scaffolding, and reflective practices to support students through each recursive SRL phase.

The following section is the summary of SRL model adopted in this study.

(1) Components of the Self-Regulated Learning Model

Forethought Phase: This phase focuses on emotional priming, goal clarification, and task interpretation. Students learn to identify procrastination triggers, break down large assignments into achievable steps, and construct autonomy-supportive motivational language to initiate tasks (e.g., "I choose to…because…").

Performance Phase: Students apply attention regulation and emotion tolerance techniques such as mindfulness breathing, minimum viable action (MVA), and task prioritization using the Important-Urgent Matrix. They also practice self-monitoring and engage in behavior tracking through reflective logs and self-assessment tools.

Self-Reflection Phase: This phase involves metacognitive evaluation and motivational restructuring. Students participate in exercises such as attribution retraining, OH card dialogue, and failure-support writing to develop emotional resilience, process setbacks, and recalibrate strategies.

(2) Implementation and Learning Activities

Activity Intervention Phase: The researcher introduced the concept of academic procrastination and the structure of the SRL model, emphasizing its relevance in managing procrastination through a cycle of "awareness–action–reflection."

Activity Implementation Stage: This stage included a range of experiential and culturally adapted activities, such as emotional projection role plays (fear of failure), timed writing and commitment cards (decision-making difficulty), ABC emotion reframing and mindfulness exercises (task aversiveness), autonomy-based task transformation (resistance to control), self-dialogue and support mapping (dependency), and future-oriented motivational rituals (risk-taking). Each activity was purposefully designed to target specific procrastination mechanisms within the SRL framework.

Summary and Feedback Stage: Reflective tools such as transformation tables, self-observation logs, group presentations, and peer feedback were utilized to

consolidate learning outcomes and provide students with opportunities to evaluate their progress and internalize effective self-regulation strategies.

(3) Learning Plan and Lesson Structure

The SRL model was structured into 12 lessons, each lasting approximately 90 minutes. The lessons were integrated into the “Mental Health Education for College Students” curriculum and tailored for first-year undergraduates.

The lessons addressed core themes such as understanding procrastination patterns, managing emotional resistance, reframing maladaptive beliefs, building task engagement routines, and enhancing self-awareness through reflective practices. Emphasis was placed on the recursive connection between SRL phases and procrastination triggers.

Researcher’s Role: The researcher served as both facilitator and observer, guiding students through the structured activities, offering real-time feedback, scaffolding emotional-cognitive strategies, and ensuring that the theoretical underpinnings of SRL were translated into practical tools.

Students’ Role: Students actively participated in immersive learning activities, reflected on their internal barriers, experimented with new regulation techniques, and progressively refined their ability to manage academic tasks through adaptive SRL processes.

In conclusion, the development and implementation of the Self-Regulated Learning Model in this phase demonstrated its potential to effectively address academic procrastination among college students through an emotionally and culturally responsive pedagogical framework. By integrating cognitive, emotional, and motivational strategies into a recursive SRL cycle, the model empowered students to become proactive, self-aware, and resilient learners. The structured design, grounded in

theoretical rigor and real-world classroom practice, ensured both depth of learning and sustainability of behavioral change..

The third phase of this study **[evaluating the effectiveness of self-regulated learning in reducing academic procrastination]** aimed to evaluate the effectiveness of the Self-Regulated Learning (SRL) model in reducing academic procrastination among college students. Two research hypotheses were proposed:

1. College students' academic procrastination after receiving the self-regulated learning model intervention and after the follow-up period will be significantly lower than before beginning the experiment.

2. Experimental group college students' academic procrastination after receiving the self-regulated learning model intervention and after the follow-up period will be significantly lower than those in the control group.

To ensure the validity of the study, an independent samples t-test was conducted before the intervention to confirm that there were no significant differences in academic procrastination between the experimental and control groups. The results indicated that both groups had similar levels of academic procrastination at the pre-test stage, with no significant differences in variance or mean scores.

Results of the Intervention

(1) Descriptive Statistics: the control group showed a slight decrease in academic procrastination from the pre-test (M = 3.93) to the post-test (M = 3.90) and follow-up (M = 3.93). The experimental group exhibited a more significant decrease from the pre-test (M = 3.91) to the post-test (M = 2.73) and follow-up (M = 2.72).

(2) Repeated Measures ANOVA:

Within-Subjects Effects: The analysis revealed a highly significant effect of time on academic procrastination ($F (2, 176) = 75.112$, $p < 0.001$, $\eta^2 = 0.452$), indicating substantial differences across the three time points. The interaction effect of Time × Group was also highly significant ($F (2, 176) = 56.711$, $p < 0.001$, $\eta^2 = 0.412$),

highlighting that the changes over time differed significantly between the experimental and control groups.

Between-Subjects Effects: For the between-subjects analysis, the group effect is highly significant ($F(1, 88) = 80.043$, $p < 0.001$, $\eta^2 = 0.488$), demonstrating a substantial difference in academic procrastination between the two groups. The Intercept is also significant ($F(1, 88) = 98.633$, $p < 0.001$, $\eta^2 = 0.535$), indicating the overall magnitude of the measure across groups.

Pairwise Comparisons:

Between Groups: The experimental group had significantly lower levels of academic procrastination compared to the control group (Mean Difference = -0.793, $p < 0.001$). Within Groups: The experimental group showed a significant reduction in academic procrastination from the pre-test to the post-test and follow-up stages. The control group exhibited minimal changes across the three time points.

(3) Component Analysis:

A one-way repeated measures ANOVA was conducted on six components of academic procrastination (fear of failure, difficulty in deciding, task aversiveness, rebellion against control, dependency, and risk-taking). All components showed significant reductions from the pre-test to the post-test and follow-up stages, with effect sizes ranging from $\eta^2 = 0.36$ to $\eta^2 = 0.64$. The largest reductions were observed in dependency ($\eta^2 = 0.63$) and risk-taking ($\eta^2 = 0.64$).

Hypothesis 1 was supported. The experimental group showed a significant reduction in academic procrastination after the intervention and during the follow-up period compared to pre-intervention levels.

Hypothesis 2 was supported. The experimental group exhibited significantly lower levels of academic procrastination compared to the control group after the intervention and during the follow-up period.

The SRL model intervention effectively reduced academic procrastination among college students, with sustained effects over time. The intervention was particularly effective in reducing dependency and risk-taking behaviors, which are critical components of academic procrastination.

5.2 Discussion

5.2.1 Discussion

This study aims to (1) study the definitions and components of academic procrastination for undergraduate students in colleges, (2) develop a self-regulated learning model to reduce academic procrastination, and (3) evaluate the effectiveness of the self-regulated learning model in reducing academic procrastination.

The findings of this study provide valuable insights into the nature of academic procrastination among undergraduate students and the effectiveness of a self-regulated learning (SRL) model in mitigating this behavior. The discussion is structured around the three phases of the research, addressing the implications of the findings, their alignment with existing literature, and the practical applications of the SRL model.

The first phase of the study aimed to define academic procrastination and identify its core components. The findings from both sources demonstrate a high level of consistency in the conceptualization of academic procrastination, while also providing complementary perspectives that enrich our understanding of its underlying mechanisms and impacts (Solomon & Rothblum, 1984; Limone et al., 2020).

Definition of Academic Procrastination

Academic procrastination is broadly understood as the voluntary but unnecessary delay in the completion of academic tasks, despite awareness of potential negative consequences. The literature consistently frames this behavior as a failure of self-regulation, rooted in emotional, cognitive, and motivational deficiencies (Steel, 2007; Wolters, 2003). Solomon and Rothblum (1984) first conceptualized academic procrastination, highlighting its direct implications for students' performance and well-being. Subsequent research extended this view, interpreting procrastination as a

maladaptive pattern that impedes task initiation, goal achievement, and academic success(Cheng & Xie, 2021; Ma et al., 2022).

The expert interviews in this study provide micro-level insights into how these mechanisms operate in real-world contexts. For instance, Fear of Failure emerges not only as generalized anxiety about grades but as an immediate psychological barrier when students approach specific tasks. Expert 1 described how students may spend hours on trivial preparation rather than starting the actual assignment, indicating that fear triggers avoidance behaviors that are highly task-specific (Sirois, 2014). Expert 3 further illustrated that pre-task anxiety and self-doubt create cognitive paralysis: students are unable to prioritize or begin assignments, even when deadlines are near, demonstrating the interaction of emotional dysregulation with cognitive misjudgments (Steel, 2007). Expert 4 highlighted emotional overwhelm at task initiation, showing that negative affect occurs before any task engagement, which aligns with findings on anticipatory stress and emotional avoidance in procrastination literature (Seo, 2009). Expert 5 emphasized the long-term erosion of motivation and confidence, suggesting that repeated micro-level avoidance accumulates into a feedback loop, reinforcing habitual delay, which is supported by Bockmann and Yu (2023).

Moreover, the interviews reveal that procrastination often involves subtle cognitive distortions at the micro-level. Expert 2 noted that students commonly underestimate task difficulty and overestimate available time, leading to sequential delays and last-minute stress. This aligns with previous findings on executive dysfunction and miscalibrated self-efficacy as central cognitive mechanisms of procrastination (Chu & Choi, 2005; Steel, 2007). The micro-level analysis highlights that procrastination is not a singular failure of time management but a complex interplay of moment-to-moment decisions, emotional regulation, and self-perception biases.

Taken together, these findings indicate that academic procrastination is a multidimensional phenomenon, where emotional dysregulation, cognitive distortions, and maladaptive coping strategies operate simultaneously at the task-specific level. Interventions, therefore, should not only address general time-management skills but

also provide task-level scaffolding, real-time emotion regulation strategies, and mechanisms to correct cognitive misperceptions to mitigate the micro-level processes that perpetuate procrastination among undergraduate students (Zimmerman, 2002; Wolters, 2003).

Components of Academic Procrastination

Based on social cognitive theory and prior empirical research, academic procrastination is widely recognized as a multifaceted construct composed of several interrelated psychological dimensions. Milgram et al. (1995) proposed a six-dimensional model—later adapted in academic contexts (e.g., Seo, 2009; Zhang et al., 2020)—including Fear of Failure, Task Aversiveness, Difficulty in Deciding, Rebellion Against Control, Dependency, and Risk-Taking. These dimensions reflect emotional, cognitive, and motivational factors that dynamically interact within students' learning environments (Bandura, 1986).

The present study's expert interviews provide micro-level insights that contextualize these six dimensions among Chinese undergraduate students, revealing how these mechanisms operate in real-time academic scenarios:

Fear of Failure: Experts highlighted that avoidance behaviors are triggered not only by concern over grades but also by anticipated social evaluation, self-perception, and energy depletion. For instance, Expert 1 described students spending hours on trivial preparations or irrelevant tasks to avoid starting an important assignment, illustrating task-specific avoidance patterns (Sirois, 2014). Expert 3 noted that pre-task anxiety and rumination create cognitive paralysis, preventing task initiation even when students know exactly what to do (Wolters et al., 2017). Expert 5 emphasized that repeated fear-driven delays erode motivation and confidence over time, demonstrating a micro-level feedback loop between emotional states and behavioral procrastination.

Task Aversiveness: Experts reported that tasks perceived as boring, complex, or emotionally taxing trigger immediate avoidance. Expert 2 observed students choosing more enjoyable alternatives, such as digital entertainment, over academic work, highlighting short-term reward prioritization. Expert 4 emphasized that perceived

lack of meaning in certain assignments exacerbates aversiveness, leading to prolonged delay. These micro-level observations illustrate how emotional discomfort interacts with motivational deficiencies to drive task-specific procrastination (Steel, 2007; Chu & Choi, 2005).

Difficulty in Deciding: Beyond generalized indecision, experts highlighted repeated second-guessing, multitasking, and collective indecision in group projects. Expert 1 described students continually revising to-do lists without initiating tasks, while Expert 2 noted that group members often wait for each other's decisions, producing cognitive fatigue and compounding delays. Expert 3 further explained that anxiety about making the "wrong" choice intensifies procrastination, demonstrating a dynamic interplay between cognitive uncertainty and emotional strain (Steel & Klingsieck, 2016).

Rebellion Against Control: Experts indicated that procrastination can serve as a micro-level strategy to assert autonomy or express dissatisfaction with perceived unfair expectations. Expert 3 illustrated students deliberately postponing assignments as a form of silent protest, while Expert 5 noted relational consequences, such as tension with instructors or peers. These examples reveal that rebellion-related procrastination is not merely behavioral but also emotionally and socially mediated, influencing performance and interpersonal outcomes (Ferrari et al., 1995).

Dependency: Reliance on external guidance or supervision can exacerbate delay. Expert 2 highlighted students waiting for instructions or peer validation before starting tasks, and Expert 4 observed habitual dependence in unfamiliar tasks, which lowers self-confidence and increases procrastination. Expert 5 emphasized that in collaborative settings, dependent behaviors can amplify group-level delays, demonstrating the situational amplification of this dimension (Sirois, 2014; Steel, 2007).

Risk-Taking: Experts described students who intentionally postpone tasks to create urgency, believing that last-minute pressure enhances focus. Expert 1 noted that repeated reliance on this strategy forms a habit, while Expert 3 emphasized that although temporary adrenaline may increase engagement, it often compromises quality and induces stress. Expert 4 highlighted how this micro-level strategy interacts with

emotional and cognitive mechanisms, showing that risk-taking sustains the procrastination cycle (Ondersma et al., 2017; Zusho & Edwards, 2011).

The integration of literature and expert insights demonstrates that academic procrastination is a complex, multidimensional construct, where the six dimensions interact dynamically at a micro-level: Fear of Failure amplifies indecision, Task Aversiveness reinforces Dependency, Rebellion Against Control heightens avoidance, and Risk-Taking perpetuates last-minute behaviors. These findings suggest that effective interventions must target task-specific emotional regulation, real-time decision-making, self-efficacy enhancement, motivational strategies, and autonomy support, rather than focusing solely on generalized time-management skills (Zimmerman, 2002; Wolters, 2003).

The second phase of the study focused on developing a Self-regulated Learning Model to reduce academic procrastination. The second stage of this study focused on the lesson-by-lesson implementation of the Self-Regulated Learning (SRL) Model. Unlike interventions that segment lessons by SRL phases, each of the twelve lessons in this study was designed to integrate all three phases—Forethought, Performance, and Self-Reflection—creating a continuous, iterative cycle of planning, execution, and reflection. This approach ensured that students repeatedly engaged in self-regulatory processes, which allowed them to practice planning strategies, monitor task performance, and reflect on outcomes within each session. The integration of SRL phases across all lessons enabled targeted reductions in the six dimensions of academic procrastination—Fear of Failure, Difficulty in Deciding, Task Aversiveness, Rebellion Against Control, Dependency, and Risk-Taking—while fostering students' self-efficacy, emotional regulation, and autonomous learning behaviors (Zimmerman, 2002; Schunk & Greene, 2018; Pintrich, 2000).

In Lesson 1 (Orientation to SRL and Procrastination), students were introduced to the SRL framework and the concept of academic procrastination, including its six components (see Table 34). During the Forethought Phase, students analyzed personal

procrastination patterns, set initial learning goals, and identified potential barriers. This task analysis encouraged self-awareness and allowed students to externalize negative beliefs, which is essential in reducing Fear of Failure and Difficulty in Deciding (Flavell, 1979; Bandura, 1997). In the Performance Phase, students engaged in guided exercises and discussions to connect theory with practice, strengthening attentional control and fostering initial self-monitoring skills. The Self-Reflection Phase encouraged students to evaluate their understanding of procrastination and reflect on emotional reactions, promoting early internalization of task responsibility and reinforcing motivation to initiate tasks (Zimmerman & Moylan, 2009).

Lessons 2 and 3, focusing on Fear of Failure, provided repeated opportunities for students to confront anxiety and self-doubt (see Table 34). In the Forethought Phase, learners set specific, attainable goals and anticipated potential challenges, building self-efficacy through cognitive restructuring and guided visualization (Schunk & Pajares, 2009). During the Performance Phase, students applied strategies such as role-playing, scenario analysis, and mindfulness exercises, allowing them to actively manage emotional responses to task-related stress. The Self-Reflection Phase emphasized self-evaluation and adaptive attributions, enabling students to reinterpret failures as opportunities for growth and reducing avoidance behaviors. The structured combination of these three phases promoted resilience and sustained reductions in Fear of Failure, while also indirectly addressing tendencies toward Rebellion Against Control by fostering adaptive coping mechanisms (Bandura, 1997; Deci & Ryan, 2000).

In Lessons 4 and 5, which targeted Difficulty in Deciding, the Forethought Phase involved task decomposition, goal clarification, and prioritization using tools such as the Eisenhower Matrix (see Table 34). Students learned to break down complex assignments into manageable components and focus on achievable steps, which reduced cognitive overload and perfectionist tendencies (Steel, 2007; San et al., 2016). During the Performance Phase, students practiced applying time-management

techniques, focused attention, and self-instruction strategies to execute tasks in real time. The Self-Reflection Phase encouraged students to analyze decision-making processes and reflect on outcomes, further reducing indecision-related procrastination and promoting a “minimum viable action” mindset. By embedding all three phases in each session, these lessons facilitated consistent practice in task initiation and completion, which directly lowered Difficulty in Deciding and partially mitigated Task Aversiveness.

Lessons 6 and 7 addressed Task Aversiveness, where students often experience emotional resistance to academic tasks (see Table 34). In the Forethought Phase, learners identified triggers of task aversion and examined task value, fostering motivation and cognitive reframing. The Performance Phase involved active application of mindfulness exercises, focused reading, and attention-control strategies, helping students regulate emotional responses and sustain engagement. Self-Reflection exercises prompted evaluation of concentration and strategy effectiveness, enabling iterative adjustments and reinforcing intrinsic motivation. These activities reduced emotional avoidance and improved task persistence, directly mitigating Task Aversiveness and indirectly lowering Risk-Taking behaviors associated with last-minute completion (Schunk & DiBenedetto, 2020; Zhao, 2012).

Lessons 8 and 9, which focused on Rebellion Against Control, leveraged the three SRL phases to promote autonomy and intrinsic motivation (see Table 34). During the Forethought Phase, students examined the psychological drivers of rebellious procrastination and reframed externally imposed demands into self-endorsed goals. The Performance Phase provided opportunities for students to apply motivational reappraisal strategies, including goal integration, flexible task methods, and autonomous self-talk. In the Self-Reflection Phase, learners evaluated their responses to control-related challenges, reinforcing internalized motivation and reducing resistance behaviors. This cyclical engagement strengthened both self-regulation and emotional ownership,

helping students overcome Rebellion Against Control and supporting ongoing reductions in Fear of Failure (Deci & Ryan, 2000; Schunk & Greene, 2018).

In Lesson 10, addressing Dependency, students explored reliance on external cues and support (see Table 34). Forethought activities involved planning independent task steps and anticipating reliance triggers. The Performance Phase emphasized self-instruction, environmental structuring, and time management to foster autonomous execution. During Self-Reflection, students evaluated their ability to act independently and refined strategies for self-initiation. This phase-integrated approach promoted autonomy and reduced dependence on peers or instructors, directly addressing the Dependency dimension (Zimmerman, 2002; Cleary & Zimmerman, 2001).

Lesson 11 targeted Risk-Taking, helping students recognize self-handicapping behaviors and last-minute procrastination (see Table 34). The Forethought Phase encouraged goal-setting with realistic timelines and pre-commitment to reduce risky delay behaviors. Performance activities included monitoring progress, applying incremental steps, and using peer-supported contracts to ensure steady engagement. Self-Reflection involved evaluating the consequences of delayed work, reinforcing awareness of procrastination risks and fostering habitual early task initiation. Through iterative practice, students strengthened self-monitoring and time-awareness, reducing Risk-Taking and Task Aversiveness (Wolters, 2003; Azevedo & Cromley, 2004).

Finally, Lesson 12 (Review & Reflection) integrated all three phases to consolidate SRL skills and reinforce reductions across all six procrastination dimensions (see Table 34). Forethought activities reviewed personal goals and strategies; Performance included applying accumulated skills in simulated or reflective tasks; Self-Reflection prompted comprehensive self-evaluation, narrative reflection, and symbolic exercises such as the House-Tree-Person method. This review session enabled students to internalize learning gains, enhance self-efficacy, and prepare for future

autonomous application of SRL strategies (Zimmerman & Moylan, 2009; Schunk & Greene, 2018).

Table 34 Lesson Plan Effects on Academic Procrastination Dimensions

Lesson	Topic	Objective	How it Reduces ACP Dimensions (Forethought / Performance / Self-Reflection)
1	Orientation to SRL & Procrastination	Introduce academic procrastination and SRL; connect to mental health	Forethought: Builds initial understanding of procrastination triggers (Fear of Failure, Difficulty in Deciding); Performance: Practices identifying strategies; Self-Reflection: Students reflect on personal learning habits
2	Fear of Failure (I)	Identify psychological mechanisms of fear; reduce fear through engagement	Forethought: Sets confidence-building goals; Performance: Role-play and guided exercises to face fear; Self-Reflection: Reflect on emotional reactions to failure, reducing

			Fear of Failure
3	Fear of Failure (II)	Manage negative self-talk; develop emotional resilience	Forethought: Establish self-compassion mindset; Performance: Rewrite negative self-talk, exposure exercises; Self-Reflection: Evaluate emotional coping strategies, reinforcing reduced Fear of Failure
4	Difficulty in Deciding (I)	Reduce cognitive overload; improve task planning	Forethought: Break tasks into manageable goals; Performance: Apply prioritization and Pomodoro techniques; Self-Reflection: Assess decision-making efficiency, reducing Difficulty in Deciding

5	Difficulty in Deciding (II)	Address perfectionism; promote “minimum viable action”	Forethought: Set realistic completion goals; Performance: Implement time-bound tasks; Self-Reflection: Reflect on progress vs perfection, reinforcing reduced Difficulty in Deciding
6	Task Aversiveness (I)	Identify task aversion triggers; apply cognitive restructuring	Forethought: Recognize and reframe negative beliefs; Performance: Apply cognitive restructuring in tasks; Self-Reflection: Evaluate emotional response and perceived task value, reducing Task Aversiveness
7	Task Aversiveness (II)	Apply mindfulness to sustain focus and reduce avoidance	Forethought: Plan mindfulness exercises; Performance: Engage in focused breathing and task execution; Self-Reflection: Reflect on concentration and avoidance reduction,

			lowering Task Aversiveness and Risk-Taking
8	Rebellion Against Control (I)	Recognize autonomy-related procrastination; promote self-endorsed goals	Forethought: Set self-directed objectives; Performance: Practice motivational self-talk and task reframing; Self-Reflection: Reflect on autonomy experience, reducing Rebellion Against Control
9	Rebellion Against Control (II)	Reframe controlling self-talk; enhance intrinsic motivation	Forethought: Plan strategies to internalize goals; Performance: Apply motivational reframing; Self-Reflection: Evaluate goal ownership and self-motivation, further reducing Rebellion Against Control and Fear of Failure
10	Dependency	Reduce reliance on external cues; promote self-initiation	Forethought: Set independent learning goals; Performance: Use self-monitoring

			tools and self-instruction; Self-Reflection: Assess reliance reduction and autonomy, lowering Dependency
11	Risk-Taking	Reduce last-minute procrastination; foster steady engagement	Forethought: Anticipate potential delays and set early milestones; Performance: Apply consistent self-monitoring and time management; Self-Reflection: Reflect on outcomes of proactive behaviors, reducing Risk-Taking
12	Review & Reflection	Consolidate learning; identify effective strategies; affirm growth	Forethought: Summarize learning goals; Performance: Apply integrated strategies across tasks; Self-Reflection: Reflect on progress and skill mastery, consolidating improvements across all six ACP dimensions

Across all lessons, the repeated integration of Forethought, Performance, and Self-Reflection phases created a micro-cyclic process, allowing students to iteratively strengthen self-regulatory skills. Each lesson systematically addressed the core mechanisms underlying the six dimensions of academic procrastination, demonstrating that a lesson-by-lesson, phase-integrated SRL approach is effective for reducing procrastination while enhancing self-efficacy, emotional regulation, and autonomous learning. These findings align with prior research emphasizing that effective SRL interventions require continuous practice within authentic, scaffolded contexts (Zimmerman, 2002; Schunk & DiBenedetto, 2020; Pintrich, 2000).

While preliminary feedback and classroom observations indicated increased engagement, reduced emotional avoidance, and improved task initiation, the model's current validation is limited to expert consultation and small-scale pilot testing. Future research should conduct longitudinal and multi-site studies to assess the generalizability and sustained effects of the curriculum. Moreover, the integration of digital learning analytics to monitor SRL phase transitions in real time (e.g., forethought-to-performance shifts) remains underdeveloped and represents a crucial direction for increasing intervention precision (Broadbent & Poon, 2015). Additionally, although the curriculum implements Zimmerman's (2002) cyclical mechanism conceptually, more practical scaffolds—such as decision trees or instructor protocols to identify "return points" after setbacks—are needed to translate theory into consistent practice.

Overall, this study offers a theoretically coherent and culturally embedded intervention framework that bridges SRL theory with practical classroom application. By aligning six key procrastination dimensions with the three SRL phases, and by embedding affective, cognitive, and motivational regulation strategies within each session, the curriculum constitutes a structured and adaptable model for addressing academic procrastination in Chinese higher education.

The third phase of the study evaluated the effectiveness of the SRL model in reducing academic procrastination. This phase aimed to evaluate the effectiveness of the self-regulated learning (SRL) model in reducing academic procrastination among college students. To address this objective, the study formulated two hypotheses:

Hypothesis 1: College students' academic procrastination after receiving the self-regulated learning model intervention and after the follow-up period will be significantly lower than before beginning the experiment.

Hypothesis 2: Experimental group college students' academic procrastination after receiving the self-regulated learning model intervention and after the follow-up period will be significantly lower than those in the control group.

The results of this study provided robust empirical support for both hypotheses. The repeated measures ANOVA revealed a significant main effect of time on academic procrastination ($F(2,176) = 75.642$, $p < .001$, $\eta^2 = 0.462$), indicating that procrastination levels changed significantly over the three time points. More importantly, a significant interaction effect between time and group was observed ($F(2,176) = 59.109$, $p < .001$, $\eta^2 = 0.402$), suggesting that the pattern of change in procrastination was different between the experimental and control groups.

In line with **Hypothesis 1**, the pairwise comparisons demonstrated that the experimental group experienced a significant reduction in procrastination scores from pre-test to post-test, and this effect was maintained at the follow-up stage. In contrast, the control group exhibited no statistically significant changes in procrastination scores across the same time points. These findings confirm the intervention's effectiveness and reflect a clear divergence in behavioral change between the two groups.

The results of this study provided robust empirical support for both hypotheses. The repeated measures ANOVA revealed a significant main effect of time on academic procrastination ($F(2,176) = 75.642$, $p < .001$, $\eta^2 = 0.462$), indicating that procrastination levels changed significantly over the three time points. More importantly, a significant interaction effect between time and group was observed ($F(2,176) = 59.109$, $p < .001$,

η^2 = 0.402), suggesting that the pattern of change in procrastination differed between the experimental and control groups.

The observed reduction in academic procrastination can be understood through several aspects. First, the SRL intervention encouraged students to engage in structured planning and goal-setting, which provides clear task pathways and reduces uncertainty, a common trigger for procrastination (Zimmerman, 2002; Steel, 2007). By breaking complex academic tasks into manageable steps and regularly monitoring progress, students develop a sense of control and efficacy, which lowers avoidance behaviors associated with anxiety and task aversiveness (Bandura, 1997; Schunk & DiBenedetto, 2020).

Second, the intervention likely improved students' ability to regulate their emotions and attention during task performance. Procrastination is often linked to difficulty in coping with negative emotions such as stress or boredom (Pychyl & Sirois, 2016). SRL strategies, which include self-monitoring and reflective evaluation, help students recognize these emotional states and implement adaptive coping strategies, thereby reducing the impulse to delay tasks.

Third, the intervention strengthened students' self-efficacy and intrinsic motivation. By receiving continuous feedback on their progress and reflecting on their achievements, students were able to internalize a sense of competence and autonomy, which reduces dependency on external prompts and diminishes the tendency to rebel against academic demands (Deci & Ryan, 2000; Ryan & Deci, 2017). This internalization process helps students approach tasks proactively rather than reactively, contributing to sustained decreases in procrastination.

Finally, the long-term maintenance of reduced procrastination at follow-up suggests that the SRL intervention facilitated durable changes in self-regulatory habits. By repeatedly practicing forethought, strategic action, and self-reflection across the intervention period, students appear to have integrated these skills into their routine study behaviors, indicating that the effects are not merely short-term adjustments but

reflect meaningful behavioral adaptation (Zimmerman, 2002; Schunk & DiBenedetto, 2020).

Overall, these results highlight that structured, theory-driven SRL interventions can produce both immediate and lasting reductions in academic procrastination, offering practical implications for designing supportive learning environments that foster autonomous, proactive, and resilient learners.

The Hypothesis 2 proposed that the Self-Regulated Learning (SRL) intervention would significantly reduce academic procrastination and its dimensions (Fear of Failure, Difficulty in Deciding, Task Aversiveness, Rebellion against Control, Dependency, and Risk-taking) among first-year university students compared to the control group. The results from the repeated-measures GLM analyses strongly support this hypothesis.

The mixed-design repeated-measures ANOVA showed a significant main effect of Time, $F(2, 176) = 77.415$, $p < .001$, $\eta^2 = 0.468$, indicating that overall academic procrastination scores changed significantly across the three measurement points. Importantly, the Time × Group interaction was also significant, $F(2, 176) = 71.212$, $p < .001$, $\eta^2 = 0.447$, demonstrating that the pattern of change differed between the experimental and control groups. Post-hoc comparisons revealed that the experimental group experienced a substantial reduction in academic procrastination from pre-test to post-test (mean difference = 0.634, $p < .001$), which was largely maintained at follow-up (mean difference = 0.586, $p < .001$). In contrast, the control group showed minimal change over time. These results indicate that the SRL-based intervention was effective in producing immediate and sustained reductions in overall academic procrastination. The observed reduction can be attributed to the structured guidance provided by the SRL program, which helped students plan tasks, monitor their own engagement, and reflect on their progress, thereby reducing both cognitive avoidance and emotional resistance to academic demands.

Analyses of the six dimensions of academic procrastination revealed consistent patterns:

Fear of Failure: Significant main effects of Time and Time × Group interaction ($F = 54.947$, $p < .001$; $F = 60.381$, $p < .001$) indicated that the intervention markedly reduced fear of failure in the experimental group, which remained stable at follow-up. This aligns with previous findings suggesting that SRL strategies enhance students' confidence and reduce avoidance behavior associated with failure anxiety (Bandura, 1997; Steel, 2007). The decrease in fear of failure may be explained by the structured guidance provided by SRL, which allows students to approach tasks incrementally and perceive challenges as manageable rather than threatening.

Difficulty in Deciding: The experimental group exhibited significantly lower scores over time (Time × Group interaction: $F = 41.536$, $p < .001$), demonstrating improved decision-making and task initiation. SRL interventions promote goal-setting and planning skills, which help students break down tasks into actionable steps and reduce indecision (Zimmerman, 2002).

Task Aversiveness: Task aversiveness decreased significantly in the experimental group ($F = 59.904$, $p < .001$ for interaction), suggesting that SRL strategies help students perceive academic tasks as more manageable and less unpleasant (Schunk & DiBenedetto, 2020). By emphasizing self-monitoring and reflective practices, students develop a sense of control that diminishes negative feelings toward tasks.

Rebellion against Control: The Time × Group interaction ($F = 45.595$, $p < .001$) showed a notable decline in rebellious tendencies toward imposed academic demands, indicating that the SRL intervention fostered autonomy and self-directed engagement (Deci & Ryan, 2000). When students are trained to regulate their own learning, externally imposed requirements feel less coercive, which lowers resistance.

Dependency: Dependency scores were significantly reduced in the experimental group ($F = 59.803$, $p < .001$), highlighting an increase in self-reliance and independent task management after SRL training (Zimmerman, 2002). Students learn to rely on internal strategies rather than waiting for external prompts, which naturally reduces procrastination.

Risk-taking: Risk-taking tendencies associated with procrastination also decreased significantly ($F = 47.829$, $p < .001$), indicating that students were more likely to engage in planned, deliberate behaviors rather than impulsive avoidance. SRL promotes deliberate, goal-oriented behavior by fostering self-monitoring and reflective thinking (Steel, 2007).

Across all dimensions, post-hoc comparisons indicated that reductions observed immediately after the intervention were largely maintained at follow-up, with no significant differences between post-test and follow-up for most dimensions. This suggests that the SRL model not only produces short-term improvements but also promotes lasting changes in students' self-regulatory and procrastination behaviors (Zimmerman, 2002; Schunk & DiBenedetto, 2020).

The findings underscore the effectiveness of SRL interventions in reducing both overall academic procrastination and its multidimensional components. By targeting forethought, performance, and self-reflection phases, the intervention enhanced students' ability to manage time, regulate emotions, and approach tasks strategically (Zimmerman, 2002). Practically, these results suggest that integrating SRL strategies into university curricula can foster autonomous, proactive, and resilient learners.

5.2.2 Implication

5.2.2.1 Theoretical Implication

This study integrates literature analysis and expert interviews to identify six core components of academic procrastination: fear of failure, difficulty in deciding, task aversiveness, rebellion against control, dependency, and risk-taking. These findings provide a more comprehensive theoretical framework for categorizing dimensions of academic procrastination. By supplementing traditional unidimensional explanations (e.g., self-regulation failure), this study emphasizes the multidimensional nature of procrastination (Cheng et al., 2023; Yi & Chung, 2022).

An intervention model developed based on Zimmerman's (2002) SRL framework successfully integrates goal setting, self-motivation, self-monitoring, and reflective practice into procrastination interventions. The study confirms that the cyclic nature of SRL (planning-execution-reflection) systematically addresses cognitive,

emotional, and behavioral dimensions of procrastination. This finding supports the theoretical value of SRL in managing complex learning issues such as procrastination and provides a theoretical foundation for integrating SRL with other behavioral intervention models, such as cognitive-behavioral therapy.

5.2.2.2 Practical Implication

The SRL-based model proposed in this study provides educators with practical tools. For instance, structured courses such as a 12-session module in "College Student Mental Health Education" can help students gradually develop goal-setting, self-monitoring, and reflective skills. Intervention activities (e.g., task analysis, group feedback) can be directly applied to classroom teaching or academic counseling, making them particularly useful for first-year students, who are more prone to procrastination.

The study also confirms the feasibility of embedding SRL-based interventions into existing curricula. Universities and colleges can incorporate procrastination interventions within mental health education programs to systematically enhance students' self-regulation abilities. For example, designing collaborative learning activities to mitigate "dependency" and introducing time management tools to reduce "risk-taking tendency" can provide balanced approaches to intervention. This integrated strategy addresses both prevention and intervention, ultimately improving overall student learning effectiveness

Moreover, the study indicates that SRL intervention have lasting effects, with follow-up assessments showing sustained reductions in procrastination levels. This suggests that SRL-based interventions not only alleviate short-term procrastination but also foster long-term behavioral transformation by cultivating metacognitive skills. Educational institutions can implement periodic intervention programs (e.g., phased training at the beginning, middle, and end of the semester) to reinforce students' self-regulation habits.

5.3 Recommendation

Based on the research findings, this study proposes several recommendations for practical implementation and future research to further reduce academic procrastination and enhance self-regulated learning (SRL) among college students.

First, a structured and preventive intervention approach should be systematically integrated into educational settings, especially targeting first-year undergraduate students who are undergoing a critical transitional phase from high school to university. The 12-session SRL-based module used in this study—encompassing task analysis, goal-setting, time management, and self-reflection strategies—can be embedded into mental health or academic development curricula. Its proven efficacy in reducing overall academic procrastination makes it suitable for incorporation into regular coursework, especially during orientation or foundational semesters.

Second, differentiated and tiered intervention strategies are recommended based on specific procrastination components. For instance, group workshops can be designed to address high "dependency" tendencies by encouraging collaborative autonomy, peer feedback, and supportive accountability structures. Meanwhile, one-on-one coaching or counseling sessions can be tailored for students exhibiting stronger "rebellion against control" behaviors, incorporating techniques such as motivational interviewing, self-determination theory-informed dialogue, or role-play scenarios to promote internalized motivation and reduce oppositional attitudes. In cases of high "difficulty in deciding," interactive decision-making simulations or decision journaling tools can be introduced.

Third, as the intervention showed the strongest reductions in "dependency" and "risk-taking," future implementation efforts can selectively enhance modules targeting these dimensions. For instance, training students to recognize triggers for risk-based delay (e.g., underestimating task difficulty) and replacing them with proactive planning routines may yield greater results. Similarly, dependency-related procrastination may

benefit from metacognitive prompts that encourage students to independently problem-solve rather than rely on external validation or reminders.

Fourth, educational institutions should consider implementing booster sessions at mid- and end-semester points. These could include reflective exercises or digital micro-learning modules to reinforce core SRL skills and prevent relapse into procrastination habits, particularly around exam periods or assignment deadlines.

Fifth, for long-term validation and development, future research should adopt longitudinal and mixed-method designs to assess sustained effects of SRL-based interventions over multiple academic terms. In particular, drawing from Zimmerman's (2000) cyclical model of self-regulation, studies could investigate how specific SRL phases—forethought (e.g., goal-setting), performance (e.g., self-monitoring), and reflection (e.g., self-evaluation)—differentially impact the various components of procrastination over time. This would help clarify whether, for example, the reduction in "task aversiveness" is more sensitive to reflective practices or performance-phase monitoring strategies.

Finally, cross-cultural and contextual research is encouraged. Since the current study was conducted in a Chinese higher education context, it would be valuable to examine the adaptability and effectiveness of the same intervention framework in other cultural or institutional environments, particularly in systems with differing student-teacher power dynamics or motivational structures.

In conclusion, by addressing both general and component-specific factors of academic procrastination, and through institutional integration and sustained evaluation, SRL-based interventions can become a central strategy in promoting students' academic well-being and performance.

REFERENCES

Alvi, E., & Gillies, R. M. (2015). Social interactions that support students' self-regulated learning: A case study of one teacher's experiences. *International Journal of Educational Research*, *72*, 14-25.

Azevedo, R., & Cromley, J. G. (2004). Does training on self-regulated learning facilitate students' learning with hypermedia? *Journal of Educational Psychology*, *96*(3), 523-535.

Bandura, A. (1978). Social learning theory of aggression. *Journal of Communication*, *28*(3), 12-29. https://doi.org/10.1111/j.1460-2466.1978.tb01621.x

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice-Hall, Inc.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. W. H. Freeman.

Baumeister, R. F., & Heatherton, T. F. (1996). Self-Regulation Failure: An Overview. *Psychological Inquiry*, *7*, 1-15. https://doi.org/10.1207/s15327965pli0701_1

Baumeister, R. F., Vohs, K. D., & Tice, D. M. (2007). The strength model of self-control. *Current Directions in Psychological Science*, *16*(6), 351-355. https://doi.org/10.1111/j.1467-8721.2007.00534.x

Beswick, G., Rothblum, E. D., & Mann, L. (1988). Psychological antecedents of student procrastination. *Australian Psychologist*, *23*, 207-217. https://doi.org/10.1080/00050068808255605

Bockmann, J. O., & Yu, S. Y. (2023). Using mindfulness-based interventions to support self-regulation in young children: A review of the literature. *Early Childhood Education Journal*, *51*(4), 693-703. https://doi.org/10.1007/s10643-022-01333-2

Boekaerts, M. (2002). *Motivation to Learn: Education Practices, Series 10*. International Academy of Education.

Boyd, T. (2022). *Lifelong learning in medicine: A two-part intervention to encourage self-regulated learning skills among first-year medical students* Harvard Medical School].

Butler, D. L., & Winne, P. H. (1995). Feedback and self-regulated learning: A theoretical synthesis. *Review of Educational Research*, *65*(3), 245-281. https://doi.org/10.2307/1170684

Carver, C. S., & Scheier, M. F. (1998). *On the self-regulation of behavior*. Cambridge University Press.

Chase, L. (2003). Procrastination: the new master skill of time management. *Agency Sales*, *33*(9), 60-60.

Cheng, S. L., Chang, J. C., Quilantan-Garza, K., & Gutierrez, M. L. (2023). Conscientiousness, prior experience, achievement emotions, and academic procrastination in online learning environments. *British Journal of Educational Technology*, *54*(4), 898-923. https://doi.org/10.1111/bjet.13321

Cheng, S. L., & Xie, K. (2021). Why college students procrastinate in online courses: A self-regulated learning perspective. *The Internet and Higher Education*, *50*, 100807. https://doi.org/10.1016/j.iheduc.2021.100807

Cho, M. H., & Heron, M. L. (2015). Self-regulated learning: The role of motivation, emotion, and use of learning strategies in students' learning experiences in a self-paced online mathematics course. *Distance Education*, *36*(1), 80-99.

Chu, A. H. C., & Choi, J. N. (2005). Rethinking Procrastination: Positive Effects of "Active" Procrastination Behavior on Attitudes and Performance. *The Journal of Social Psychology*, *145*(3), 245-264. https://doi.org/10.3200/SOCP.145.3.245-264

Cleary, T. J., Dong, T., & Artino, A. R. (2015). Examining shifts in medical students' microanalytic motivation beliefs and regulatory processes during a diagnostic reasoning task. *Advances in Health Sciences Education: Theory and Practice*, *20*(3), 611-626.

Cleary, T. J., & Zimmerman, B. J. (2001). Self-regulation differences during athletic practice by experts, non-experts, and novices. *Journal of Applied Sport Psychology*, *13*(2), 185-206.

Coplan, R. J., Hastings, P. D., Lagacé-Séguin, D. G., & Moulton, C. E. (2002). Authoritative and authoritarian mothers' parenting goals, attributions, and emotions across

different childrearing contexts. *Parenting: Science and Practice*, *2*(1), 1-26. https://doi.org/10.1207/S15327922PAR0201_1

Covington, M. V. (1992). *Making the Grade: A Self-Worth Perspective on Motivation and School Reform*. Cambridge University Press.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, *16*, 297-334. https://doi.org/10.1007/BF02310555

Day, C., Harris, A., Hadfield, M., Tolley, H., & Beresford, J. (2000). *Leading schools in times of change*. Open University Press.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic Motivation and Self-Determination in Human Behavior*. Springer Science & Business Media. https://doi.org/10.1007/978-1-4899-2271-7

Deniz, M., Tras, Z., & Aydogan, D. (2009). An investigation of academic procrastination, locus of control, and emotional intelligence. *Educational Sciences: Theory and Practice*, *9*(2), 623-632.

Dettori, G., & Persico, D. (2008). Detecting self-regulated learning in online communities by means of interaction analysis. *IEEE Transactions on Learning Technologies*, *1*, 11-19. https://doi.org/10.1109/TLT.2008.7

Diefendorff, J. M., & Lord, R. G. (2008). Goal-striving and self-regulation processes. In *Work motivation: Past, present, and future* (pp. 151-196). Routledge/Taylor & Francis Group.

Eisenberg, N., Duckworth, A. L., Spinrad, T. L., & Valiente, C. (2014). Conscientiousness: Origins in childhood? *Developmental Psychology*, *50*(5), 1331-1349. https://doi.org/10.1037/a0030977

Ellis, A. (1991). The revised ABC's of rational-emotive therapy (RET). *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, *9*(3), 139-172. https://doi.org/10.1007/BF01061227

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical Power Analyses Using G*Power 3.1: Tests for Correlation and Regression Analyses. *Behavior Research Methods*, *41*(4), 1149-1160. https://doi.org/10.3758/BRM.41.4.1149

Ferrari, J. R. (1992). Procrastination in the workplace: Attributions for failure among individuals with similar behavioral tendencies. *Personality and Individual Differences*, *13*(3), 315-319.

Ferrari, J. R., Keane, S. M., Wolfe, R. N., & Beck, B. L. (1998). The antecedents and consequences of academic excuse-making: Examining individual differences in procrastination. *Research in Higher Education*, *39*, 199-215.

Ferrari, J. R., O'Callaghan, J., & Newbegin, I. (2005). Prevalence of procrastination in the United States, United Kingdom, and Australia: Arousal and avoidance delays among adults. *North American Journal of Psychology*, *7*, 1-6.

Ferrari, J. R., & Olivette, M. J. (1993). Perceptions of parental control and the development of indecision among late adolescent females. *Adolescence*, *28*(112), 963-970.

Ferrari, J. R., & Scher, S. J. (2000). Toward an Understanding of Academic and Nonacademic Tasks Procrastinated by Students: The Use of Daily Logs. *Psychology in the Schools*, *37*, 359-366. https://doi.org/http://dx.doi.org/10.1002/1520-6807(200010)37:4<359::AID-PITS6>3.0.CO;2-7

Ferrari, J. R., & Tice, D. M. (2000). Procrastination as a self-handicap for men and women: A task-avoidance strategy in a laboratory setting. *Journal of Research in Personality*, *34*(1), 73-83. https://doi.org/10.1006/jrpe.1999.2261

Frost, R. O., Heimberg, R. G., Holt, C. S., Mattia, J. I., & Neubauer, A. L. (1993). A comparison of two measures of perfectionism. *Personality and Individual Differences*, *14*(1), 119-126. https://doi.org/10.1016/0191-8869(93)90181-2

Geng, H., Chuang, D., Yang, F., Yang, Y., Liu, W., Liu, L., & Tian, H. (2018). Prevalence and determinants of depression in caregivers of cancer patients. *Medicine*, *97*(39), e11863.

Gröpel, P., & Steel, P. (2008). A mega-trial investigation of goal setting, interest enhancement, and energy on procrastination. *Personality and Individual Differences*, *45*(5), 406-411. https://doi.org/10.1016/j.paid.2008.05.015

Grunschel, C., Patrzek, J., Klingsieck, K. B., & Fries, S. (2018). I'll stop procrastinating

now! Fostering specific processes of self-regulated learning to reduce academic procrastination. *Journal of Prevention & Intervention in the Community*, *46*(2), 143-157. https://doi.org/10.1080/10852352.2016.1198166

Gustavson, D. E., & Miyake, A. (2017). Academic procrastination and goal accomplishment: A combined experimental and individual differences investigation. *Learning and Individual Differences*, *54*, 160-172. https://doi.org/10.1016/j.lindif.2017.01.010

Haider, A., Najam, S., Sherazi, S. N., & Akmal, T. (2022). Self-regulated learning and academic procrastination among young adult e-learners: Moderating role of gender. *ASEAN Journal of Psychiatry*, *23*(3), 1-7.

Hall, J. H., & Fincham, F. D. (2005). Self-forgiveness: The stepchild of forgiveness research. *Journal of Social and Clinical Psychology*, *24*(5), 621-637.

Han, J., & Zhang, W. (2011). A review of research on academic procrastination. *Science & Education Literature Collection (First Ten Days Issue)*(1), 5-6.

Hayes, S. C. (2008). Climbing our hills: A beginning conversation on the comparison of acceptance and commitment therapy and traditional cognitive behavioral therapy. *Clinical Psychology: Science and Practice*, *15*, 286-295.

Hayes, S. C., Luoma, J. B., Bond, F. W., Masuda, A., & Lillis, J. (2006). Acceptance and commitment therapy model processes and outcomes. *Behavior Research and Therapy*, *44*, 1-25.

Hen, M., & Goroshit, M. (2014). Academic procrastination, emotional intelligence, academic self-efficacy, and GPA: A comparison between students with and without learning disabilities. *Journal of Learning Disabilities*, *47*(2), 116-124.

Howell, A. J., & Buro, K. (2009). Implicit beliefs, achievement goals, and procrastination: A mediational analysis. *Learning and Individual Differences*, *19*(1), 151-154.

Janis, I. L., & Mann, L. (1977). *Decision making: A psychological analysis of conflict, choice, and commitment*. Free Press.

Jansen, R. S., van Leeuwen, A., Janssen, J., Jak, S., & Kester, L. (2019). Self-regulated learning partially mediates the effect of self-regulated learning interventions on

achievement in higher education: A meta-analysis. *Educational Research Review*, *28*, 100292. https://doi.org/10.1016/j.edurev.2019.100292

Janssen, T., & Carton, J. S. (1999). The effects of locus of control and task difficulty on procrastination. *The Journal of Genetic Psychology*, *160*(4), 436-442.

Joda, A. H., Saed, O., Baytamar, J. M., Zenoozian, S., & Yusefi, F. (2018). The efficacy of group acceptance and commitment therapy on reducing academic procrastination and improving difficulty in emotion regulation: A randomized clinical trial. *Scientific Journal of Kurdistan University of Medical Sciences*, *23*(5), 66-78.

Kandemir, M. (2014). Reasons of academic procrastination: Self-regulation, academic self-efficacy, life satisfaction, and demographics variables. *Procedia-Social and Behavioral Sciences*, *152*, 188-193.

Kim, Y., Brady, A. C., & Wolters, C. A. (2020). College students' regulation of cognition, motivation, behavior, and context: Distinct or overlapping processes? *Learning and Individual Differences*, *80*, 101872.

Kirschenbaum, D. S., Tomarken, A. J., & Humphrey, L. L. (1985). Affect and adult self-regulation. *Journal of Personality and Social Psychology*, *48*(2), 509-523. https://doi.org/10.1037/0022-3514.48.2.509

Klassen, R. M., Krawchuk, L. L., & Rajani, S. (2008). Academic procrastination of undergraduates: Low self-efficacy to self-regulate predicts higher levels of procrastination. *Contemporary Educational Psychology*, *33*(4), 915-931.

Klingsieck, K. B. (2013). Procrastination: When Good Things Don't Come to Those Who Wait. *European Psychologist*, *18*, 24-34. https://doi.org/10.1027/1016-9040/a000138

Knaus, W., & McKeever, C. (1977). Rational-emotive education with learning disabled children. *Journal of Learning Disabilities*, *10*(1), 10-14. https://doi.org/10.1177/002221947701000102

Knaus, W. J. (2002). *The procrastination workbook: Your personalized program for breaking free from the patterns that hold you back*. New Harbinger Publications.

Kryshko, O., Fleischer, J., Grunschel, C., & Leutner, D. (2022). Self-efficacy for

motivational regulation and satisfaction with academic studies in STEM undergraduates: The mediating role of study motivation. *Learning and Individual Differences*, *93*, 102096.

Kuhl, J. (1984). Volitional Aspects of Achievement Motivation and Learned Helplessness: Toward a Comprehensive Theory of Action Control. In *Progress in Experimental Personality Research* (pp. 99-171). Academic Press.

Lee, S. Y., & Hall, N. C. (2020). Understanding procrastination in first-year undergraduates: An application of attribution theory. *Social Sciences*, *9*(8), 136.

Li, M., Chen, G., Wang, S., & Li, Y. (2019). An analysis of the phenomenon of "procrastination" among contemporary college students: A case study of the School of Western Languages and Cultures at the Nanguo Business School, Guangdong University of Foreign Studies. *Invention and Innovation (Vocational Education)*(06), 3-5.

Limone, P., Sinatra, M., Ceglie, F., & Monacis, L. (2020). Examining procrastination among university students through the lens of the self-regulated learning model. *Behavioral Sciences*, *10*(12), 184. https://doi.org/10.3390/bs10120184

Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting & task performance*. Prentice-Hall, Inc.

Lu, D., He, Y., & Tan, Y. (2022). Gender, socioeconomic status, cultural differences, education, family size, and procrastination: A sociodemographic meta-analysis. *Frontiers in Psychology*, *12*, 719425. https://doi.org/10.3389/fpsyg.2021.719425

Ma, M., Li, M., Wang, Q., Qiu, A., & Wang, T. (2022). Online self-regulated learning and academic procrastination: A moderated mediation model. *Psychology in the Schools*, *59*(9), 1856-1872. https://doi.org/10.1002/pits.22730

McCloskey, J. (2011). *Finally, my thesis on academic procrastination* University of Texas].

Midgley, C., Arunkumar, R., & Urdan, T. (1996). “If I don’t do well tomorrow, there’s a reason”: Predictors of adolescents’ use of academic self-handicapping strategies. *Journal of Educational Psychology*, *88*, 423-434.

Milgram, N., Marshevsky, S., & Sadeh, C. (1995). Correlates of academic procrastination:

Discomfort, task aversiveness, and capability. *Journal of Psychology*, *129*(2), 145-155.

Milgram, N. N., Mey-Tal, G., & Levison, Y. (1998). Procrastination, generalized or specific, in college students and their parents. *Personality and Individual Differences*, *25*(2), 297-316.

Montroy, J. J., Bowles, R. P., Skibbe, L. E., & Foster, T. D. (2014). Social skills and problem behaviors as mediators of the relationship between behavioral self-regulation and academic achievement. *Early Childhood Research Quarterly*, *29*(3), 298-309. https://doi.org/10.1016/j.ecresq.2014.03.002

Moonaghi, K. H., & Beydokhti, B. T. (2017). Academic procrastination and its characteristics: A Narrative Review. *Future of Medical Education Journal*, *7*(2), 43-50. https://doi.org/10.22038/fmej.2017.9049

Motie, H., Heidari, M., & Sadeghi, M. A. (2012). Predicting academic procrastination during self-regulated learning in Iranian first grade high school students. *Procedia - Social and Behavioral Sciences*, *69*, 2299-2308. https://doi.org/10.1016/j.sbspro.2013.02.023

Muis, K. R. (2007). The role of epistemic beliefs in self-regulated learning. *Educational Psychologist*, *42*(3), 173-190.

Muis, K. R., Chevrier, M., & Singh, C. A. (2018). The role of epistemic emotions in personal epistemology and self-regulated learning. *Educational Psychologist*, *53*(3), 165-184.

Muis, S., Haigh, I. D., Nobre, G. G., Aerts, J. C. J. H., & Ward, P. J. (2018). Influence of El Niño-Southern Oscillation on global coastal flooding. *Earth's Future*, *6*(9), 1311-1322.

Ondersma, S. J., Martino, S., Svikis, D. S., & Yonkers, K. A. (2017). Commentary on Kim et al. (2017): Staying focused on non-treatment seekers. *Addiction*, *112*(5), 828-829. https://doi.org/10.1111/add.13736

Panadero, E. (2017). A Review of Self-Regulated Learning: Six Models and Four Directions for Research. *Frontiers in Psychology*, *8*, 422.

https://doi.org/10.3389/fpsyg.2017.00422

Panadero, E., Jonsson, A., & Botella, J. (2017). Effects of self-assessment on self-regulated learning and self-efficacy: Four meta-analyses. *Educational Research Review*, *22*, 74-98.

Paris, S. C., & Paris, A. H. (2001). Classroom applications of research on self-regulated learning. *Educational Psychologist*, *36*, 89-101.

Park, S. W. (2009). *Self-regulation of academic procrastinators: A mixed methods study* The Pennsylvania State University].

Pintrich, P., Smith, D., García, T., & McKeachie, W. (1991). *A manual for the use of the motivated strategies for learning questionnaire (MSLQ)*. University of Michigan.

Pintrich, P. R. (2000a). An achievement goal theory perspective on issues in motivation terminology, theory, and research. In *Contemporary Educational Psychology* (pp. 92-104). Academic Press.

Pintrich, P. R. (2000b). The role of goal orientation in self-regulated learning. In *Handbook of self-regulation* (pp. 451-502). Academic Press.

Pintrich, P. R. (2004). A Conceptual Framework for Assessing Motivation and Self-Regulated Learning in College Students. *Educational Psychology Review*, *16*(4), 385-407. https://doi.org/10.1007/s10648-004-0006-x

Pintrich, P. R., & De Groot, E. V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology*, *82*(1), 33-40. https://doi.org/10.1037/0022-0663.82.1.33

Pintrich, P. R., & Zusho, A. (2007). Student motivation and self-regulated learning in the college classroom. In *The scholarship of teaching and learning in higher education: An evidence-based perspective* (pp. 731-754). Springer.

Postholm, M. B. (2011). Teachers' learning in a research and development work project. *Educational Action Research*, *19*(2), 231-244.

Pressley, M., Borkowski, J. G., & Schneider, W. (1987). Cognitive strategies: Good strategy users coordinate metacognition and knowledge. In *Annals of Child Development* (pp. 89-129). Routledge.

Razeghi, F. A., Mirzahosseini, H., & Hajebi, M. Z. (2020). The effectiveness of teaching self-regulated learning strategies on academic procrastination and its components. *Journal of Strategic Management Research*, *25*(75), 155-177.

Rio, M. C. R., & Tarin, C. A. P. (2015). Academic procrastination and achievement goal orientation as predictors of academic performance of selected college students. *Antorcha*, *2*(1), 39-50.

San, Y. L., Roslan, S., & Sabouripour, F. (2016). Relationship between self-regulated learning and academic procrastination. *American Journal of Applied Sciences*, *13*(4), 459-466. https://doi.org/10.3844/ajassp.2016.459.466

Schmitz, B., & Wiese, B. S. (2006). New perspectives for the evaluation of training sessions in self-regulated learning: Time-series analyses of diary data. *Contemporary Educational Psychology*, *31*(1), 64-96. https://doi.org/10.1016/j.cedpsych.2005.02.002

Schoenfeld, W. N. (1995). "Reinforcement" in behavior theory. *The Behavior Analyst*, *18*(1), 173-185.

Schraw, G., & Dennison, R. S. (1994). Assessing metacognitive awareness. *Contemporary Educational Psychology*, *19*(4), 460-475. https://doi.org/10.1006/ceps.1994.1033

Schraw, G., Wadkins, T., & Olafson, L. (2007). Doing the things we do: A grounded theory of academic procrastination. *Journal of Educational Psychology*, *99*(1), 12-25. https://doi.org/10.1037/0022-0663.99.1.12

Schunk, D. H. (2012). *Learning theories: An educational perspective (6th ed.)*. Pearson.

Schunk, D. H., & Ertmer, P. A. (2000). Self-regulation and academic learning: Self-efficacy enhancing interventions. In *Handbook of self-regulation* (pp. 631-649). Academic Press. https://doi.org/10.1016/B978-012109890-2/50048-2

Schunk, D. H., & Greene, J. A. (2018). *Handbook of self-regulation of learning and performance (2nd ed.)*. Routledge.

Schunk, D. H., & Pajares, F. (2009). Self-efficacy theory. In K. Wentzel & A. Wigfield (Eds.), *Handbook of motivation at school* (pp. 35-53). Routledge.

Schunk, D. H., & Zimmerman, B. J. (2007). Influencing children's self-efficacy and

self-regulation of reading and writing through modeling. *Reading & Writing Quarterly: Overcoming Learning Difficulties*, *23*(1), 7-25.

Senécal, C., Koestner, R., & Vallerand, R. J. (1995). Self-regulation and academic procrastination. *Journal of Social Psychology*, *135*(5), 607-619.

Seo, E. H. (2009). The relationship of procrastination with a mastery goal versus an avoidance goal. *Social Behavior and Personality: An International Journal*, *37*(7), 911-919.

Simons, P. R. J., & Vermunt, J. D. H. (1986). Self-regulation of knowledge acquisition: A selection of Dutch research. In *German and Dutch research on learning and instruction: General topics and self-regulation in knowledge acquisition* (pp. 101-135). S.V.D.

Sirois, F. M. (2014). Procrastination and stress: Exploring the role of self-compassion. *Self and Identity*, *13*(2), 128-145.

Skinner, B. F. (1953). *Science and human behavior*. Macmillan.

Solomon, L. J., & Rothblum, E. D. (1984). Academic procrastination: Frequency and cognitive-behavioral correlates. *Journal of Counseling Psychology*, *31*, 503-509.

Stanton, R., To, Q. G., Khalesi, S., Williams, S. L., Alley, S. J., Thwaite, T. L., Fenning, A. S., & Vandelanotte, C. (2020). Depression, anxiety and stress during COVID-19: Associations with changes in physical activity, sleep, tobacco and alcohol use in Australian adults. *International Journal of Environmental Research and Public Health*, *17*(11), 4065.

Steel, P. (2007). The nature of procrastination: a meta-analytic and theoretical review of quintessential self-regulatory failure. *Psychological Bulletin*, *133*(1), 65-94. https://doi.org/10.1037/0033-2909.133.1.65

Steel, P. (2010). Arousal, avoidant and decisional procrastinators: Do they exist? *Personality and Individual Differences*, *48*(8), 926-934.

Steel, P., & Klingsieck, K. B. (2016). Academic procrastination: Psychological antecedents revisited. *Australian Psychologist*, *51*(1), 36-46.

Steel, P., & König, C. J. (2006). Integrating theories of motivation. *Academy of*

Management Review, *31*(4), 889-913.

Syabilla, Y. A., Suryanda, A., & Sigit, D. V. (2018). A correlation between self-concept and procrastination based on gender in a neuroscience perspective. *Biosfer: Jurnal Pendidikan Biologi*, *11*(2), 114-120.

Thompson, N., & Campling, J. (1996). Time management. In *People Skills* (pp.?-?). Palgrave. https://doi.org/10.1007/978-1-349-13737-4_3

Tuckman, B. W. (1991). The development and concurrent validity of the procrastination scale. *Educational and Psychological Measurement*, *51*(2), 473-480.

van Eerde, W. (2003). A meta-analytically derived nomological network of procrastination. *Personality and Individual Differences*, *35*(6), 1410-1418. https://doi.org/10.1016/S0191-8869(02)00358-6

Wang, S., Zhou, Y., Yu, S., Ran, L. W., Liu, X. P., & Chen, Y. F. (2017). Acceptance and commitment therapy and cognitive–behavioral therapy as treatments for academic procrastination: a randomized controlled group session. *Research on Social Work Practice*, *27*, 48-58. https://doi.org/10.1177/1049731515577890

Weinstein, C. E., Palmer, D., & Schulte, A. C. (1987). *Learning and Study Strategies Inventory (LASSI)*. H & H Publishing.

Winne, P. H. (1995). Inherent details in self-regulated learning. *Educational Psychologist*, *30*(4), 173-187. https://doi.org/10.1207/s15326985ep3004_2

Winne, P. H. (1996). A metacognitive view of individual differences in self-regulated learning. *Learning and Individual Differences*, *8*(4), 327-353. https://doi.org/10.1016/S1041-6080(96)90022-9

Winne, P. H., & Perry, N. E. (2000). Measuring self-regulated learning. In *Handbook of self-regulation* (pp. 531-566). Academic Press.

Wohl, M. J., Pychyl, T. A., & Bennett, S. H. (2010). I forgive myself, now I can study: How self-forgiveness for procrastinating can reduce future procrastination. *Personality and Individual Differences*, *48*(7), 803-808.

Wolters, C. A. (2003). Understanding procrastination from a self-regulated learning perspective. *Journal of Educational Psychology*, *95*(1), 179-187.

Wolters, C. A., Won, S., & Hussain, M. (2017). Examining the relations of time management and procrastination within a model of self-regulated learning. *Metacognition and Learning*, *12*, 381-399.

Yip, M. C. W., & Chung, O. L. (2022). Psychometric properties of the Chinese version of procrastination assessment scale for students. *Frontiers in Psychology*, *13*, 1016116. https://doi.org/10.3389/fpsyg.2022.1016116

Zimmerman, B. J. (1989). *A social cognitive view of self-regulated academic learning*. Academic Press.

Zimmerman, B. J. (2000). Attaining self-regulation: A social cognitive perspective. In *Handbook of self-regulation* (pp. 13-39). Academic Press. https://doi.org/10.1016/B978-012109890-2/50031-7

Zimmerman, B. J. (2002a). Becoming a self-regulated learner. *Theory Into Practice*, *41*(2), 64-70.

Zimmerman, B. J. (2002b). Becoming a Self-Regulated Learner: An Overview. *Theory Into Practice*, *41*(2), 64-70. https://doi.org/10.1207/s15430421tip4102_2

Zimmerman, B. J. (2008). Investigating Self-Regulation and Motivation: Historical Background, Methodological Developments, and Future Prospects. *American Educational Research Journal*, *45*, 166-183.

Zimmerman, B. J., & Campillo, M. (2003). Motivating self-regulated problem solvers. In J. Davidson & R. Sternberg (Eds.), *The psychology of problem solving* (pp. 233-262). Cambridge University Press.

Zimmerman, B. J., & Martinez-Pons, M. (1986). Development of a Structured Interview for Assessing Student Use of Self-Regulated Learning Strategies. *American Educational Research Journal*, *23*, 614-628. https://doi.org/10.3102/00028312023004614

Zimmerman, B. J., & Martinez-Pons, M. (1988). Construct validation of a strategy model of student self-regulated learning. *Journal of Educational Psychology*, *80*(3), 284-290. https://doi.org/10.1037/0022-0663.80.3.284

Zimmerman, B. J., & Moylan, A. R. (2009). Self-regulation: Where metacognition and

motivation intersect. In D. Hacker (Ed.), *Handbook of metacognition in education* (pp. 299-315). Routledge.

Zimmerman, B. J., & Schunk, D. H. (1989). *Self-regulated learning and academic achievement: Theory, research, and practice*. Springer-Verlag Publishing.

Zimmerman, B. J., & Schunk, D. H. (2011). *Handbook of self-regulation of learning and performance*. Routledge/Taylor & Francis Group.

Zusho, A., & Edwards, K. (2011). Self-regulation and achievement goals in the college classroom. *Teaching in Learning*(126), 21-31.

APPENDIX

Appendix A

List of Interview Experts and Experts for IOC Testing

List of Experts of Research Phase 1

Name	Affiliation	Expertise/Research Focus
Dr. Huang Lingyi	Guangdong University of Science and Technology	Educational psychology, student support services, academic motivation
Prof. Bi Huidong	Guangdong University of Science and Technology	Educational leadership, academic performance, student engagement
Assoc. Prof. Wang Hongwu	Guangdong University of Science and Technology	Educational pedagogy, motivation in learning, academic achievement
Assoc. Prof. Chen Biaoxin	Guangdong University of Science and Technology	Learning strategies, self-regulation, academic procrastination

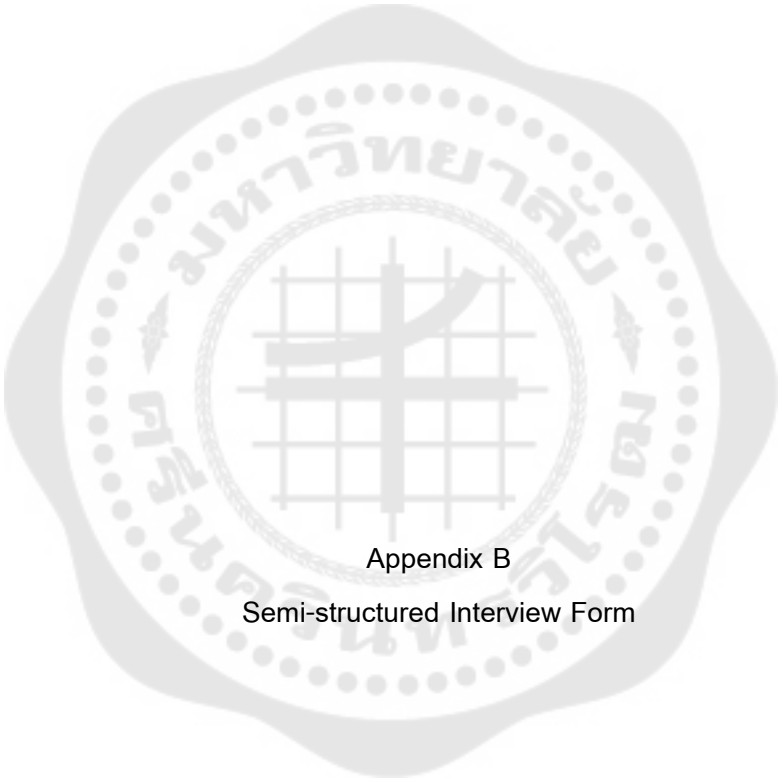
Dr. Ye Zi	Guangdong University of Science and Technology	Academic management, self-regulated learning, innovation in education

List of Experts of Evaluating the Item Objective Congruence (IOC) Assessment in Academic Procrastination

Assoc. Prof. Wang Hongwu	Guangdong University of Science and Technology	Educational pedagogy, motivation in learning, academic achievement
Prof. Yu Xijue	Guangdong University of Science and Technology	Higher education, self-regulation, academic performance enhancement
Dr. Zhou Xunni	Guangdong University of Science and Technology / Guangdong Polytechnic of Industry and Trade	Educational psychology, student motivation

List of Experts of Evaluating the Item Objective Congruence (IOC) Assessment in Self-Regulated Learning Model

Assoc. Prof. Chen Biaoxin	Guangdong University of Science and Technology	Learning strategies, self-regulation, academic procrastination
Dr. Ye Zi	Guangdong University of Science and Technology	Academic management, self-regulated learning, innovation in education
Dr. Zhou Xunni	Guangdong University of Science and Technology / Guangdong Polytechnic of Industry and Trade	Educational psychology, student motivation



Appendix B

Semi-structured Interview Form

Semi-Structured Interview Questionnaire for Interviewing Eligible Respondents

STATEMENT: This semi-structured interview questionnaire is a tool used to interview respondents for the following purposes.

Purpose of the Interview:

1. To define the definition and components of academic procrastination among college students in China.
2. To gain the guidelines for developing a self-regulated learning model to reduce academic procrastination among university students in China.
3. To gain the guidelines for developing research measurement instruments to evaluate academic procrastination among collge students in China.

Section 1: General Information

Name of Expert _____

Educational Background_ _____

Work Experience _____

Position _____

Organization_ _____

Specialized Field _____

Date and Time of Interview _____

Section 2: Question Orientation

Question1) The meaning and components of academic procrastination among college students in China context.

1.1 In your opinion, what is the definition of academic procrastination for college students in China?

_____

_____

_____

_____

1.2 According to the literature review, there are the six core components of academic procrastination (fear of failure, task aversiveness, difficulty in making decision, dependency, risk taking and rebellion against control). Do you think academic procrastination with these six components is suitable for college students?

_____

_____

1.2.1 Fear of failure refers to the procrastinators who believe they are not capable of completing a task, leading to negative thoughts and self-doubt, and believing that they are unable to complete the task. Also means evaluation anxiety, perfectionism, and lack of self-confidence.

1.2.2 Task aversiveness means aversiveness of the task and laziness. This happens when the procrastinator considers the task as boring, frustrating, unpleasant, wearisome, difficult or resented, they will develop feelings of disgust and choose to escape, and this avoidance behavior relieves negative emotions in the short term.

1.2.3 Difficulty in making decision refers to procrastinators' indecision and repeated evaluation of choices or prioritization in tasks. In academic settings, rebellion against control manifests as students' resistance to external structures or tasks in the academic environment.

1.2.4 Dependency means the procrastinators lack self-confidence in motivation, have low initiative in task completion, and are more inclined to expect

support from others. Dependence in an academic setting is defined as students relying on others, such as classmates or professors, to guide or help with decision-making.

1.2.5 Risk taking means refers to students' tendency to deliberately postpone tasks and seek the thrill of task under pressure at the last minute. This behavior is often characterized by a conscious decision to procrastinate despite potential negative outcomes.

1.2.6 Rebellion against control means the rebellious emotion of the procrastinator when facing the external forced task. Procrastinators tend to perceive tasks as external compulsions and procrastinate to express their dissatisfaction with the control by procrastinating.

1.3 In addition to the four components mentioned above, do you think there are other components that reflect academic procrastination of college students in China? What are they?

1.4 In response to if there are additional components, what should the behaviors guided by those components you mentioned look like?

_____

_____

_____

_____

Question 2) Guidelines to develop Self-regulated learning model for reducing Academic procrastination among college students.

2.1 In your opinion, what is the definition of self-regulated learning for college students in China?

_____

_____

_____

_____

2.2 Could you provide me with the guidelines for developing a self-regulated learning model to reduce academic procrastination among college students in China?

_____

_____

_____

_____

2.3 What characteristics or steps to provide the contents and activities of self-regulated learning model to reduce academic procrastination among college students?

_____

_____

_____

_____

2.4 In your opinion, are there psychological techniques or other activities that can be used to reduce academic procrastination among college students in developing a self-regulated learning model? If so, what kinds of techniques or activities?

_____

_____

_____

_____

Question 3) Guidelines for developing research measurement instruments to evaluate academic procrastination among college students in China.

3.1 In your opinion, it is suitable to use the Procrastination Assessment Scale-Student (PASS) Scale to evaluate resilience among college students in China?

_____

_____

_____

_____

3.2 Are there any other measurements can be used to evaluate academic procrastination of college students in China? If so, what are the measurements?

_____

_____

_____

_____

Appendix C

Summary of Key Findings and Recommendations from Expert Interviews

Summary of Key Findings and Recommendations from Expert Interviews

In the first phase of this study, interviews were conducted with five experts who possess extensive knowledge in psychology, education, and related fields. The purpose of the interviews was to gather information on the definition and components of academic procrastination and to develop self-regulated learning model for reducing students' academic procrastination.

Key Points from the Interviews:

1. Definition and Components of Academic Procrastination

1.1 Definition of Academic Procrastination

Based on the opinions of experts, Academic procrastination refers to the tendency to delay or postpone academic tasks. It is a common problem among students and can lead to poor academic performance, increased stress, and decreased motivation. This behavior is often driven by internal emotional and cognitive factors.

1.2 Six Core Components of Academic Procrastination

The experts unanimously agreed that academic procrastination should include the following six components:

Fear of Failure: Students lack confidence in their ability to complete tasks, leading to negative thoughts and self-doubt, which impedes their progress.

Task Aversiveness: Students perceive tasks as boring, frustrating, or unpleasant, leading to avoidance behavior as a way to escape negative emotions.

Difficulty in Deciding: Students hesitate and repeatedly evaluate their choices or prioritize tasks, which results in procrastination.

Dependency: Students lack autonomy and confidence, relying on others for guidance or decision-making instead of taking initiative.

Risk-Taking: Students intentionally postpone tasks and seek the thrill of working under pressure at the last minute.

Rebellion Against Control: Students resist external demands or tasks, seeing them as forced obligations, and procrastinate as a form of expressing dissatisfaction with external control.

1.3 Other Components of Academic Procrastination

In addition to the six core components, the experts mentioned that cultural pressure (such as high expectations from family and society) and social comparison are additional factors contributing to academic procrastination among Chinese students. These factors may exacerbate procrastination, especially when students face significant academic pressure. However, the modified PASS scale based on Yip and Chung (2022) is so comprehensive and suitable for Chinese students that experts recommend using the complete scale without adding additional factors.

2. Suggestions for Developing a Self-Regulated Learning Model to Reduce Academic Procrastination

2.1 Definition of Self-Regulated Learning

Experts defined self-regulated learning as the process and ability of learners to consciously identify learning objectives, develop learning plans, apply learning strategies, regulate their emotional state, fully mobilize internal and external learning resources, and monitor and regulate the learning process in order to achieve the learning goals.

2.2 Steps for Developing a Self-Regulated Learning Model

Experts suggested that the self-regulated learning model to reduce academic procrastination should be based on framework constructed by Zimmerman (2002). Based on the opinions of experts, a good self-regulated learning model should include three main phases: the forethought phase, the performance phase, and the self-reflection phase.

In the forethought phase, students begin with task analysis, which involves setting clear goals and strategic planning to prepare for learning. Additionally, self-

motivation plays a crucial role, including factors such as self-efficacy, outcome expectations, intrinsic interest, and learning goal orientation, all of which drive students to initiate and persist in their learning tasks.

In the performance phase, students engage in self-control by using strategies like imagery, self-instruction, attention focusing, and task strategies to manage their learning effectively. At the same time, they perform self-observation, through self-recording and self-experimentation, to monitor their progress and evaluate the effectiveness of their strategies, allowing for timely adjustments.

In the self-reflection phase, students engage in self-judgment, which involves self-evaluation and causal attribution to understand their learning outcomes and address any challenges faced during the process. This phase also includes self-reaction, where students experience self-satisfaction and adaptive or defensive responses, which help them adjust emotionally and behaviorally for future learning. These three interconnected phases enable students to continuously improve their learning process and enhance their overall learning outcomes.

2.3 Characteristics of an Effective Self-Regulated Learning Model

Experts believed that a successful self-regulated learning model should focus on fostering intrinsic motivation and inspiring students' interest in autonomous learning. Key components include:

Goal setting: Encourage students to set specific and measurable academic goals.

Self-monitoring: Regularly assess learning progress and reflect on challenges and solutions.

Emotional regulation: Help students manage anxiety, pressure, and perfectionism to reduce procrastination.

2.4 Psychological Techniques or Activities to Reduce Academic Procrastination

Experts recommended the following psychological techniques to reduce academic procrastination:

Cognitive Restructuring: Help students challenge negative thoughts and self-doubt, building their confidence.

Mindfulness Practices: Enhance focus and reduce anxiety and stress.

Behavioral Activation: Encourage students to take small, proactive steps in completing academic tasks to reduce procrastination.

3. Suggestions for Academic Procrastination Measurement Tools

3.1 Procrastination Assessment Scale-Student (PASS)

Experts expressed conditional support for the use of the Procrastination Assessment Scale-Student (PASS) in China. While the scale is useful for assessing academic procrastination in Western cultures, they emphasized that it might need localization to better fit the cultural context of Chinese students. Therefore, the PASS scale modified from Solomon and Rothblum (1984) by Yip and Chung (2022) was recommended as the suitable instruments for measuring students' academic procrastination.

Conclusion

From the expert interviews, the following recommendations were made:

The six core components of academic procrastination modified by Yip and Chung (2018) are applicable to Chinese college students but may require cultural adaptation.

The self-regulated learning model should focus on planning and goal-setting, along with self-motivation in the forethought phase; applying strategies and monitoring progress in the performance phase; and evaluating outcomes and adjusting in the self-reflection phase. These phases help learners continuously improve their learning motivation and reduce their academic procrastination.

In evaluating academic procrastination, the PASS scale can be used, but it should be localized, and qualitative research methods.

These recommendations provide valuable insights for developing intervention strategies and self-regulated learning models to address academic procrastination.

Appendix D

Questionnaire for Testing Academic Procrastination of First-year Undergraduate Students

Appendix B: Questionnaire

Questionnaire for Academic Purpose

Dear Students,

This survey is conducted anonymously for academic research purposes. We kindly ask you to complete the questionnaire thoughtfully and honestly, following the provided instructions. Your responses will contribute valuable data to support this study and establish a robust scientific foundation for its findings. Please note that there are no right or wrong answers, and all information will be kept strictly confidential. Thank you for your participation and support!

Explanation

This research questionnaire will take 5-10 minutes and is divided into 3 parts as follows;

- Part 1 General information of the respondents
- Part 2 Factors involved in the study

Please give you a score based on your online shopping experience and behavior according to the following criteria. (From the left 'Strongly Disagree' to right

'Strongly Agree') 1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

Researcher certifies that your responses will be kept confidential and will not affect you or any organization.

Thank you very much for answering this questionnaire. If you have any questions, please contact 784332963@qq.com.

Best Regards,

Liu Fangyuan

PhD student, Ed.D. (Educational Psychology and Guidance) Faculty of Education, Srinakharinwirot University

Part 1 General information of the respondents

1.1 Please specify your gender

Male

Female

1.2 Please specify social media usage frequency

Less than 1 hour

1-2 hours

2-4 hours

More than 4 hours

1.3 Part-Time Job Status

Yes

No

Part 3 Factors involved in the study

Please specify your level of agreement or disagreement with the following questions (Strongly Disagree 1 – Strongly Agree 5)

No.	Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
		1	2	3	4	5
2.1	You were concerned the teacher wouldn't like your work.					
2.2	You were not worried you would get a bad grade.					
2.3	You didn't think you knew enough to complete the learning tasks.					
2.4	You didn't trust yourself to do a good job.					
2.5	You were concerned you wouldn't meet your own expectations.					
2.6	You were not concerned that if you got a good grade, people would have higher expectations of you in the future.					
2.7	You set very high standards for yourself and worried you wouldn't					

	be able to meet them.					
2.8	You waited until a classmate did theirs, so they could give you some advice.					
2.9	There was any information you needed to ask the teachers; you felt comfortable approaching them.					
2.10	You couldn't choose among all the learning tasks.					
2.11	You really disliked learning tasks.					
2.12	You did not feel overwhelmed by the learning task.					
2.13	You didn't have enough energy to begin the learning tasks.					
2.14	You did not feel it just takes too long to learning tasks.					
2.15	You just felt too lazy to complete learning tasks.					

2.16	You resented having to do things assigned by others.					
2.17	You did not resent people setting deadlines for you.					
2.18	You had a hard time knowing what to include and what not to include in your learning task.					
2.19	You did not have difficulty requesting information from other people.					
2.20	You waited to see if the teacher would give you more information about the learning tasks.					
2.21	You looked forward to the excitement of doing learning task at the last minute.					
2.22	You do not like the challenge of waiting until the deadline.					

Appendix E

Teaching Activities Designed through the Self-regulated Learning Model to reduce Students' Academic Procrastination

Teaching Activities Designed through the Self-regulated Learning Model to reduce Students' Academic Procrastination

In this study, the self-starting stage, execution control stage and self-reflection stage in Zimmerman's self-regulated learning cycle model are combined with the six parts of self-regulated learning model in self-regulated theoretical model, namely, task analysis, self-motivation belief, self-control, self-observation, self-judgment and self-reaction, and a 12-class lesson plan is designed to reduce students' learning procrastination. As mentioned above, the main factors leading to college students' academic procrastination are fear of failure, difficulty in deciding, task aversiveness, rebellion against control, dependence and adventure. The goal of this course design is to help students understand the causes and effects of academic procrastination. Secondly, help students learn to apply the task analysis, self-motivation and self-control of self-regulation theory to improve their learning efficiency. Finally, through practice and reflection, improve students' self-regulation ability in real learning scenes.

According to Zimmerman's self-regulated learning cycle model, this course is divided into three stages, namely, self-starting stage, execution control stage and self-reflection stage.

The purpose of the first stage of teaching is to help students complete task analysis, stimulate self-motivation beliefs, and establish a preliminary awareness of overcoming academic procrastination. At this stage, four class hours will be used to lead students to understand academic procrastination and self-regulation, analyze people and set goals, resume self-motivation beliefs, and overcome fear of failure and difficulty in deciding.

The purpose of the second stage of teaching is to help students learn to control themselves and self-observation in task execution. This stage will also be held in four class hours, with the main contents of improving students' self-control, coping with task aversiveness and rebellion against control, self-observation and behavior correction, and coping with dependence and risk-taking behavior.

The teaching purpose of the third stage is to establish a sustainable learning management model through the practice of self-judgment and self-reflection of users. This stage will lead students to learn self-judgment, build positive self-reaction, comprehensive practice and feedback through four class hours, and finally consolidate and prospect the course content.

The following is the teaching framework of this course.

Lesson 1: The Orientation of Student's Academic Procrastination

Lesson 2: Fear of Failure (I)

Lesson 3: Fear of Failure (II)

Lesson 4: Difficulty in Deciding (I)

Lesson 5: Difficulty in Deciding (II)

Lesson 6: Task Aversiveness (I)

Lesson 7: Task Aversiveness (II)

Lesson 8: Rebellion Against Control (I)

Lesson 9: Rebellion Against Control (II)

Lesson 10: Dependency

Lesson 11: Risk-Taking

Lesson 12: Review and Reflection

Table 35 a teaching framework based on reducing academic procrastination

Lesson 1: Orientation	1. Familiarize students with academic procrastination and its 6 components. 2. Introduce Self-regulated Learning (SRL) model. 3. Establish connection between mental health and procrastination.	- Warm-up: Teacher self-introduction, icebreaker (one-word emotion check). - Video analysis of procrastination behaviors. - Recitation of "Tomorrow Poem." - Group reflection on personal procrastination experiences. - Collaborative strategy building (whiteboard sharing).	- Icebreaker & emotional awareness. - Multimedia demonstration. - Classical poetry reinforcement. - Group discussion & peer sharing. - Collaborative problem-solving.
Lesson 2: Fear of Failure (I)	1. Understand definition/significance of fear of failure. 2. Recognize psychological mechanisms linking fear to procrastination. 3. Reduce fear through activities.	- Movie clip analysis (*Inside Out*). - Guided imagination (submission stress scenario). - Group role-play (Inside Out emotions). - Anonymous voting for creative solutions.	- Media-assisted emotional identification. - Scenario-based imagination. - Role-playing therapy. - Peer evaluation & reinforcement.

Lesson 3: Fear of Failure (II)	1. Understand "failure tolerance" and "self-criticism." 2. Manage negative self-talk. 3. Develop emotional recovery strategies.	- Video: "They All Failed Before." - Writing task: Describe failure experiences. - Inner language rewriting training. - Step-by-step exposure to failure scenarios. - Self-compassion meditation.	- Vicarious learning (role models). - Reflective writing. - Cognitive restructuring. - Gradual exposure therapy. - Mindfulness meditation.
Lesson 4: Difficulty in Deciding (I)	1. Understand decision difficulty ⟶ procrastination. 2. Reduce choice overload/goal ambiguity. 3. Enhance task planning skills.	- TED video analysis (decision paralysis). - Scenario activation: Psychology competition prep. - Task decomposition & prioritization (Important-Urgent Matrix). - Pomodoro execution simulation.	- Expert insight integration. - Real-world task framing. - Chunking & prioritization tools. - Focused time-blocking technique.
Lesson 5: Difficulty in Deciding (II)	1. Understand perfectionism's role in decision difficulty. 2. Apply "minimum viable action" (MVA).	- Timed tasks: Draft essay intro, brainstorm self-care, plan study schedule. - Group reflection on	- Time-constrained practice. - Incremental progress emphasis. - Behavioral commitment

	3. Cultivate "completion > perfection" mindset.	progress vs. perfection. - MVA commitment cards.	contract.
Lesson 6: Task Aversiveness (I)	1. Identify task aversion triggers. 2. Understand components (boredom/frustration/low value). 3. Master task restructuring.	- Emotional sticker self-assessment. - Movie clip analysis (*Inside Out* Disgust). - ABC Emotion Theory lecture. - Group cognitive transformation formula design.	- Emotional labeling. - Metaphorical media analysis. - Cognitive-behavioral reframing (ABC model). - Collaborative reframing exercises.
Lesson 7: Task Aversiveness (II)	1. Identify distraction patterns. 2. Understand mindfulness regulation. 3. Apply mindfulness techniques. 4. Compare strategy effectiveness.	- Mindful breathing exercise. - Mindful reading experience. - Mindfulness task execution practice. - Group strategy analysis & voting.	- Breath-focused attention training. - Concentrated reading immersion. - Real-time mindfulness application. - Peer-led experiential evaluation.
Lesson 8: Rebellion Against Control (I)	1. Recognize rebellious procrastination mechanisms. 2. Transform demands ⟶ self-endorsed	- "Mini quiz" simulation with imposed rules. - Task reframing worksheet. - Motivational self-talk card creation.	- Controlled scenario elicitation. - Cognitive reappraisal (obligation ⟶ choice). - Visual motivational anchoring.

	goals. 3. Practice autonomy-supportive language.		
Lesson 9: Rebellion Against Control (II)	1. Link illusory freedom to procrastination. 2. Distinguish controlled vs. autonomous motivation. 3. Practice motivational reframing strategies.	- Video analysis of controlling language. - Motivation mapping (task positioning). - Reframing practice worksheet. - Role-play (avoidance ⟶ autonomy).	- Language deconstruction. - Spatial behavioral mapping. - Meaning/goal/method reframing paths. - Scripted behavioral rehearsal.
Lesson 10: Dependency	1. Understand dependency mechanisms. 2. Identify help-seeking delay triggers. 3. Shift from reliance ⟶ self-initiation.	- Dependency positioning game (zones). - "Letter to Inner Assistant" writing. - Self-initiation sentence practice.	- Self-categorization activity. - Compassionate self-dialogue. - Language pattern restructuring.
Lesson 11: Risk-Taking	1. Understand risk-taking procrastination traits. 2. Identify self-handicapping behaviors. 3. Express resistance via visual metaphor. 4. Build feedforward	- OH card dialogue (visual emotion association). - Feedforward Motivation Contract. - Excuse-to-intention group reframing.	- Projective imagery technique. - Pre-commitment contracting (reward/consequence). - Collective rationalization dismantling.

	motivation.		
Lesson 12: Review & Reflection	1. Synthesize procrastination components. 2. Identify effective personal strategies. 3. Express transformation visually/narratively. 4. Affirm growth.	- Group timeline warm-up. - HTP reflective drawing (House-Tree-Person). - Affirmation certificate completion. - Closing circle sharing.	- Collective memory recall. - Symbolic art therapy. - Formalized self-affirmation. - Ritualistic closure.

Lesson 1 The Orientation of student's academic procrastination

Content

In the evolving landscape of higher education, academic procrastination has become a widespread psychological barrier affecting student performance and emotional well-being. Defined as the intentional delay of academic tasks despite foreseeable negative outcomes, procrastination is reported by a majority of university students, especially under conditions of high academic pressure.

Modern research views academic procrastination not as a matter of poor time use, but as a multi-dimensional construct rooted in deeper psychological mechanisms. Six core components—fear of failure, difficulty in deciding, task aversiveness, rebellion against control, dependency, and risk-taking orientation—collectively shape students' avoidance behaviors and emotional responses in learning contexts.

As academic autonomy increases and cognitive demands grow, understanding the structure and function of procrastination is essential. Educators must identify its underlying patterns in order to develop targeted interventions that foster emotional regulation, decision-making confidence, and long-term academic engagement.

Objectives

1. To familiarize students with the concept of academic procrastination and its six components.

2. To introduce Self-regulated Learning model definition and its relevance to overcoming procrastination.

3. To establish a connection between mental health and academic procrastination, emphasizing the importance of self-regulated learning.

Duration: 90mins

Target: First-year undergraduates (Experimental group)

Teaching Materials

1. PPT

2. Multimedia

3. Whiteboard and markers

4. Timer

5. Learning link software

Lesson Program

1. Warm-up

1.1 Teacher self-introduction.

Teacher introduces self background, and teacher's interest in academic prcrasnation and self-regulated learning.

1.2 Icebreaker

Teacher asks each student to quickly speak one word that describes how they feel about starting the new semester. Teacher then record these words and review them at the end of the class to see if students' feelings have changed.

1.3 Video playing.

Teacher plays 1-2 short videos of college students' daily study processes, showing typical procrastination behaviors. After the video, the teacher asks: "What procrastination behaviors did you see in this video?" Teacher summaries course topic and start the small lecture.

1.4 Small-Lecture

The teacher begins by reciting the first line of the classic ancient poem "Tomorrow Poem": "Tomorrow after tomorrow, how many tomorrows there are." Then, the students follow with the second line: "If I wait for tomorrow, everything will be in vain." Teacher introduces the concept of academic procrastination. Then, teacher show the course plan, outline the course syllabus, briefly introduce the main content of each class, and emphasize the course objectives by PPT.

2 Lesson Activity

2.1 Story telling

The teacher demonstrates by sharing self-real experience of procrastinating on graduate school assignments. Teachers use vivid language to describe the procrastination process and explain why procrastination is happened in the most difficult course. Teacher uses different emotion word to describe the emotions teacher experienced, and the eventual consequences of the delay. Teacher then informs the students that we often encounter situations of academic procrastination. During the story telling activity, teacher creates a relaxed classroom atmosphere to reduce students' negative feelings about academic procrastination.

2.2 Group reflection

After teacher's storytelling, teacher divide students into 9 groups (5 students) and let each student state academic procrastination experience in their college life to their group members. After 15 minutes, teacher ask students to discuss following questions:

Q1. Have you experienced academic procrastination in your academic life?

Q2. How academic procrastination impact your study or life and how do you feel?

Q3. What learning strategy do you think might helpful?

2.3 Collaborative Strategy Building

Teacher let students write down the learning method on group white board. Each group send one representative student to share their group discussion results. And teacher summarize student's discussion results and highlight the connection between academic procrastination and mental health.

3 Conclusion and Evaluation

3.1 Conclusion

Academic Procrastination is important in the college lift, also closely related to psychological factors. Through the course, students can form basic knowledge and framework for overcoming procrastination, most students could accurately identify

common academic procrastination. Students feel study is an interesting process, and students gradually develop a positive mindset. Besides, students realize that procrastination can be changed and that "small progress" is the starting point of success. Additionally, by fostering a supportive and encouraging environment, students are motivated to take action and make consistent progress towards their academic goals.

3.2 Evaluation

In this class, teacher assess the students' participation and feeling. Teachers give extra points to students with outstanding performance and register them on the student class activity rating sheet of this semester. After the class, students are required to fill out the Emotional Shorthand for Academic Procrastination Form.

Emotional Shorthand for Academic Procrastination Form

Date: _____ Term Tasks:_____

Items	Content
Why I'm stuck...	
How I feel...	
My procrastination behavior...	
Coping method...	
Anti-Procrastination Hacks.	Next time I will (one sentence): _____

Lesson 2 Fear of Failure (I)

Content

Fear of failure is a core emotional driver of academic procrastination. It refers to the avoidant emotional response that arises when students perceive academic tasks as a threat to their competence or self-worth. This fear is often linked to two cognitive distortions: the belief that "effort does not guarantee success" and the internalized idea that "failure equals personal inadequacy" (Cognitive Reframing, 2024).

When students associate failure with negative self-evaluation, they may use procrastination as a defense mechanism to avoid potential disappointment. Delaying academic tasks provides short-term emotional relief but often results in long-term consequences, including reduced motivation, lowered self-confidence, and emotional distress. Research indicates that students with a strong fear of failure are significantly more likely to procrastinate and experience a drop in self-evaluation after doing so (Steel, 2007).

Over time, this cycle reinforces avoidance and deepens self-doubt. Breaking this pattern requires helping students reframe failure—not as a sign of inadequacy, but as a necessary step in learning. Studies show that students who adopt this mindset are more resilient and less likely to delay tasks (Kapur, 2022). In this course, understanding the emotional roots of procrastination is the first step toward changing the behavior.

Objectives

1. Students can understand the definition and significance of fear of failure.

2. Students can understand the psychological mechanism of fear of failure and its connection with academic procrastination, and recognize the positive value of failure as a learning opportunity.

3. To reduce the emotion of fear of failure in their studies through specific activity.

Duration: 90mins

Target: First-year undergraduates

Media/Materials

1. PPT

2. Multimedia

3. Worksheets

4. Timer

5. Rewards (e.g., stickers)

6.Learning link software

Learning Program

1 Lead in

1.1 Playing the Movie Clip

Teacher plays a clip from the movie "Inside Out" showing that Riley's mind is inhabited by five main emotions: Joy, Fear, Anger, Disgust, and Sadness, to attract student's attention and interest in this class. Then teacher play scenes from "Inside Out" where Fear takes the lead (such as Fear making Riley avoid danger, Riley being extremely nervous during her self-introduction in class).

1.2 Guided imagination

Teacher asks students: "What role does Fear play in Riley's brain? How does it affect her actions?" Then, the teacher asks students to close their eyes and imagine the scene of "having to submit a paper tomorrow but not having started yet". The teacher guides with words: "Are your palms sweating? Is your heart beating faster? This is Fear activating your amygdala!"

1.3 Small lecture

Teacher first introduces the definition and significance of fear of failure by PPT. Teacher guide students understand the psychological mechanisms of fear of failure, such as catastrophic assumptions, self-worth binding, and the fight-or-flight response. Explain how these mechanisms cause academic procrastination.

Then Teacher shows a vicious cycle diagram of procrastination (PPT dynamic display): Fear of failure ⟶ Avoiding tasks ⟶ Last-minute cramming ⟶ Poor performance ⟶ Reinforcing the belief of "I'm not capable enough" ⟶ Higher fear. Teacher emphasizes the impact of fear on learning efficiency and mental health.

2 lesson Activity

2.1 Grouping and Role Allocation

The teacher allowed students to choose their own team members, with five students forming one group, totaling nine groups. Each group member freely selected a role from Inside Out movie. The teacher explained that in the activity, Fear was the dominant emotion, and the other emotions would interact around Fear.

2.2 Scenario Setting

The teacher set the scenario for the students—they were in the situation of "completing a midterm microeconomics short essay assignment for the semester." The students were asked to engage in interactions centered around this scenario.Afterward, the teacher used the random selection tool on the learning platform to determine the order of the groups' role-play. Students were encouraged to use body language and emotional expressions to enhance their performances.

Student 1: Fear – Represents the fear of failure and procrastination (e.g., "What if I fail? Maybe I should just wait until tomorrow.").

Student 2: Joy – Representing positive thinking and motivation, help Fear find solutions (e.g., "Let's start small! Even a little progress will make us feel great!").

Student 3: Sadness – Represents feelings of inadequacy or hopelessness, reflect the negative emotions brought about by Fear (e.g., "I'm not good enough to do this. Why even try?").

Student 4: Anger – Represents frustration or impatience, rcauses anxiety and stress (e.g., "This is so difficult! Why do we have to do this?).

Student 5: Disgust – Represents avoidance or disdain for the task, reflect the procrastinating behavior caused by Fear (e.g., "This paper is so boring. I'd rather do anything else!").

2.3 Role-playing and discussion

The teacher said "let's start the role play", and at the same time played the music from the movie "inside out" to create an immersive experience. The first group of students began the role play performance.

The teacher prompted that three minutes were up and asked the group to start discussing solutions to the fear of failure, with a time limit of two minutes. After the discussion, the group sent one member to state in concise language what strategy the group ultimately adopted to overcome the fear of failure. The first group finishes their performance, and the second group begins until all five groups finish their performance. The teacher reminded the students that while other groups were performing, the remaining groups needed to keep quiet, watch and listen carefully to others' performances, and think about whether their strategies were feasible. Can it effectively help Fear overcome the fear of failure?

2.4 Anonymous voting and rewards

After the student groups completed the role play in sequence, other groups vote for the "Most Creative and Effective Solution." the teacher asked each group (except their own group) to vote anonymously on Learning Pass for the "Most Creative and Effective Solution. The teacher reminds the students that the voting criterion is whether the solution is feasible and can effectively overcome the fear of failure. The teacher announced the group with the highest number of votes and presented sticker rewards. And also gave affirmation to the teams that did not win, expressing, "The performance of each team was excellent. Everyone has something worth learning from!" The teacher ended the class with warm and inspiring words, allowing the students to leave the classroom with positive energy.

3 Conclusion and Evaluation

3.1 Conclusion

Through this course, students can understand the formation mechanism of the "fear of failure" and how it affects our study and life. By watching the movie clips of "Inside Out", students intuitively see the different functions of emotions in the brain and better understand their psychological states when facing tasks. Then, through role-playing activities, students personally experienced how to overcome the fear of failure

with different strategies. Some groups proposed the "sandwich decomposition method", breaking down tasks into minimum actions, fault-tolerant Spaces and immediate rewards. Some groups emphasized the importance of "redefining failure", viewing it as an opportunity to learn rather than a denial of self-worth. Students deeply realize that the fear of failure is normal, but it can be managed through the right methods.

3.2 Evaluation

3.2.1 Task 1: Students fill out the "Fear Transformation Table", rewriting the original sentence "I'm afraid of _____" as "Fear of failure reminds me _____" (e.g., "Afraid of mistakes ⟶ Fear reminds me to double-check carefully"); therefore, I can _____" (e.g., "Set a 30-minute focused checking period").

3.2.2 Task 2: Students complete the "Emotional Toolbox" to help Fear overcome the fear of failure. (Choose the three tools you like in the following table and explain their functions. You can refer to the examples or give full play to your creativity to design unique tools.)

Tool name	Tool description	Tool function
1. small goal decomposition		
2. instant rewards		
3. positive quotes		
4. Emotional Diary		
5. Support from partners		
Your ideas/method		

Lesson 3 Fear of Failure (II)

Content

Indeed, emotionally resilient learners are not those who avoid failure, but those who learn how to coexist with it. (Neff, K. D., 2003). Fear of failure is a deeply rooted cognitive-emotional experience that inhibits individuals from taking action, often leading to chronic procrastination. However, this fear is not only cognitive—it is also affective. It lives in emotional memory, manifests in physiological stress, and often triggers avoidance behavior.

Emotional repair and self-compassion are powerful tools in addressing this inhibition. Research shows that individuals with high failure tolerance are more willing to engage in challenging academic tasks, show greater emotional stability, and are less prone to rumination and self-sabotage (Neff, 2003). By engaging in structured emotional exposure (e.g., revisiting small failure experiences in a safe setting), students can gradually build resilience to the negative effect associated with anticipated failure.

Many procrastinators internalize self-judgment as a performance standard. Observation of students' internal self-talk often reveals harsh, punitive language following perceived academic setbacks. By practicing self-compassion-based interventions (Neff & Germer, 2013), learners can reframe failure as growth feedback rather than personal deficiency. These exercises shift inner dialogue from "I can't afford to fail" to "Even if I fail, I can learn." Emotion-focused strategies such as positive self-talk, future self-integration, and motivational language practice help learners transition from avoidance to engagement. Psychological safety—both intrapersonal and in the classroom setting—becomes a foundation for action. Instead of avoiding failure, students learn to anticipate, accommodate, and recover from it with less psychological cost.

Objectives

1.To understand the psychological mechanisms of "failure tolerance" and "self-criticism".

2.To learn how to recognize and manage internal negative self-talk.

3.To enhance emotional recovery after failure through practical exercises and develop "bounce-back strategies" to strengthen self-support.

Materials

1. PowerPoint
2. Guided audio and text for self-compassion exercises
3. Reflection worksheets
4. Blank paper and colored markers
5. Background music for the session

Learning Program

1 Lead-in

1.1 Emotion-triggering video & writing task

Before the class content begins, the teacher plays a short, edited video titled "They All Failed Before": it includes clips of famous people's failures, Olympic athletes' falls, and scientists' failed experiments. Then, the teacher asks questions and presents them on a PPT:

"Have you ever had a similar experience? How did you evaluate yourself at that moment?"

The teacher asks each student to write down on paper their most recent learning experience of "task failure or not meeting expectations". The teacher encourages students to write two sentences using the sentence patterns "What was my thought at that time? What emotions did I feel?" The teacher writes several typical emotional keywords (such as shame, anger, withdrawal, self-blame, etc.) on the blackboard.

1.2 Small Lecture

Teacher introduces the *Shame Loop of Failure* using a diagram: failure ⟶ shame ⟶ self-criticism ⟶ avoidance ⟶ procrastination ⟶ reinforced incompetence. Next, the teacher presents a slide titled “Quotes from the Inner Critic”, reading aloud a few typical examples. Then, the teacher invites students to reflect:

“Have you ever said these things to yourself? Do you think these words empower you—or make you want to give up?”

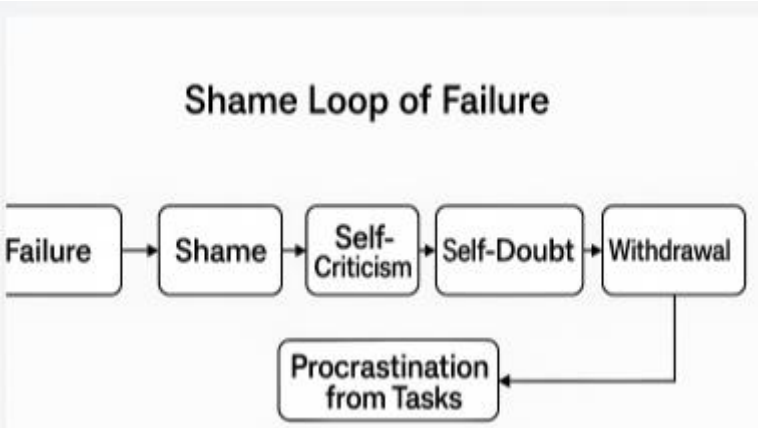


Figure 11 Shame Loop of Failure

Source: Created by author

The teacher then introduces self-compassion as an emotional regulation strategy. In clear and accessible language, the teacher explains the three core components of self-compassion: Mindful Awareness – acknowledge the pain and discomfort of failure without avoiding or exaggerating it. Common Humanity – understand that failure is a normal part of life and shared by everyone—not a personal flaw. Self-Kindness – Talk to yourself like a friend: not “What’s wrong with me?” but “This is tough, but I can try again.”

After the lecture, the teacher leads the class into the first experiential activity: “Inner Language Rewriting Practice.”

2 lesson Activity

2.1 Inner Language Rewriting Training

The teacher said, "Next, we are going to try to rephrase those harsh words. Not pretending everything is fine, but accompanying ourselves in a gentler and more realistic way." Then the teacher displayed an example on the blackboard:

Original sentence: "I'm just hopeless."

Rewritten: "I feel very down, but I still have a chance to make a change."

Students write the rewritten version on the "Rewrite Card"; they read each other's rewrites with group members and feel the emotional changes.

2.2 Step-by-Step Exposure to Failure Scenarios Practice

The teacher says, "We usually avoid failure because we imagine the worst possible consequences. But we seldom stop to ask ourselves, 'Is that really the worst? Can I really not handle it?' " Then, the teacher presents three failure scenarios (PPT):

Scenario 1: Submitting homework early but finding out the format is incorrect.

Scenario 2: I was not fluent in my speech and was laughed at by my classmates.

Scenario 3: My request for extra credit on the assignment was rejected by the teacher.

Each student selects a situation that resonates with them the most; they complete the sentence with "If it were me, the consequence I fear the most would be... but I might also..."; when sharing, the teacher encourages them to add a sentence: "How would I take care of myself in such a situation?"

2.3 Self-Compassion Meditation and Writing"

The teacher plays a 3-minute gentle and soothing audio and recites the following sentences: "I am going through difficulties... Many people have also struggled like this... I am willing to treat myself gently at this moment." The teacher asks the students to close their eyes, relax their breathing, and follow the teacher's guidance. After the meditation, the students write down one sentence on the paper: "What I want to say to myself at that time is...".

Teacher then ask students to decorate the sentence they have written as a "Failure Support Card" and stick it in their textbooks or schoolbags as a "gentle reminder when facing failure".

3 Conclusion and Evaluation

3.1 Conclusion

In this session, students explored how their fear of failure is often accompanied by harsh inner criticism and shame, which together form a cycle that leads to withdrawal and procrastination. Through guided discussions and reflective activities, students identified the negative language they often direct at themselves and learned how to transform it into more supportive and realistic self-talk.

By practicing emotional exposure in imagined failure situations, students realized that failure is not the end, but a normal part of the learning journey. The self-compassion meditation and writing activities helped students recognize that being kind to oneself does not mean avoiding responsibility—it means making space for resilience and restarting.

Many students reflected that for the first time, they were able to “speak differently” to themselves after setbacks—less judgmentally and more constructively. They also reported that they feel more prepared to handle frustration without resorting to avoidance. The lesson marked an important shift: from fearing failure to building emotional tools for facing it.

3.2 Evaluation

In this session, evaluation focuses on students’ ability to translate emotional insight into practical self-regulation. Rather than judging performance by correctness, the assessment emphasizes emotional literacy, self-awareness, and language transformation. Particular attention is given to students’ tone and mindset shifts—from harsh inner criticism to more balanced, compassionate self-dialogue. Through written

reflections, observed language use, and application-oriented sharing, the teacher gathers evidence of how each learner is starting to reshape their relationship with failure.

Lesson Evaluation Form

Student Name: _____ Student ID: _____ Group No.: _____ Date: _____

Dimension	Evaluation Criteria	Score (1–5)	Teacher Comments / Observations
Emotional Awareness	Can recognize inner critical thoughts after failure and attempt to reframe them into more supportive self-talk. Demonstrates accurate emotional expression and uses appropriate emotional vocabulary.		
Failure Tolerance	In failure scenarios, describes specific worries and expresses realistic recovery strategies. Shows movement from catastrophic thinking to grounded evaluation.		
Self-Compassion	Demonstrates warmth, empathy, or encouragement in support cards or meditative writing. Transforms statements like 'I can't' into 'I can try again'.		
Application Readiness	Uses forward-looking language such as 'I will try...' or 'Next time I		

	want to…'. Applies learned strategies to future tasks.		
Self-Reflection (Optional)	Exit Card or open reflection demonstrates learning gain, emotional shift, or strategy internalization.		

🔍 Scoring Guide

5 = Excellent (clear insight and strong application potential)

4 = Good (thoughtful expression with some depth)

3 = Satisfactory (meets basic expectations, standard expression)

2 = Emerging (partial understanding or weaker expression)

1 = Not Yet Demonstrated (difficulty expressing or applying dimension)

Lesson 4 Difficulty in Deciding (I)

Content

"Difficulty in deciding" refers to the cognitive overload and emotional stress that individuals experience when facing multiple tasks, options, or expectations—yet struggle to determine where to begin or what matters most. In academic settings, this difficulty often leads to stagnation, indecisiveness, and ultimately, procrastination. Students may find themselves paralyzed not by a lack of ability, but by an excess of choices and the fear of choosing incorrectly.

This state is typically the result of several interrelated psychological patterns. First, students may face **unclear task priorities**, especially when multiple assignments compete for attention without clear deadlines or importance hierarchies. Second, **choice overload**—the presence of too many options or information sources—can exhaust

working memory and reduce decision-making efficiency (Ferrari, 2010). Third, students may exhibit a **fear of making wrong decisions**, believing that one poor choice could compromise their entire academic standing. This anxiety is often linked to **perfectionist tendencies**, where individuals delay decisions in pursuit of the "ideal" answer or action. Finally, emotional undercurrents such as **self-doubt**, **performance anxiety**, and **intolerance for ambiguity** further amplify hesitation, making even small tasks feel psychologically burdensome.

These patterns can create a mental bottleneck in the learning process: students know they should begin, but can't decide *how* to begin. Over time, this leads to a breakdown of task initiation, reduced self-efficacy, and a growing sense of failure. Left unaddressed, decision-making paralysis can become a self-perpetuating loop that undermines both academic performance and emotional well-being (Steel, 2007).

Objective

1. To help students understand how difficulty in making decisions leads to academic procrastination.

2. To help students reduce choice overload and goal ambiguity in academic tasks through practical activities involving task decomposition and prioritization

3. To enhance students' task planning skills when faced with multiple academic tasks.

Duration: 90 minutes

Target: First-year undergraduates

Media/Materials

1. PPT
2. Multimedia
3. Timer
4. Notebook

Learning Program

1 Lead in

1.1 Video Activation and Emotional Recall

Teacher plays the first three minutes of "The Surprising Science of Motivation | Tim Urban at TED" and a segment of "Why More Choices Make Decisions Harder | TED-Ed".

Teacher asks and let students start discusses: "Have you ever experienced the procrastination behavior or decision-making difficulty mentioned in the video?" "What do you think are the reasons for these behaviors?" "Which parts of the video impressed you the most and why?" After simply discussion, teacher ask students to spend 1–2 minutes writing down their initial feelings on their notebook about the video content.

Teacher then introduces the topic and explains that decision-making difficulty is one of the core components of academic procrastination, typically manifested as: Inability to determine priorities when faced with multiple tasks.

1.2 Small Lecture

Teacher make theoretical explanation by PPT, show the definition about decision-making difficulty and the reason caused decision-making difficulty in academic procrastination, such as choice overload、 vague goals and task initiation delay.

Teacher introduce Value of Task Decomposition guide student understand the role of Breaking down complex tasks into manageable small steps. And introduce common Priority Sorting Tools (Important-Urgent Matrix and Pomodoro Technique) by ppt, demonstrates how to categorize tasks based on their importance and urgency,and explains the benefits for maintaining focus and productivity through Pomodoro Technique by different case. In the end of lecture, teacher previews that the next class will cover the aspect of perfectionism in decision-making difficulties.

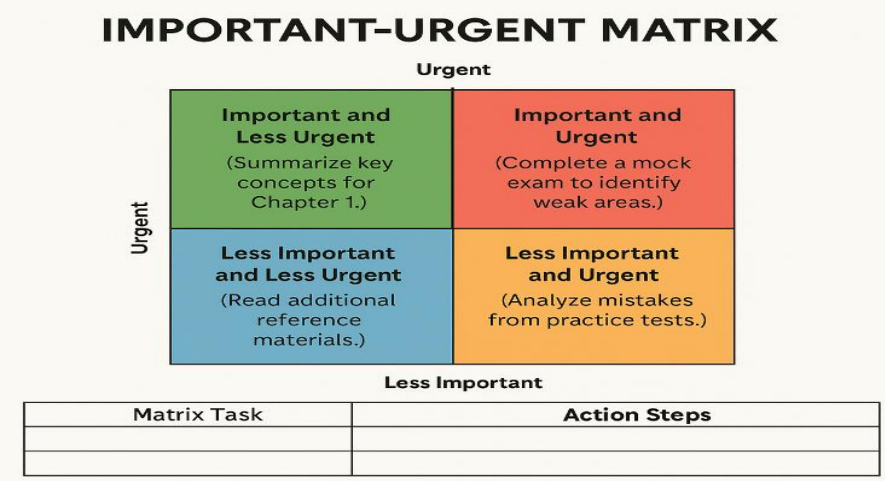


Figure 12 Shame Loop of Failure

Source: Created by author

2 Lesson Activity

2.1 Scenario Activation: A Realistic Task Framing

Teacher introduces the college will host a Psychology Knowledge Competition in April. The top 5 winners will receive cash prizes, certificates, and extra credit in the college evaluation system. The teacher emphasizes the importance of breaking down complex tasks into smaller, manageable steps to help students reduce procrastination and improve efficiency in preparing for the competition.

2.2 Tool Integration Practice

Students are required to use a task decomposition table to break down the preparation process into specific steps, actionable steps(e.g., determining the review scope, organizing key points, making review cards, etc.). Students apply the Important-Urgent Matrix to prioritize their decomposed steps and clarify "what must be done first". The teacher provides an example to guide students:

Important and Urgent: Do practice tests (e.g., "Complete a mock exam to identify weak areas").

Important but Not Urgent: Organize key points (e.g., "Summarize key concepts for Chapter 1").

Urgent but Not Important: Review wrong answers (e.g., "Analyze mistakes from practice tests").

Not Important and Not Urgent: Optional tasks (e.g., "Read additional reference materials").

2.3 Pomodoro Execution Simulation

Students based on their task decomposition table and Important-Urgent Matrix, to use the Pomodoro Technique to work intensively for 25 minutes, followed by a 5-minute break. The teacher sets a timer on the screen for 30 minutes, reminding students to start their break after 25 minutes. During the 5-minute break, the teacher plays relaxing music to help students unwind and recharge and students chat with each other freely. The teacher encourages students to repeat this cycle (25 minutes of work + 5 minutes of rest) to maintain focus and productivity after class.

2.4 Group Debrief & Reflective Dialogue

Students engage in a group discussion to share their experiences and feelings about the task execution process. The teacher provides guiding questions to facilitate the discussion:

Q1: How did you feel during the 25-minute focused work session? Was it easy or challenging to stay focused?

Q2: Did the Pomodoro Technique help you manage your time better? Why or why not?

Q3: What difficulties did you encounter while working on your tasks? How did you overcome them?

Q4: How did prioritizing tasks using the Important-Urgent Matrix affect your workflow?

Q5: What strategies did you find most helpful in staying productive?

Each student shares their thoughts and experiences with the group, students provide constructive feedback to each other and if students encountered common

challenges, the group brainstorms solutions together. The teacher circulates among the groups, listening to their discussions and providing additional guidance if needed, and highlights effective strategies shared by students and encourages others to try them in their next work session.

3 Comprehensive Conclusion and Evaluation

3.1 Conclusion

In this lesson, students systematically learned about decision-making difficulties and how these challenges contribute to academic procrastination. They explored the psychological and behavioral factors that make decision-making difficult. Through practical activities, students gained hands-on experience in breaking down complex tasks into manageable steps using task decomposition and prioritizing tasks using the Important-Urgent Matrix.

Additionally, students practiced the Pomodoro Technique to enhance focus and productivity during task execution. By engaging in group discussions and reflections, they identified personal challenges in decision-making and developed strategies to overcome them. These skills not only help students reduce procrastination but also improve their ability to manage multiple academic tasks efficiently, leading to better academic performance and reduced stress.

3.2 Evaluation

The teacher evaluates students' engagement and understanding by observing their participation in group discussions, the quality of their task decomposition tables, and their ability to apply prioritization tools.

Students fill out a reflection form to evaluate their performance and learning during the lesson. The teacher reviews students' reflection forms to assess their self-awareness and ability to identify challenges and improvement strategies.

Reflection Form

Instructions: Reflect on your experience using the planning tools and strategies during the activity.

Reflection Questions	Your Responses
1. What difficulties did I encounter in task decomposition and priority ranking?	
2. How did these difficulties affect my task initiation and execution?	
3. How can I improve my task decomposition and ranking methods?	
4. Which strategies were most helpful to me during task execution?	
5. Did I complete the task as planned? If not, why?	
6. How would I adjust my plan next time when facing a similar task?	

Lesson 5 Difficulty in Deciding (II)

Content

When students face academic decision-making, the paralysis they experience is often not due to lack of knowledge or resources—but from a deep-seated pursuit of perfection. **Perfectionism** refers to the tendency to set excessively high standards, accompanied by overly critical self-evaluation and fear of mistakes. While often mistaken as a motivator, perfectionism is in fact a **paradoxical inhibitor of performance**, especially in decision-making contexts.

In academic settings, perfectionism manifests in multiple ways: students may **delay initiating a task** until they feel completely ready, spend hours revising minor details, or become emotionally overwhelmed by the fear that their performance will not meet expectations. These tendencies often lead to **choice paralysis**, **over-analysis**, and **emotional avoidance**, forming a cognitive-emotional loop that reinforces procrastination (Steel, 2007).

Research also shows that **self-oriented perfectionism** (unrealistic demands on oneself) and **other-oriented perfectionism** (overcritical expectations of others) both contribute to diminished academic engagement and poor task completion rates. When students define success as “flawlessness,” the risk of falling short becomes too threatening—and doing nothing feels safer than doing it imperfectly.

Objectives

1. To understand how perfectionism intensifies decision-making difficulties and procrastination.

2. To learn strategies such as the "minimum viable action" to break the perfectionism cycle.

3. To help students cultivate the mindset that "completion is better than perfection” through practical activities,

Duration: 90 minutes

Target: First-year undergraduates

Media/Materials

1. PPT

2. Multimedia

3. Timer

4. Notebook and worksheet (for task drafts, MVA commitment, and reflection)

5. SuperStarLearn APP

Lesson Program

1. Lead in

1.1 Review of Previous Strategy

1.1 Relatable Prompt

Teacher begins with a short, engaging question on PPT: “Have you ever delayed something just because you didn’t feel ‘ready enough’ to make it perfect?” Students are invited to raise hands or share one word aloud (e.g., “essay,”

“presentation,” “study plan”). Teacher adds: “That hesitation—that loop of thinking it needs to be perfect—is what we’ll talk about today.”

Then the teacher reviews: “Last week, we explored how breaking down tasks and ranking priorities can reduce mental overload.” Teacher asks: “Did anyone try using the task decomposition strategy? What worked or didn’t?”

Finally, the teacher connects: “Even with clear steps, we sometimes don’t start—because perfectionism blocks us. Today, we’ll deal with that block.”

1.2 Small Lecture

To begin, the teacher uses a PPT slide to introduce the definition of perfectionism and highlights its two main types: Self-oriented perfectionism—setting excessively high standards for oneself; Other-oriented perfectionism — holding unrealistic expectations of others.

The teacher explains that while striving for excellence can be healthy, perfectionism often becomes counterproductive when it paralyzes action. To illustrate, the teacher shows two relatable academic scenarios on the screen: A student rewriting the same essay multiple times and never submitting it. A group project member feeling frustrated when others “don’t meet their standards”

Next, the teacher explains how perfectionism creates decision-making blocks, using a diagram to show four common traps:

1. Too many choices ⟶ stuck deciding
2. Over-thinking ⟶ stuck analyzing
3. Avoiding emotions ⟶ stuck fearing failure
4. No clear goal ⟶ stuck chasing “perfect”

Then, the teacher introduces the strategy: Minimum Viable Action (MVA)—doing just one small thing to get started. The lecture ends with a teaser: “You’ll now have a chance to try this for yourself in a timed activity. The challenge is to act, not perfect.”

2 Lesson Activity

2.1 Activity Framing

Teacher introduces the activity in this lesson. Saying "We're going to practice overcoming perfectionism by completing a series of short, timed academic tasks. The goal is to focus on progress, not perfection. Remember, the minimum viable action is your best friend here—just take the first step and keep moving forward!"

3.2 Students are asked to complete three timed tasks, each designed to reflect common academic scenarios where perfectionism leads to procrastination. Teacher presented three tasks on the ppt.

Task 1: Draft an Essay Introduction. "You have 5 minutes to write an introduction for an essay on the topic: 'The Impact of Social Media on Mental Health.' Don't worry about making it perfect—just get your ideas down!"

Task 2: Brainstorm Self-Care Strategies. "In 5 minutes, brainstorm a list of self-care strategies that can help improve mental health. These could be simple activities like taking a walk, listening to music, or talking to a friend. Don't worry about organizing or prioritizing them—just write down as many ideas as you can think of!"

Task 3: Plan a Study Schedule. "You have 5 minutes to draft a study plan for an upcoming exam. Just list the subjects and the time you'll spend on each—no need to make it detailed or perfect!"

2.3 Group Reflection

The teacher asks students to reflect on their experience completing the timed tasks. Teacher prompt students with questions "How did it feel to focus on progress rather than perfection? Did you find it easier to get started when you weren't worried about making everything perfect?" The teacher then invites a few students to share their experiences, particularly how they felt about working under time pressure and whether the "minimum viable action" approach helped them get started.

2.4 Personal Commitment: MVA Application

The teacher reinforces the key lesson by saying, “To overcome perfectionism in your academic work, remember: small steps lead to big progress. Think of one task this week where you’ll use the minimum viable action approach.” Students are then asked to write down their commitment, specifying the task and the small step they will take to get started. Then, students share their commitment with a classmate, and teacher circulates among students, review the students' commitment and providing additional guidance if needed.

Minimum Viable Action (MVA) Commitment Card

Your Name:	
Avoided Task:	
Minimum Viable Action:	
When will you do it?	
Who will you tell / share this with?	

3 Conclusion and Evaluation

3.1 Conclusion

In this lesson, students know how perfectionism contributes to decision-making difficulties and procrastination, particularly in academic settings. Students also gained insight into how setting unrealistically high standards can lead to over-analysis, emotional avoidance, and task paralysis.

The timed activities provided students with hands-on practice in applying learning strategies. By focusing on progress rather than perfection, students experienced how small, actionable steps can help overcome procrastination and improve task initiation. The reflection and commitment phase further reinforced these concepts, encouraging students to apply the strategies to their real academic challenges. By integrating theory and practice, students are now better prepared to tackle decision-making challenges in their academic and personal lives.

3.2 Evaluation

To reinforce the concepts from both Lesson 4 and Lesson 5, teacher assign reflective homework, and reading tasks. To ensure students continue to engage with the material outside of class and apply the strategies to their academic.

Reflective Homework Assignment

Task: Students are asked to write a 1–2 pages reflection on their experiences with decision-making difficulties and perfectionism. Submitting the reflection to Superstar Learning APP.

Prompt as following:

1. Recall a recent academic task where you struggled to make a decision or complete the task due to perfectionism.

2. Describe how you felt during the process and what specific challenges you faced (e.g., over-analysis, fear of failure, choice overload).

3.Reflect on how the strategies from Lessons 3 and 4 (e.g., task decomposition, minimum viable action, completion over perfection) could have helped you in that situation.

4.Commit to using one of these strategies for an upcoming task and outline your plan.

Reading Material:1. Procrastination: Why You Do It, What To Do About It Now

Authors: Jane B. Burka, Lenora M. Yuen

Content Introduction: This book delves deeply into the psychological roots of procrastination, including perfectionism, fear of failure, and difficulty in deciding. It offers practical strategies to overcome procrastination and helps students manage their time and tasks more effectively.

Recommendation Reason: Highly relevant to classroom content, it helps students understand the relationship between procrastination and perfectionism.

Access Method: Available as an e-book or through library borrowing.

2. "Decision Making and Judgment"

Author: Scott Plous

Content Introduction: This book analyzes common pitfalls in human decision-making processes from a psychological perspective, such as choice overload and the influence of emotions, helping students understand the reasons behind decision-making difficulties.

Recommendation Reason: Highly relevant to the "Decision Difficulties" theme covered in class.

Available as an e-book or through the school library.

3. Open Course on Psychology: Perfectionism and Mental Health

Presenter: Professor of Psychology from Peking University

Content Introduction: The course delves into the psychological mechanisms of perfectionism and its impact on mental health, suitable for college students.

Recommendation Reason: Strong academic content, closely related to the class theme.

Link: NetEase Open Courses (search for "Perfectionism and Mental Health")

4. TED Talk: The Inner World of a Master Procrastinator

Presenter: Tim Urban

Content Introduction: The speaker humorously reveals the psychological mechanisms of procrastination and explores the relationship between perfectionism and procrastination.

Recommendation Reason: Engaging and relatable, likely to resonate with students.

Link: Bilibili Video

Note: Students are required to choose either a book or a video to read/watch.

Think the following questions:

1. What is the main point of this book/video?
2. Have you ever had a similar experience? Please provide an example.

3. What strategies have you learned that can be applied to your studies or life?

4. In the next class, students will share their reading/watching experiences in groups.

Lesson 6 Task Aversiveness (I)

Content

Task aversiveness refers to the emotional resistance students experience when facing academic tasks that are perceived as boring, frustrating, ambiguous, or lacking immediate value. While procrastination is often mistaken for laziness, it is more accurately a form of emotion-driven avoidance. Students delay tasks not because they cannot do them, but because they wish to escape the uncomfortable emotions associated with doing them—confusion, pressure, or even boredom (Pychyl & Flett, 2012).

According to ABC Emotion Theory, emotions do not arise directly from tasks themselves, but from one's beliefs and interpretations about those tasks. For example, the thought "This assignment is meaningless" can trigger disengagement, while "I always mess this up" leads to anxiety and withdrawal. These internal appraisals silently activate procrastination behaviors even before a student consciously realizes it. Therefore, the key to reducing task aversiveness lies not in changing the task, but in changing the way students think about the task. Cognitive reappraisal refers to the process of adjusting one's interpretation of a task in order to generate more constructive emotional responses. It is not forced optimism, but a guided reframing of inner narratives. Through structured sentence-level transformations, students learn to identify hidden irrational beliefs and replace them with more adaptive ones. For example, "This is so tedious" might become "It's repetitive, but I'm practicing consistency."

Objectives

1. Students can accurately identify typical triggering situations of their own task aversion.

2. Students can understand the constituent elements of task aversion (boredom/frustration/low sense of value).

3. Students master the basic skills of task restructuring.

Materials

1.PPT

2.Notebook

3. Emoji Stickers

4. Multimedia

5. Task Aversion Self-Assessment Scale

6. Projector

Lesson Program

1 Lead in

1.1 Emotional Stickers and movie clips

Before the class began, the teacher asked the monitor to distribute chat stickers frequently used on WeChat (disgust / anger / numbness / anxiety / hesitation) to the students. When the class started, the teacher asked the students a question: "What was your first reaction when you received the notice that 'the group assignment is due next week'?" The students quickly chose their stickers and stuck them on their notebooks. The teacher looked through the stickers and concluded, "It seems that the sticker for disgust was chosen the most, indicating that it is a common experience. Today, we will explore it."

The teacher plays a classic scene from "Inside Out" featuring "Disgust" (such as the instinctive rejection of broccoli) . The teacher asks, "How does 'Disgust' help Riley avoid things she doesn't like? (Such as refusing to eat bad-tasting food, staying away from 'uncool' behaviors)" . Then, teacher let students start a free discussion: listing

similar protections in real life. The teacher asks students to think about the question: "If 'Disgust' completely takes over the brain, what would Riley miss?" What would you like to say to Disgust?" Students are required to write 1-2 sentences in their notebooks, and then the teacher randomly selects 5 anonymous ones to read aloud.

1.2 Small Lecture

The teacher uses PPT to explain the definition of task aversion theoretically. It is clarified that task aversion is the core factor of academic procrastination, referring to the strong negative emotional experience (such as irritability and resistance) that students have when facing specific learning tasks. The teacher introduces the three main causes of task aversion: low sense of control, high frustration expectation, and lack of meaning. Three subject cases are presented to let students initially understand the specific manifestations of task aversion. Case 1: E-commerce data analysis; Case 2: High frustration expectation - Online store operation; Case 3: Lack of meaning - Manual calculation of e-commerce logistics costs. The teacher shows each page of the PPT and marks the corresponding cause characteristics and typical emotional responses for each case.

The teacher systematically expounds the ABC emotion theory through the PPT system. The core elements A (Activating event): the actual characteristics of the triggering event, B (Beliefs): the distinction between rational and irrational beliefs, and C (Consequence): the mechanism of generating emotions and behaviors are analyzed. The teacher uses dynamic PPT to demonstrate the causal relationship chain of the three elements of ABC. It is shown that the task (A) itself does not directly lead to emotions/behaviors (C), but our beliefs (B) directly affect the outcome in the middle. The teacher introduces relevant cases.

The teacher systematically explains and introduces the cognitive reappraisal technique through the concept mapping teaching method. Three core types of cognitive reappraisal are presented: situation selection, attentional deployment, and cognitive

change. At the same time, the teacher uses multimedia cases to explain the cognitive reappraisal technique. Play a case: Conflict in group project division of labor. The teacher plays a video of a group project discussion. The teacher pauses the video and guides the students to think about what their first thought is when there is a conflict in the group and how to change this cognition?

At the end of the lecture, the teacher summarized the ABC theory and cognitive reappraisal that were the focus of this week. They also previewed that the next class would mainly cover strategies at the behavioral level, specifically the role of mindfulness in regulating task aversion.

2 Lesson Activity

2.1 Self-Assessment

Teachers distribute the "Task Aversion Self-Assessment Form" (including a 5-point Likert scale). On the left side of the form are five recent learning tasks for students: 1. Student Handbook Exam 2. College Students' Mental Health Knowledge Competition 3. College Students' 5-Minute Pre-Class Speech 4. CET-4 and CET-6 English Exams 5. The 39th Batch of Party Membership Aspirants Exam.

Students use black pens to circle their level of aversion (1 = slightly uncomfortable, 5 = extremely resistant) on the 5-point Likert scale on the right side of each task. Then, in the dotted line box at the bottom of the form, they use key words to describe the three main characteristics of the most aversive task (with a score of 4-5).

2.2 Group Mapping

Students are grouped into teams of five, and the team leader organizes each member to share their self-assessment results in turn. The teacher invites one student representative from each group to present and report. The representatives use the standard statement format: "Through group analysis, we found that [task type] is the most likely to cause aversion, mainly because of [element 1] and [element 2]". The

teacher simultaneously draws a mind map on the blackboard, categorizing the key factors mentioned by students with different colored chalk: red chalk marks expressions related to "task ambiguity", blue records feedback on "skill gaps", and green organizes viewpoints on "value questioning". Finally, the teacher circles the three most frequent pain points with a yellow box: "lack of step-by-step guidance", "repetitive operations", and "low visibility of results".

2.3 Sentence Reframing

The teacher asks each student to choose one task they are most resistant to and complete the sentence transformation on the right side of the task aversion self-assessment form: "Although _____ (task) makes me _____ (emotion), but it can help me _____ (value)." Students complete the form independently. The teacher emphasizes that everyone should use the simplest words to express themselves, with no more than five characters in each blank. For example, a student filled it out like this: "Although the manual exam makes me very annoyed, but it can help me consolidate the knowledge of school regulations."

2.4 Group Disscusion and Cognitive Transformation Formula

Group members share their transformed expressions, focusing on discussing the value discovery after "but" and the positive aspects of the task itself. Students are invitied think about the questions: "What abilities that might be useful in the future can this task cultivate?" "If viewed from a different professional perspective, what special value does this task have?" The teacher asks group members to jointly design one "cognitive transformation formula": "When encountering a _____ (characteristic) task, one can transform _____ (negative cognition) into _____ (positive value)" and record it in their notebooks.

Finally, after the students have completed the exercises, the teacher randomly select five sets of answers. These answers are displayed to the entire class through the

classroom projector. For the most creative and effective reconstructions among them, the teacher gives special recognition and praise, such as "This perspective is very novel" or "This solution is very practical", providing specific feedback.

3 conclusion and evaluation

3.1 Conclusion

Task aversion is not an enemy to be eliminated but a signal light that reminds us of opportunities for growth. Through the systematic theoretical learning and practical activities in this course, students have established a comprehensive cognitive framework for task aversion. They have learned how to accurately identify the types of learning tasks that are most likely to cause aversion through self-assessment scales, and can also clearly describe their emotional response patterns when encountering ambiguous requirements or repetitive tasks. More importantly, students have basically mastered practical cognitive restructuring tools. Through the learning of the ABC emotion theory, they have attempted to use more rational beliefs to improve emotional and behavioral outcomes. In group activities and discussions, students have jointly created creative "cognitive transformation formulas", which will become practical tools for dealing with task aversion in the future. For example, "When encountering complex tasks, the thought of 'I can't do it' can be transformed into 'This is an opportunity to learn new skills'". These personalized coping strategies will help students better manage negative emotions in future studies.

3.2 Evaluation

Teachers add points in class based on the number of students' active speeches and their contribution to group discussions, and also give additional points for the quality of the cognitive reconstruction cases provided by students.

The teacher assigns a 21-day cognitive reconstruction diary after-class assignment, and students need to complete at least 15 days of recording. After completion, upload it to Learning Pass and the teacher will grade the students' homework. The assignment format is as follows:

Date: _____

Task: _____

Type: _____

Original Belief: _____

Reframed Statement: _____

Execution Effect: ★×5 (Self-rated)

New Insight: _____

Optional Assignment: "Cognitive Reframing Declaration" Video

Students may choose to record a 30-second video (strictly 25-35 seconds) using their phones.

Requirements: Clear audio, quiet background, good lighting. Graded based on content quality, video clarity, and creativity.

Script Framework:

Opening Template:

"I'm [Name] from [Major] [Class]. I'm redefining [Task]."

Core Content:

Old Belief: "I used to think [Task] was [negative description]."

New Insight: "Now I see it helps me [specific value]."

Action Plan: "Next, I'll [specific strategy]."

Slogan:

"Cognitive reframing for efficient learning!"

Lesson 7 Task Aversiveness (II)

Content

While cognitive reframing equips students to reinterpret their emotional responses to tasks, actual resistance often re-emerges during execution. Many learners begin with good intentions but quickly find themselves distracted, restless, or

emotionally fatigued once they sit down to work. This phenomenon is not due to poor willpower, but to the invisible emotional friction of task engagement.

Mindfulness-based self-regulation—a set of practices designed to build attention stability and reduce avoidance behaviors. Mindfulness is the practice of observing the present moment without judgment, and in an academic context, it helps students become aware of their mental habits: drifting attention, task rejection thoughts, and emotional discomfort loops.

Through practices such as focused breathing, sensory grounding, and nonjudgmental task observation, students strengthen their capacity to face inner resistance without being overwhelmed. These micro-regulations are essential to the execution phase of learning and allow students to complete tasks more consistently.

The core message of this session is not “push through,” but “stay present.” By learning to regulate emotional discomfort in real time, students gain not only study discipline, but a calmer and more compassionate relationship with their work. Over time, mindful execution replaces avoidance with presence—and procrastination with sustainable progress.

Objectives

1. To identify their own patterns of distraction when performing tasks.

2. To understand the regulatory effect of mindfulness on task aversion.

3. To master simple mindfulness practice techniques and can apply them in actual learning tasks.

4. Students can compare the effectiveness of different mindfulness strategies and choose the methods that suit them.

Materials

1.PPT

2. Timer or the timer function on a mobile phone

3. Short reading materials

4. Task aversion experience record sheet

5. Mindfulness practice log

6. Projector

Lesson Program

1. Lead-in

1.1 Context Trigger

The teacher plays a piece of white noise (rain and ocean waves) and asks the students to close their eyes and listen for one minute. Then the teacher asks, "During this minute, did your attention remain completely focused on the sound? Did any other thoughts come up?" Students share their experiences, and the teacher summarizes, "Our attention is prone to drift, especially when we are faced with tasks we dislike. We tend to avoid rather than focus on them."

1.2 Small Lecture

The teacher begins by introducing a common learning struggle: “Have you ever sat down to study, but found yourself staring at your phone, cleaning your desk, or thinking about something else entirely?”

A slide appears showing three typical patterns of attention drift:1. Emotional Avoidance – Task feels too hard or boring ⟶ immediate urge to scroll through social media; 2. Thought Jumping – While working, thoughts suddenly jump to other unrelated academic worries; Physical Avoidance – Feeling restless ⟶ getting up to clean or reorganize surroundings.

The teacher asks: “Which one do you relate to most? Or do you experience all three?” Students reflect and record their responses in their notebooks. Next, students complete a short self-assessment to check their current state.

Question	Your Answer
How much do you dislike the current learning task (1-5)?	
How do you usually avoid this task?	
What do you hope to gain from the	

mindfulness practice?	

After the self-assessment, the teacher briefly explains mindfulness: staying focused on the present moment, noticing thoughts and emotions without judging them, and accepting discomfort without rushing to fix it.

The teacher closes with a reminder: “Mindfulness means noticing when you drift—and gently coming back.”

2 Lesson Activity

2.1 Mindful Breathing Exercise

The teacher guides the students through a 3-minute mindful breathing exercise:

Ask the students to place their feet flat on the ground, hands naturally resting ontheir thighs, and close their eyes.

The teacher gently instructs: "Focus your attention on your breathing. Feel the temperature of the air as it enters your nostrils and notice the rise and fall of your chest. If your attention wanders, don't criticize yourself, but gently bring it back to your breath."

After 3 minutes, the students open their eyes and record their feelings.

2.2 Mindful Reading Experience

The teacher provides a reading material of about 500 words (such as a short story or an excerpt from an article). Students are asked to read it attentively within 2 minutes. After reading, students answer two questions: "Did your attention drift during the reading just now?" "If it did, at which point?" The teacher emphasizes that the awareness during the reading process itself is the practice of mindfulness.

2.3 Mindfulness Task Execution Practice

Teachers ask students to choose an academic task they have most resisted this week and write down relevant information in the task aversion experience record sheet.

Students perform the task for 3 minutes in the classroom and apply mindfulness strategies.

Record the number of times the urge to escape occurs and document the experience in the mindfulness practice log.

2.4 Instant Feedback and Strategy Analysis

Task Execution Time Number of Attention Drifts Used Mindfulness Strategies Effectiveness (1-5 Points)

Mindful Reading Experience 2 minutes

Task Execution Practice 3 minutes

Task Execution	Task duration	Number of Attention Drifts	Mindfulness Strategies
Mindful Reading Experience	2 minutes		
Task Execution Practice	3 minutes		

2.5 Group Discussion

Students form groups of five. Each student shares their experience and discusses which mindfulness strategy is the most effective and fill in the following table.

Mindfulness Strategy	Usability Score (1-5)	Effectiveness (1-5)	Effectiveness (1-5) Willingness to Use in Daily Tasks (Y/N)
Mindful Breathing			
Mindful Reading			
Mindful Task Execution			

2.6 Whole-Class Demonstration & Monthly Mindfulness Plan Launch

After the group discussions, each group will select one representative to present their findings to the whole class within three minutes. They should share the most effective strategy that the group has agreed upon (including the reasons for choosing it and the scenarios where it can be applied), and lead the class in a one-minute brief experience of the strategy on the spot (such as the group demonstrating the counting method of mindful breathing). The teacher should provide guiding language like: "Now, please sit up straight and follow the A group students to try their method..." At the end, the teacher will organize mutual evaluations, emphasizing: "Please pay attention to scoring based on whether the strategy is innovative and whether the demonstration is clear." The strategy with the highest total score will be adopted by the whole class as the "Monthly Mindfulness Plan". The teacher particularly point out when summarizing: "This plan will be piloted next month. Let's observe together whether it can improve everyone's concentration. We will discuss and adjust it again in two weeks." Throughout the process, the teacher control the time (using a timer), encourage participation ("Does the B group have any supplementary cases?"), and record the excellent viewpoints on the blackboard in real time to form a visual discussion thread.

3 Conclusion and Evaluation

3.1 Conclusion

In this class, through mindfulness exercises, students not only experienced how to be aware of their wandering attention during task execution, but also mastered effective regulation methods such as mindful breathing, thought marking, and environmental perception. Through group discussions and practical activities, students deeply analyzed the applicable scenarios and actual effects of different mindfulness strategies, cultivating self-reflective abilities to enhance concentration. In the group presentation session, each group combined quantitative data and actual cases to

demonstrate the effectiveness of the best strategies and led the whole class in interactive experiences, further consolidating the learning outcomes.

3.2 Evaluation

To comprehensively evaluate the learning outcomes of this class, a multi-dimensional assessment approach is adopted, covering classroom participation, immediate feedback, and long-term practice tracking:

1. Classroom Participation Assessment (Teacher Observation)

- Mindfulness Practice Concentration (1-5 points: 1 = Frequent Distraction, 5 = Fully Engaged)

- Group Discussion Contribution (Whether presenting viewpoints, listening to others, and summarizing conclusions)

- Interactive Experience Cooperation (Such as following demonstrations and providing feedback on feelings)

2. Task Aversion Experience Record Form (Self-assessment by Students)

Evaluation Dimension	Before Practice (1-5 points)	After Practice (1-5 points) Remarks	Remarks (Specific Changes)
Task Anxiety Level			
Attention Span			
Physical Tension			

3. Task Mindfulness Challenge

Task Selection: Students fill in the one task they most want to avoid this week (e.g., memorizing vocabulary / math homework)

- Execution Plan:

Date: ____ Strategies Used: _____ (e.g., "Breathing Technique + Thought Labeling") Pre-execution Mood: (one word) Post-execution Mood: (one word) Key Disovries: _____

- Outcome Evaluation (Feedback from Teacher or Peers):

- Strategy Appropriateness (★ to ★★★★★)

- Record Detail (Such as whether it includes specific duration and mood comparison)

Lesson 8: Rebellion Against Control (I)

Rebellious procrastination is a form of academic delay behavior that emerges in response to perceived external control. Rather than being rooted in disinterest or disorganization, it is often a defensive mechanism triggered when students feel their autonomy is restricted. In this state, delaying tasks becomes a symbolic act of reclaiming freedom and resisting imposed demands.

This phenomenon is particularly common in young adults navigating the transition from structured high school environments to university autonomy. When assignments are framed with authoritative or compulsory language—such as “you must” or “or else”—students may react not by complying, but by withdrawing. This emotional pushback is explained by reactance theory, which posits that individuals experience motivational arousal when they perceive a threat to their freedom of choice.

Within the framework of Self-Determination Theory (Deci & Ryan, 1985), procrastination of this type reflects a breakdown in autonomy support. If learners internalize academic goals without endorsement—feeling they are “doing it for others”—their engagement diminishes. The mismatch between external demands and internal values leads to tension, demotivation, and delayed task initiation.

One effective approach to disrupting this cycle is task reframing. By cognitively redefining a task’s value, ownership, or execution method, learners can shift from resistance to agency. Instead of viewing a task as something they “must” do, reframing

invites them to say “I choose to…” and clarify why it matters to them. This subtle shift in interpretation can transform a burdensome obligation into a personally meaningful act.

Objectives

To recognize the psychological mechanism of rebellious procrastination and its link to threatened autonomy.

To learn how task reframing transforms external demands into self-endorsed goals.

To practice converting controlling self-talk into autonomy-supportive language.

To apply reframing strategies in real academic scenarios and reflect on emotional shifts.

Material:

PowerPoint Slides

Task Reframing Worksheet

Strategy Puzzle Cards (printed)

Autonomy Reminder Card Templates

Whiteboard and Markers

Timer

Lesson program

1 Lead in

1.1 Sudden “Mini Quiz” Simulation

To begin the session, the teacher suddenly announces a surprise quiz and instructs all students to begin answering immediately. After students begin, the teacher unexpectedly interrupts and imposes strange new rules, such as: "You may only write with your non-dominant hand." "You must answer the questions in a specific sequence."

After 1 minute, the teacher stops the quiz and asks:“How did you feel during this experience? Did you feel controlled or restricted?” “How did this feeling of coercion affect your concentration, motivation, or mood?” “Have you had similar experiences during your academic work?”

The teacher summarizes: “When we feel that a task is ‘forced’ rather than chosen, our intrinsic motivation often drops which called reactance.

1.2 small lecture

The teacher begins by presenting a student case on a slide: “A freshman was asked to write a ‘semester study plan’ but found the task meaningless. For two weeks, he avoided starting, and only completed it last minute with little effort. Why did he procrastinate? Was it laziness—or something else?”

The teacher then introduces the concept: "Rebellious procrastination refers to the intentional or unconscious delay of tasks to regain a sense of autonomy when we feel pressured or coerced." Next, The teacher briefly introduces Self-Determination Theory (Deci & Ryan, 1985), using a visual with three core needs:

Autonomy – “I want to choose.”

Competence – “I want to feel capable.”

Relatedness – “I want to feel understood.”

The teacher then uses contrasting language examples to help students recognize control-based vs. autonomy-based inner speech:

Control-Oriented Language	Autonomy-Oriented Reframing	Control-Oriented Language	Autonomy-Oriented Reframing
“The teacher told me to do it.”	“I want to try to understand this part.”	“The teacher told me to do it.”	“I want to try to understand this part.”
“I’ll lose marks if I don’t.”	“I prefer to finish this early so I can rest.”	“I’ll lose marks if I don’t.”	“I prefer to finish this early so I can rest.”
“My parents expect me to.”	“This could help me manage my time better.”	“My parents expect me to.”	“This could help me manage my time better.”

Finally, the teacher transitions to the lesson's core strategy: "Today, we will practice Task Reframing—a technique where you change the way you define, interpret, and approach a task. When the purpose and process of a task feel like your choice, motivation naturally follows."

2 Lesson activity

2.1 Individual Reflection: Reframing Your Task

The teacher distributes the **Task Reframing Worksheet** and gives the following prompt:

"Think of an academic task you are currently resisting or postponing. Don't overthink—go with what comes to mind first."

Students complete the worksheet independently, responding to the following items:

Instructions: Please reflect on your current academic task and complete the form below.

1. The academic task I'm currently facing is:	
2. This task makes me feel:	
3. My original, control-based thought about this task is:	
4. My reframed, autonomy-based expression is: "I choose to _____ because _____."	
5. My current motivation to complete it (1–5 scale):	
6. Notes or additional thoughts:	

Teacher Walk around during this time and offer gentle support and check if students are connecting emotionally with their statements.

2.2 Group Exchange and Peer Feedback

Students form groups of 4. Each student shares their original statement and their reframed version. Group members offer feedback using guiding questions:

Does it truly reflect **autonomous motivation**?

Is the "because…" explanation specific and meaningful?

Can the sentence be simplified for clarity?

Teacher visits each group briefly and prompt deeper thinking when needed: "What makes this statement feel more 'yours'?"

2.3 Motivational Self-Talk Card Creation

Students receive blank index cards and colored pens (or access a digital whiteboard app). They are asked to design a **"Self-Talk Card for Motivation Ownership"** that includes:

1. My goal task:	
2. I choose to complete it because:	
3. Why this task matters to me:	
4. An encouraging message to my future self:	

Students are encouraged to decorate the card with symbols, sketches, or favorite quotes to make it feel personal and visually memorable.

2. 4 Partner Showcase and Card Reflection

Students pair up and share their completed cards. They briefly explain:

The personal meaning behind the card

How it helps them feel more in control of the task

The listening partner gives a one-sentence reflection:

"After hearing your reason, I feel you're motivated by…"

Teacher closes with the message: "These cards aren't just for today. They are reminders of the mindset you want to bring into your work. You can keep them in your planner, notebook, or study space as a gentle nudge when resistance hits."

Students freely choose to take the card

3 Conclusion and Evaluation

3.1 conclusion

By exploring the emotional experience of resistance and practicing task reframing, students developed deeper awareness of how control language affects their motivation. Through restructured internal dialogue, many students reported a shift from avoidance to personal investment. Reframing helped transform reluctant tasks into manageable, meaningful actions, reinforcing students' autonomy and reactivating their academic engagement.

3.2 evaluation

Evaluation

To assess learning outcomes and reinforce long-term behavioral change, this lesson incorporates multiple layers of evaluation:

Teachers monitor student engagement throughout the experiential activities and group discussions. Notes are taken on how clearly students identify their procrastination tendencies and apply the reframing strategy.

During the Task Reframing activity, teachers evaluate the depth and authenticity of students' language transformation—from externally driven statements to autonomy-based motivational self-talk. Peer feedback forms offer additional insights into students' ability to articulate internal motivation.

Follow-up Practice (Homework Tracking):

Students are asked to document one academic task per day in a personal journal over the following week. For each task, they are encouraged to apply the Task Reframing technique and reflect on whether it helped reduce procrastination. At the beginning of Lesson 9, students will share selected experiences and revise their strategies based on real-world practice.

Task Reframing Worksheet

Instructions: Reflect on a current academic task you're avoiding and use the questions below to reframe your thinking.

Item	Your Entry
1. Task Description	
2. Emotional Response	
3. Control-Based Statement	
4. Reframed Autonomy Statement	
5. Motivation Score (1–5)	
6. Peer Feedback	
7. Additional Notes	

Tips:

- Be honest with your emotional responses. Recognizing discomfort is the first step to regulating it.

- For peer feedback, exchange your worksheet with a group member and ask for one suggestion to improve your reframed statement.

Lesson 9: Rebellion Against Control (II)

Content

Some students resist academic tasks not by directly refusing them, but through subtle withdrawal—delaying, ignoring, or avoiding action as a way to reclaim autonomy. This behavior reflects a phenomenon known as *illusory freedom* (Sirois, 2014), where students seek psychological relief by framing inaction as choice: “I could do it—but I won’t, because it’s mine to decide.” While this may temporarily reduce pressure, it ultimately undermines responsibility, self-regulation, and long-term motivation.

Motivational psychology shows that external control significantly reduces engagement, even when tasks are objectively manageable (Assor et al., 2005; Deci & Ryan, 2000). When students perceive a task as imposed, not chosen, their emotional

resistance increases—even if they understand its importance. Over time, this avoidance erodes both learning outcomes and the internal sense of competence.

This session deepens the learning from Lesson 8 by helping students identify and re-author their motivational language. Students will explore three reframing strategies—meaning reconstruction, goal alignment, and method flexibility—to convert coercive self-talk into genuine self-direction. Through mapping exercises, motivational language training, and peer role-play, students begin to internalize the belief that tasks can reflect their own values and intentions, even within externally structured systems. Rebuilding this sense of ownership is essential to reducing resistance-driven procrastination and cultivating long-term autonomous motivation.

Objectives

1. To understand the psychological link between illusory freedom and rebellious procrastination.

2. To distinguish between controlled motivation and autonomous motivation.

3. To practice three motivational reframing strategies: Meaning Reframing, Goal Integration, and Flexible Method.

4. To strengthen students' ability to reframe task-related language through collaborative discussion and role play.

Materials

1. PowerPoint slides

2. Motivational Self-Assessment Form

3. Motivation Reframing Worksheet

4. Role-Play Script Template

5. Whiteboard, markers, or digital board tools

Lesson Program

1. Lead-in

1.1 Video Observation and Guided Questions

The teacher plays a short video clip from a college student's study vlog. In the video, the student frequently uses controlling language such as: "I have to finish the homework or the professor will deduct points," or "My parents pushed me to apply for this program." After watching, the teacher asks: "What did you hear? How did those words feel?"

The teacher lists common controlling phrases like "I must," "I was told to," and "I have no choice."

Then asks: "Do these expressions sound reasonable? What kind of motivation do they reflect?"

The teacher explains how this kind of language represents controlled motivation and often leads to resistance and procrastination.

1.2 Small Lecture: Psychological Roots of Reactance

The teacher shows two contrasting sets of motivational language using a PowerPoint slide: one with controlling phrases ("I have to…", "The teacher makes me…") and one with autonomous phrases ("I choose to finish early so I can focus on next week's project").

Students are invited to compare the tone and emotions associated with each.

The teacher introduces Reactance Theory with a simple diagram: When we feel our freedom is threatened, we react by resisting, even if the task benefits us. This creates a false sense of autonomy — the illusion of choice by doing nothing.

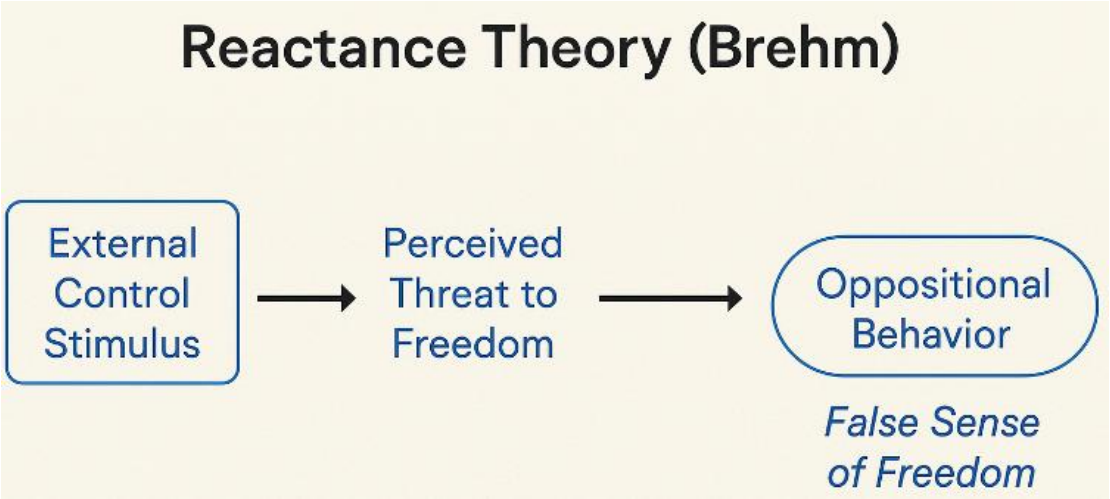


Figure 13 Shame Loop of Failure

Source: Created by author

Then, the teacher introduces the Motivational Reframing Paths:

- Meaning Reframing: Link the task to personal value.
- Goal Integration: Align the task with long-term goals.
- Flexible Method: Allow freedom in how the task is completed.

The teacher demonstrates how to reframe a controlling phrase into an autonomous one and invites students to try rewriting their own “I have to…” sentence into “I choose to… because…” with a personal reason.

2. Lesson Activity

2.1 Motivation Mapping

The teacher places six task cards in a horizontal row on the blackboard or floor, representing common academic tasks:

1. Preparing for the midterm exam
2. Writing a report
3. Watching course videos
4. Completing group work
5. Reviewing class notes
6. Finishing an online test

Below each task card, a blank A4 sheet is attached for students to write down emotional keywords.

First Instruction:

"Please stand closest to the task you feel most willing to begin right now. You must choose one—no standing between cards."

Once students are positioned, each group writes a phrase or keyword on the sheet below their selected task, describing their positive emotions toward it (e.g., “goal-oriented,” “easy to focus,” “efficient”).

The teacher facilitates reflection by asking:

- “Which task gathered the most students? Why?”

- “What kind of motivation do your emotion words suggest?”

The teacher summarizes common emotional keywords like: “meaningful,” “under control,” “a sense of achievement.”

Second Instruction:

"Now, stand next to the task you are most likely to procrastinate—the one you tend to avoid or postpone."

After repositioning, students write typical avoidance or control-based language on the sheets (e.g., “I have to do it,” “I’m being forced,” “I really don’t want to move”).

The teacher invites groups to share sample phrases and asks: “What emotion does this ‘I have to…’ reflect?” “Has anyone ever told themselves, ‘I’ll start after one more break’?”

The teacher summarizes the group’s input in a comparative table:

Tasks Started Willingly	Tasks Frequently Delayed
Sense of meaning	Lack of motivation
“I want to…” expressions	“I have to…” expressions
Flow and rhythm	Avoidance, anxiety, resistance

The teacher concludes:

"What we've created here is a motivational map. Where you stood reveals which tasks reflect your personal alignment and which are just compliance. That difference in alignment—and the language you use—directly influences whether you'll take action. Next, we'll practice how to rewrite procrastinated tasks using more autonomous language."

2.2 Reframing Practice

The teacher distributes the "Motivational Reframing Worksheet" and guides students to complete the following:

1. Choose one academic task you often procrastinate.

2. Write your usual control-based expression (e.g., "I have to turn this in, or I'll fail").

3. Transform it into an autonomous expression: "I choose to… because…"

4. Select which motivational reframing path you used:

- Meaning Reframing | Goal Integration | Flexible Method

5. Rate your willingness to execute this new expression (1–5 scale).

The teacher circulates, encouraging students to avoid clichés and instead write personalized, emotionally relevant reasons (e.g., "I want to finish early so I can prepare for my club meeting with peace of mind").

Worksheet: Task Reframing Exercise

Item	Student Response
1. Academic Task You Procrastinate On	
2. Typical Controlling Thought (e.g., "I must… or else…")	
3. Reframed Motivational Expression ("I choose… because…")	
4. Motivation Strategy Used (Meaning / Goal / Method)	

5. Motivation Score (1–5)	
6. Peer Feedback (Is it authentic? Clear? Specific?)	

2.3 Peer Review

Students pair up and exchange their worksheets. Each student explains:

- Their original control-based sentence

- Their reframed motivational sentence

- The reason for their chosen expression

Partners provide verbal or written feedback on three points:

1. Does this expression sound authentic and believable?

2. Could it be made more specific or motivating?

3. Does it reflect true choice—or just repackaged compliance?

The teacher randomly selects 2–3 rewritten sentences to display and leads a discussion about their motivational impact.

Teacher concludes:

"A single change in wording can shift how you feel about the entire task. If you keep practicing 'I choose… because…', it can become your most powerful inner language to counter procrastination."

2.4 Role Play & Reflection

Students are divided into 4–5 groups to create a two-scene role play:

- Scene 1: Students use control-based language and show avoidance. - Scene 2: Students use reframed motivation and take action.

A script template includes:

- Task setting (e.g., midterm, assignment deadline)

- Role assignments (Student A, teacher, peer, group leader)

- Required transformation (control ⟶ autonomy)

Example Script:

Scene 1:

- Student A: “The teacher dumped this paper on us. I *have* to do it… I really don’t want to write.”

- Peer B: “If you don’t, you’ll lose marks.”

- A delay, scrolls phone.

Scene 2:

- A: “I choose to write the first paragraph tonight because I want to understand this theory.”

- B: “Then we can proofread together!”

- A write with calm focus.

Audience students rate performances on:

- Clear procrastination scene?

- Clarity of motivational transformation?

- Emotional shift from resistance to action?

- Most empowering line?

2.5 Group Feedback & Wrap-up

After all performances, audience groups share impressions. The class votes for the “Most Authentic Motivational Transformation.”

Teacher closes the class with: “Hidden in our language are clues to how we feel about tasks. When you said ‘I choose… because…’, did you feel a sense of control? Let’s carry that into our next challenge.”

3 Conclusion & Evaluation

3.1 Conclusion

In this lesson, students deepened their understanding of reactance-driven procrastination by examining the emotional resistance caused by perceived external control. Through activities such as motivational mapping, language reframing, and role play, they explored how rigid, obligation-based expressions (e.g., "I must...") diminish

engagement and increase procrastination. Students practiced identifying and transforming these expressions into autonomy-supportive statements like "I choose to... because...", using three cognitive reframing pathways: meaning reconstruction, goal alignment, and method flexibility.

By visualizing motivation patterns and participating in collaborative rewriting and dramatization, students became more aware of how language influences behavior. They reported feeling a greater sense of ownership over their academic responsibilities and began to internalize motivational language that supports self-regulation and task initiation. These shifts mark an important movement from passive compliance toward proactive learning, laying a foundation for sustained academic engagement.

3.2 Evaluation

A combination of formative and peer-based assessments was used to evaluate students' learning outcomes:

Motivation Reframing Worksheet: Teachers reviewed students' ability to convert externalized, pressure-driven statements into autonomous, personally meaningful expressions. Emphasis was placed on originality, emotional clarity, and alignment with one of the three motivational pathways.

Peer Feedback Exchange: In pairs, students exchanged written reframing attempts and offered structured feedback using a provided checklist. This peer interaction fostered reflective thinking and provided opportunities to revise expressions based on authenticity, specificity, and motivational strength.

Role Play Performance: Small groups created short skits demonstrating both a procrastination scenario rooted in reactance and a revised version using self-determined language. Performances were evaluated using a rubric measuring emotional accuracy, language transformation, and motivational impact.

Post-Class Reflection Task: For extended practice, students were assigned to select a current academic task they are avoiding and write a self-directed motivational

statement (“I choose to... because...”) to post in the course discussion board. They were also encouraged to give one supportive comment to a peer’s entry, reinforcing the collective commitment to autonomous learning.

Peer Feedback Sheet: Motivation Reframing

Partner’s Statement	Feedback Prompts	Your Feedback
“I have to…” statement	Does this reflect a sense of pressure or obligation?	
“I choose to… because…” statement	Does the new sentence sound personally meaningful and authentic?	
Motivational Path Selected	Is the reason clear (e.g., meaning, goal, or method)?	
Clarity & Emotion	Does it evoke engagement or empowerment?	

Role Play Performance Rubric

Evaluation Criteria	Excellent	Satisfactory	Needs Improvement
Portrayal of Procrastination Scenario	Clearly depicts emotional resistance with realism	Somewhat clear; minor inconsistencies	Unclear or lacks emotional authenticity
Use of Motivational Language	Effective transition to “I choose… because…”	Transition present but lacks clarity	No clear motivational shift
Emotional Expression & Delivery	Engaging and emotionally believable performance	Moderately expressive	Flat or disengaged delivery
Overall Impact	Statement inspires	Somewhat impactful	Little to no

	reflection and motivation		motivational impact

Lesson 10 Dependency

Content

Dependency is a cognitive-emotional pattern in which individuals habitually wait for external cues—such as instructions, encouragement, or peer action—before starting a task. In academic contexts, this often shows up as phrases like “I don’t know how to begin” or “I’ll wait until someone else starts.” These expressions reflect low self-efficacy (Bandura, 1997) and an attempt to avoid the uncertainty of independent effort. Even capable students may hesitate to act if they are used to relying on others to initiate behavior, reinforcing procrastination through avoidance.

The motivational cost of dependency rises when students see tasks as imposed rather than chosen. According to self-determination theory, autonomy is essential for sustained effort and engagement (Deci & Ryan, 2000). When learners feel pressured rather than self-directed, their motivation declines. Students with maladaptive dependency may appear to seek help, but in fact avoid responsibility (Ryan & Lynch, 1989), leading to a cycle of hesitation and low task ownership.

Reducing procrastination linked to dependency involves three key strategies. First, students need to recognize their own start-up habits—especially patterns of delay caused by waiting for others. Second, introducing the stages of motivational internalization helps them understand how to move from external pressure to internal commitment. Third, practicing self-directed task language (“I’ll begin with one small step”) builds readiness to act without waiting. These tools help students shift from passive dependence to proactive learning.

Objectives

1. To understand the psychological mechanisms of dependency in academic procrastination.

2.To identify personal behavioral and emotional triggers of help-seeking delay.

3. To learn practical strategies to shift from external reliance to internal task initiation.

4. To practice autonomy-supportive language and micro-action planning for academic self-regulation.

Materials

1. PowerPoint slides (theory + prompts)

2.Sticky notes + A4 movement zone signs

3. Peer Reflection Cards

4. Worksheets

5. Motivation wall

6. Timer, pens

Lesson Program

1 Lead-in

1.1 Personal Scenario Reflection

The teacher begins with a short anecdote: “Last week, a student told me that he had known about a report deadline for days but didn’t begin writing until his roommate started. He said: ‘I can only work when others around me are also working.’”

The teacher writes two questions on the board for personal reflection: “When there’s no teacher or peer reminding you, do you still begin your tasks?” “When you say ‘I don’t know how,’ are you stating a fact or hoping someone else will step in?”

Students are asked to write their responses anonymously on sticky notes, sharing a moment when they delayed action because others hadn’t started. After a few volunteers read theirs aloud, the teacher summarizes key emotional responses and introduces the idea that waiting can become a procrastination habit. Students are then invited to form small groups to discuss the following questions: "Have you ever waited for someone else to begin before starting a task?" "What emotions or thoughts do you associate with starting something on your own?"

The teacher gathers key phrases and transitions to the small lecture.

1.2 Small Lecture

Using slides, the teacher introduces the concept of 'dependency' from a psychological perspective, distinguishing between developmental dependency (normal help-seeking during early learning) and maladaptive dependency (habitual avoidance or waiting for others to act).

Students are guided to reflect on why some people tend to wait for others. The teacher explains that this may originate from early educational experiences, perfectionism, fear of failure, or low self-efficacy.

The PPT displays the psychological path of dependency-based procrastination:

Uncertainty ⟶ Expectation for support ⟶ Waiting for feedback ⟶ Emotional avoidance ⟶ Procrastination begins ⟶ Anxiety increases ⟶ Greater dependency

The teacher encourages students to notice if they fall into procrastination by expecting others to take the lead. Then introduces Deci & Ryan's (2000) motivational internalization continuum:

- External Regulation (I'm required)
- Introjected Regulation (I'm complying)
- Identified Regulation (I understand why it matters)
- Intrinsic Motivation (I want to)

2 Lesson Activity

2.1 Dependency Positioning Game

The teacher begins by setting up three labeled areas in the classroom:

Zone A – "I usually wait for the teacher,"

Zone B – "I usually wait for others," and

Zone C – "I usually start on my own."

Students are presented with three academic scenarios (e.g., preparing for an exam, a newly assigned group project, a reading task with no deadline) and are instructed to move to the zone that best represents their typical behavior in that situation.

After each round, students form small groups in their respective zones and engage in a 2-minute discussion based on the following questions provided by the

teacher: “Why did you choose this zone?”, “What do you usually say to yourself in such moments?”, and “Does this habit support your progress, or does it hold you back?”

The teacher circulates among groups, noting keywords and examples. After the third round, the teacher summarizes key behavioral patterns on the whiteboard and prompts students to complete a sentence individually:

“Next time I face a similar situation, I want to say to myself: _____.”

Students are encouraged to record this phrase in their notebooks as a personal task-starting cue.

2.2 Self-Talk Letter to the Inner Assistant

The teacher introduces the next activity by saying: “We all hesitate sometimes. But what if you could send advice to the version of yourself who’s stuck?”

Students are asked to write a letter addressed to their present, procrastinating self—specifically the part of them that feels unsure, passive, or overly reliant on others. The letter should contain three parts:

1. A compassionate reflection on current emotional struggles.

2. A sentence of encouragement and one specific small action step.

3. A commitment phrase that begins with “I decide to…”

The teacher provides sentence starters as inspiration (e.g., “You’re not broken—you’re just waiting. Let’s begin with one line.”). Students write for 8–10 minutes in silence. Once completed, students are invited to either read their letter aloud voluntarily or anonymously post it on the classroom “Inner Voice Wall.” Each student then selects their favorite sentence—either from their own or a peer’s letter—and writes it on a sticky note to place in their notebook or laptop as a motivational anchor.

2.3 Task Startup Language Practice

Next, students transition into structured language training. The teacher distributes a worksheet titled “Self-Initiation Sentence Practice” with 6 common dependency-based phrases (e.g., “I can’t start without help,” “I don’t know where to begin”). Students are instructed to rewrite each sentence into a self-directive version using the following structure:

"Even though…, I choose to…"

"Instead of waiting, I can…"

After individual completion, students form pairs to read aloud 2–3 of their rewritten sentences and offer each other feedback on tone, motivation, and clarity. The teacher emphasizes that language is a powerful cue for action, and that the way we talk to ourselves can reinforce either avoidance or autonomy.

After individual completion, students form pairs to read aloud 2–3 of their rewritten sentences and offer each other feedback on tone, motivation, and clarity. The teacher emphasizes that language is a powerful cue for action, and that the way we talk to ourselves can reinforce either avoidance or autonomy.

	Common Dependency-Based Phrase	Your Reframed Self-Directive Sentence
1	I can't start without someone helping me.	
2	I don't know how to begin, so I'll wait.	
3	No one else has started, so why should I?	
4	I'm not confident unless someone checks my work first.	
5	I always need a deadline or reminder to start.	
6	It's too hard to do alone—I'll just wait for support.	

3 Conclusion and Evaluation

3.1 Conclusion

Through reflection, group dialogue, and structured sentence rewriting, students gained insight into how dependency affects academic task initiation. By mapping out their procrastination cycles and transforming avoidance-based expressions into proactive self-talk, students practiced reframing their internal language to support autonomy. The positioning activity helped reveal unconscious initiation habits, while the letter-writing and language training bridged emotional understanding with action readiness.

Instead of defaulting to “I need someone to push me,” students began exploring the possibility of “I can choose to begin.” These micro-level shifts in thinking and expression laid a foundation for long-term improvements in self-regulated learning.

3.2 Evaluation

This session uses multi-layered formative evaluation to assess students' behavioral awareness, motivational clarity, and transfer to real-life academic tasks:

Behavioral Awareness

The teacher observes students' choices in the Dependency Positioning Game, noting if students can articulate the behavioral language and thought patterns associated with their initiation habits.

Motivational Reframing & Expression

Students' "Letter to Self" outputs and peer-reviewed rewrites are evaluated for emotional clarity, use of self-supportive internal dialogue, and originality. Attention is paid to whether students use actionable and non-passive expressions.

Collaborative Feedback Quality

Peer feedback during Reframing Exchange is evaluated for constructiveness, empathy, and ability to offer motivation-enhancing suggestions.

Metacognitive Mapping (Worksheet 1)

The Dependency Awareness Map is reviewed to assess students’ ability to: Accurately trace procrastination sequences; Identify key emotional states and triggers; Reflect on unconscious avoidance behaviors and their personal meanings.

Action Planning & Implementation (Worksheet 2)

Through the Micro Action Tracker (3-Day Log), students document and reflect on their ability to independently initiate tasks, track emotional changes, and evaluate follow-through. This tool serves as both a self-monitoring log and a teacher diagnostic resource for understanding learning transfer and motivational resilience.

Optional Sharing & Retrospective Insight

In the next class, selected students may voluntarily share their tracker reflections and insights.

Worksheet 1: Dependency Trigger Mapping

Instructions:

Think of a recent academic task you procrastinated on. Draw a chain showing your 'waiting-avoidance' pattern. Use arrows or symbols to indicate the flow from one step to the next. Label each step with the corresponding emotional state.

Step in the Process	What Happened	Emotional Label (e.g., uncertain, dependent, distracted)

Example:

Task: Midterm Paper Preparation

⟶ Look at prompt ⟶ Wait for peer to start ⟶ Check phone ⟶ Forget ⟶ Start anxiously close to deadline

Emotions: Unclear ⟶ Dependent ⟶ Distracted ⟶ Avoidant ⟶ Anxious

Worksheet 2: 3-Day Independent Action Log

Instructions:

For the next three days, track your task initiation behavior. Each time you begin a learning task, complete one row.

This log helps you reflect on whether you initiated independently and how your emotions changed as a result.

Date	Task Description	Initial Emotion	Started Independently (Yes/No)	Emotion After Starting	Follow-up Action Taken

Lesson 11: Risk-Taking

Content

Risk-taking procrastination refers to a defensive pattern where students delay academic tasks not due to laziness, but as a way to stimulate short-term pressure or preserve self-esteem in the face of potential failure. Instead of starting early, they may wait until the last minute, justifying procrastination with phrases like “I work better under pressure” or “I’m waiting for inspiration.”

Psychologically, this behavior serves as a form of ego protection (Covington, 1992). If a student works hard but performs poorly, the failure may be attributed to a lack of ability. However, if they delay and fail, they can blame the outcome on limited time, thus preserving self-worth. This reduces short-term anxiety but reinforces a long-term avoidance loop.

Steel (2007) further explains that risk-taking procrastinators tend to have a high temporal discount rate—they discount long-term rewards and rely more heavily on immediate emotional relief or the adrenaline of last-minute urgency. These students “know the task matters” but continue to wait for the ‘perfect state’ to begin.

To disrupt this cycle, it’s crucial to (1) identify emotional and cognitive avoidance cues, (2) surface the psychological trade-offs of procrastination, and (3)

develop sustainable internal drivers. Emotional projection tools (e.g., image cards) and forward-looking strategies (e.g., pre-commitment contracts) offer structured, low-risk pathways to recognize and transform high-pressure procrastination into proactive action.

Objectives

1. To understand the psychological traits and mechanisms of risk-taking procrastination.

2. To identify behaviors like high-pressure activation and self-handicapping in one's academic life.

3. To express emotional resistance to task initiation using visual metaphor (OH cards).

4. To construct forward-motivation strategies using peer-supported commitment tools.

Duration: 90 minutes

Target: First-year undergraduates

Materials / Media

1. PPT slides

2. OH image cards (90–100 total, 10–12 per group)

3. OH Card Reflection Worksheet

4. Feedforward Motivation Contract Card

5. Whiteboard, sticky notes, pens, timer

Lesson Program

1 Lead-in

1.1 Comic Case Reflection

The teacher begins by showing a short-illustrated sequence titled “A Risk-Taker’s Study Day,” depicting a student who plans to work in the morning but ends up watching videos all day, only to pull an all-nighter to complete a presentation. The

teacher then asks, “Have you ever told yourself you were just waiting for the ‘right moment’ to start a task—but that moment never came?”

The teacher then presents two relatable academic scenarios on the slide:

Scenario A: You’re assigned a group project, but you tell yourself, “I’ll wait and see what the others do first.”

Scenario B: A two-week report deadline is approaching, and you keep saying, “I want to do something creative,” but haven’t started yet.

In small groups of three, students briefly discuss: “What was the real reason I delayed my last major task?” “When I said ‘I’ll do it later,’ what was I actually feeling or avoiding?”

The teacher concludes: “Risk-taking procrastination is not about laziness—it’s about the fear of starting something that might not turn out perfect.”

1.2 Small Lecture

With the support of a PowerPoint presentation, the teacher introduces a familiar psychological behavior pattern: risk-taking procrastination. The teacher writes on the board a few common student phrases:“I do better under pressure.”“I’m just waiting for the right inspiration.”“If I fail after trying hard, it’ll prove I’m not good enough.”

Then, the teacher explains: These are not just habits of thought. They are part of a self-worth protection strategy. According to Covington (1992), students may delay starting to preserve their self-esteem. If the result is poor, they can blame lack of time, not lack of ability.

The teacher displays a visual diagram of the risk-procrastination cycle on PPT:

High standards ⟶ Fear of failure ⟶ Wait for ideal state ⟶ Last-minute action ⟶ Exhaustion & self-blame ⟶ Repeat

Then teacher breaks down three core mechanisms behind this loop:

Attribution avoidance – Postponing provides an excuse for failure (“I just ran out of time.”)

Stimulation craving – The thrill of urgency becomes a false motivator.

Cognitive distortion – Believing “I only work well at the last moment” even when it harms performance.

The teacher uses examples from academic life—delayed report writing, all-nighter project slides, and perfectionism-fueled delay. Students are asked to reflect: “Are you really waiting for inspiration… or trying to protect yourself from doing it imperfectly?”

2 Learning Activities

2.1 OH Card Dialogue

The teacher begins by dividing students into 8–10 small groups (4–5 students per group) based on proximity or seating. Each group receives a set of 10–12 OH picture cards. These cards include abstract illustrations, emotional metaphors, and symbolic imagery.

The teacher projects a few sample cards and explains:

“These cards don’t have ‘correct answers.’ Their value lies in what they remind you of. Your first reaction matters most.”

Step 1: Individual Reflection and Sentence Writing

Each student browses their group’s card set and selects one that best represents their current emotional state around procrastination. The teacher asks:

- “What academic task have you been putting off lately?”
- “Does this card resemble your emotional state when avoiding it?”
- “Does it feel like fear? Confusion? Shame? Paralysis? Say yes to your first instinct.”

Students then begin filling in the OH Card Worksheet:

1. Card Description (Write or Sketch)	2. Associative Sentence “When I face ___, I feel like ___ because ___.”	3. Reframed Action Sentence “Even though ___, I choose to start with ___.”

Step 2: Pair Share + Emotional Reflection

Students form pairs within their group and take turns reading their sentences aloud. Their partner listens attentively and responds with one emotionally attuned sentence. The teacher gives examples to guide them:

- “It sounds like you’re afraid of falling short after trying your best.”
- “This card seems to reflect your worry about being judged.”
- “I hear the tension between wanting to begin and fearing imperfection.”

The teacher distributes a Psychological Vocabulary Reference Sheet, which includes terms such as self-doubt, avoidance, fear of failure, loss of control, shame, and comparison anxiety. Students are guided to refer to this sheet when describing their emotional responses. Using the vocabulary provided, students enrich their associative sentences and supportive reflections by choosing words that best represent their feelings.

Step 3: Reframing Statement

Next, the teacher transitions with: “Now, let’s try turning these stuck feelings into a small first step.”

Students complete Column 3 of the worksheet:

- “Even though I’m afraid of _____, I choose to start with _____.”
- “I’m willing to take a small step because _____.”

Teacher provides example first: “Even though I’m unsure how to structure it, I choose to begin by writing just the introduction.”

Students then share their reframed sentences in pairs or groups, offering encouragement to one another:

- “I appreciate how you’re acknowledging the fear but still choosing to begin.”

- “Your first step sounds simple and doable—I believe you can do it.”

The teacher offers a reflective summary: “What we’ve just practiced is the inner shift from ‘I’m scared of failing’ to ‘I choose to begin anyway.’ Images carry emotions. Words build action. Today you used both—and that’s self-regulation in motion.”

2.2 Pre-Commitment Exercise

The teacher distributes a Feedforward Motivation Contract Card to each student and introduces the task with this prompt: “You’ll now set a goal for the next 48 hours and design both a reward and a consequence. Not as punishment—but to anchor your decision.”

Instructions for completing the card:

Feedforward Motivation Contract

1. The academic task I will complete: _____

2. I will complete it by (date/time): _____

✅ If I complete it, I will reward myself with:

_____

❌ If I don’t complete it, I will accept the following consequence:

_____

My signature: _____

Witness (group member): _____

Teacher guidance during the process:

- “Choose a reward that actually excites you—something meaningful.”

- “Avoid vague consequences like ‘I’ll feel bad.’ Make it specific and slightly uncomfortable.

- “You’re not writing this for me. You’re making a deal with yourself.”

Students exchange cards with a partner, explain their contract aloud, and sign each other’s cards as accountability witnesses. Students then take a picture of their signed contract for personal record and upload it to the learning platform or class group.

Teacher states that this contract isn't about pressure. It's about commitment. You're no longer waiting on a deadline to pressure you—you are choosing your own timeline. That's the difference between procrastination and agency.

2.3 Peer Mapping Debrief: From Excuse to Intention

In the final activity process, students return to their groups and reflect on their common procrastination rationales.

Teacher prompt:

- "We all say certain things when we delay starting. What's your go-to excuse?"
- "What are you really protecting when you say that?"
- "What's one new sentence you could say instead?"

Each group identifies 2–3 common excuse patterns and writes new reframed versions on the board as a team. These phrases are posted as a "Wall of Self-Talk Reframes" that stays visible for future lessons.

Excuse Reframing Table

Common Excuse	Reframed Statement
I need more time to think.	I can spend 20 minutes brainstorming now.
I'm not ready yet.	I'll make a checklist so I feel prepared.
I'll wait until I'm in the mood.	I'll work for 15 minutes and see how it goes.

In the end of the lesson, teacher summary: "What we've done here is change language that excuses delay into language that enables action. Let's keep adding to this wall. Your future self will thank you."

3 Conclusion and Evaluation

3.1 Conclusion

Through visual expression and structured motivation design, students came to understand that risk-taking procrastination is not laziness, but a protective mechanism against perceived failure. In the OH card dialogue, they articulated task-related anxiety and began constructing self-supportive action language. In writing a pre-commitment

contract, they practiced linking goals with meaningful consequences. These strategies helped externalize avoidance tendencies and made proactive behavior more tangible.

Students gained emotional clarity, motivation insight, and peer accountability. Some initially hesitated at the idea of self-imposed penalties but later reflected that even the act of writing a commitment changed their mindset. The lesson laid groundwork for transforming 'last-minute panic' into sustainable motivation.

3.2 Evaluation

This lesson employed a multi-dimensional evaluation strategy to assess students' emotional awareness, motivational reframing, and commitment to action. By combining real-time observation, peer interaction, and self-reflection tools, the evaluation not only measured behavioral engagement but also captured students' emotional and cognitive shifts.

Evaluation Form

Evaluation Dimension	Criteria	Method	Indicators
Emotional Awareness	Recognize avoidance feelings and task-related fears	OH Card Worksheet	1. Described image connects to personal experience 2. Expressed emotions are specific and grounded
Motivational Reframing	Translate avoidance into intention	Reframed Action Sentences	1. Includes "I choose" or "I will start…" style sentence 2. Action step is realistic and emotionally anchored
Commitment Activation	Design and follow through on pre-commitment	Feedforward Motivation Contract	1. Deadline and task clearly stated 2. Reward/consequence is meaningful and personal

Peer Engagement	Encourage others and receive insight	Group reflections and board mapping	1. Participated in sentence swaps and contract witness 2. Provided supportive feedback
Follow-up Implementation	Reflect on contract completion and barriers	Self-Reflection Tracker	1. Completion status honestly recorded 2. Insight into obstacles and emotional response to follow-through

Self-Reflection Tracker

Students are asked to implement the task from their Motivation Contract within 48 hours and reflect over a 3-day period using the form below.

1. My chosen task	_____
2. Task execution dates	☐☐☐ Day 1: ___ ☐☐☐ Day 2: ___ ☐☐☐ Day 3: ___
3. Task completed?	☐ Day 1 ☐ Day 2 ☐ Day 3
4. My main emotional state while doing it	_____
5. Biggest obstacle I faced	_____
6. How I motivated myself to start	_____
7. Did I follow through with my reward/consequence?	☐ Yes ☐ No If yes, how did it feel? If no, what will I change next time?
8. Final reflection (write one sentence to encourage yourself)	"_____"

Lesson 12 Review and reflection

Content

Reflective closure is a vital component of behavioral change and motivational internalization. Procrastination is not simply reduced through one-time insight but through cycles of self-observation, action, and reflection. This final session consolidates students' learning across all 11 prior modules, guiding them to revisit their own patterns, interventions, and growth. This final session marks the transition from strategy acquisition to reflective internalization.

Students are invited to view their procrastination not as a fixed trait, but as a dynamic process shaped by cognitive, emotional, and behavioral interactions. By recognizing patterns such as fear of failure, dependency, or rebellious avoidance, and matching them with personalized strategies, they begin to see the architecture of their self-regulation.

Review activities in this session promote self-recognition through imagery, feedback, and articulation of motivational identity. Visual metaphors help students externalize how their mindset has shifted, while symbolic affirmation reinforces autonomy and capability. Through structured reflection and positive closure, students gain both clarity and self-affirmation: they are not just managing tasks—they are becoming self-regulated learners.

Objectives

1. To synthesize the psychological components of academic procrastination covered in prior lessons.

2. To identify which strategies have personally helped students shift behavior and mindset.

3. To express their transformation through visual and narrative activities.

4. To conclude the learning process with emotional recognition and motivational affirmation.

Duration: 90 minutes

Target: First-year undergraduates

Materials/Media

1. PPT presentation

2. HTP Drawing Worksheet

3. Reflection Prompts

4. Certificate of Self-Compassion and Growth (template printed)

5. Markers, colored pencils, whiteboard

6. Affirmation Sentence Bank

Lesson Program

1 Lead-in

2 lesson activity

1.1 Group Timeline Warm-Up

The teacher draws a long timeline on the board labeled “Lesson 1 to Lesson 11.” Students are invited to walk up and write or draw symbols, keywords, or emotions they remember from specific lessons.

The teacher asks: “Which session stood out most for you, and why?” “When did you feel something changed for you—emotionally or behaviorally?” Students write down their answer on their notebook.

1.2 Summary Recap

Using a PPT, the teacher presents brief snapshots of each prior lesson’s core strategy (e.g., task decomposition, motivational reframing, self-compassion language). Students are asked to check off which ones they tried in real life and annotate how they worked.

2.1 House Tree Person Reflective Drawing

The teacher introduces a guided drawing activity based on the therapeutic principles of the House–Tree–Person (HTP) method. Students are invited to represent

their personal learning growth using symbolic imagery, fostering both emotional resonance and self-awareness.

The teacher dims the classroom lights and plays calm, instrumental music in the background to create a quiet, reflective atmosphere. Students are encouraged to turn off their phones and settle into a moment of stillness. The teacher then distributes blank A4 paper and colored pencils or markers to each student, and projects a simple HTP structure diagram (see image: “House–Tree–Person Diagram”).

With soft and steady pacing, the teacher says:

“You’ve come a long way in these 12 lessons—not just learning strategies, but getting to know yourself. Now, we’ll use three simple symbols to reflect where you started, where you are, and where you want to grow next.”

The teacher explains each element:

1. The House represents your internal learning environment—your mindset, your fears, your emotional resistance to academic tasks.

2. The Tree symbolizes your growth—what strategies or inner strengths you’ve developed during the course.

3. The Person represents your learning self—how you now view yourself as a student, and who you want to become.

Students are invited to draw their own House–Tree–Person composition, using imagery, metaphors, or annotations. Emphasis is placed on expression, not artistic skill.

As music continues to play, the teacher gives occasional verbal prompts to support introspection:

- “What kind of ‘house’ did you live in before learning to manage procrastination—was it chaotic, quiet, or closed off?”

- “Is your ‘tree’ still growing? Does it have deep roots? What strategy branches support your progress?”

- “Who is the person in your drawing? What strengths do they carry now that they didn’t before?”

Students are encouraged to add symbols like sunlight (motivation), wind (external pressures), or water (support systems). They may also label key strategies they’ve practiced, such as: “task reframing,” “minimum viable action,” or “emotion naming.”

Once most students finish, the teacher invites those who feel comfortable to share their drawings in small groups. In each group of three, students take turns explaining the meaning of their house, tree, and person. Group mates are encouraged to offer appreciative feedback:

- “Your tree seems really strong. I can see how task planning has helped you.”

- “I relate to the small figure in your person—it shows how much we all want to grow.”

To close, the teacher invites 1–2 students to display their drawings under the visualizer/projector. The teacher affirms their interpretation and offers a reflective comment, such as:

“This is not just a picture—it’s a snapshot of how far you’ve come. The person you’ve drawn already holds the strength you need to move forward.”

Finally, the teacher reminds students they may keep their drawings as a private anchor or submit them anonymously for a classroom reflection display. Students are encouraged to write one short affirmation under their drawing:

“One thing I’ve learned about myself: _____.”

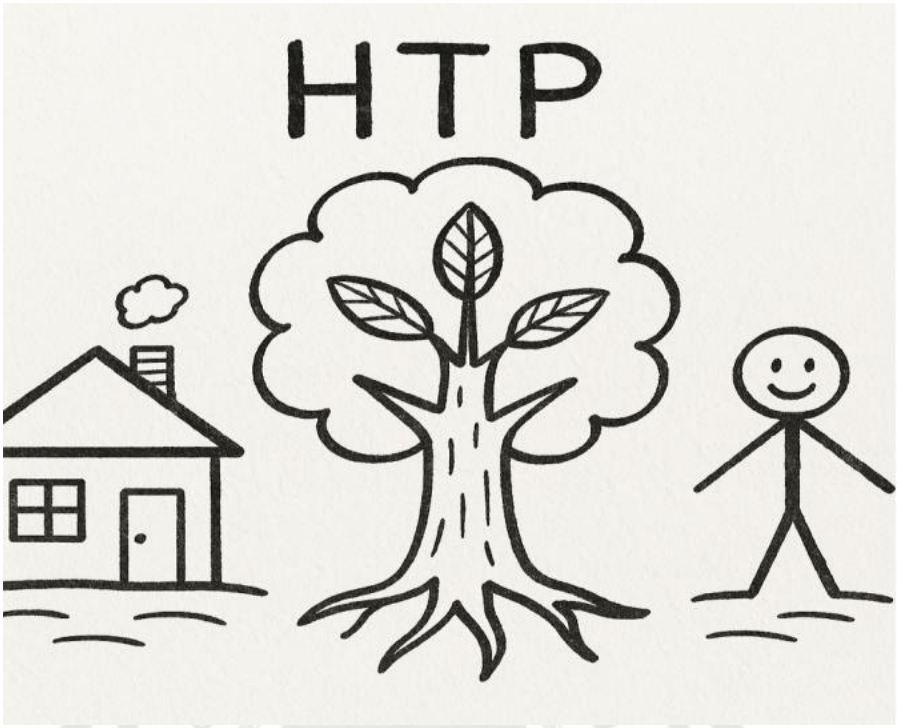


Figure 14 House–Tree–Person Diagram

Source: Created by author

2.2 Certificate and Affirmation

To close the course with a sense of ownership and accomplishment, the teacher invites students to participate in a simple but powerful affirmation and celebration activity. The teacher announces:

“Over the past 12 weeks, you’ve confronted challenges, unpacked procrastination, and practiced real strategies. Today, we are not only reviewing what you’ve done — we are honoring the person you’re becoming.”

Each student receives a blank Affirmation and Certificate Sheet, students complete this sentence with something personal, powerful, and true.

Affirmation & Certificate Sheet

This is to honor the growth and commitment shown throughout the anti-procrastination journey. Please take a moment to reflect and write down your affirmations below.

Name: _____

One thing I've discovered about myself is:

_____

_____

When I face procrastination in the future, I want to remember:

_____

_____

I am the one who can:

_____

_____

Teacher's Signature: _____ Date: _____

Once everyone finishes writing, students form a large standing circle. Those who feel comfortable are invited to share their final sentence aloud. After each student shares, the group softly claps once or says "yes!" in affirmation — cultivating a sense of peer recognition and closure.

The teacher signs each student's affirmation sheet as a symbolic "witness of growth." Teacher collected and pinned to a class wall under the title: "Voices of Change."

3 Conclusion and evaluation

3.1 conclusion

This final session marked the culmination of a 12-lesson journey of self-discovery, emotional insight, and strategy application in overcoming academic procrastination. Through reflective drawing in the HTP Growth Tree activity, students externalized their procrastination tendencies and clarified the growth pathways they have begun to take. The symbolic process of transforming self-perceptions from "I can't" to "I choose to try" was made tangible.

In the Certificate & Affirmation Circle, students publicly claimed their strengths and future commitments, supported by an atmosphere of celebration and solidarity. The

deliberate integration of emotion, metaphor, and community reminded students that self-regulation is not only cognitive but also relational and motivational.

3.2 Evaluation

This final evaluation serves not only as an assessment of student performance, but as a reflection of their growth across the 12-lesson journey.By combining teacher observation, peer feedback, and personal reflection, this evaluation framework celebrates each learner's development while paving the way for continued growth beyond the classroom.

1. Final Self-Reflection Sheet: My SRL Journey

Purpose: To allow students to reflect personally on what they learned, how they've changed, and how they will continue self-regulated learning beyond the course.

1. Personal Awareness:

- Which procrastination tendencies do I still struggle with?

- Which ones have I improved most?

2. Strategy Use:

- Which strategy or concept helped me most?

- How did I apply it to my real academic tasks?

3. Emotional Growth:

- What new emotional reactions have I experienced?

- How do I speak to myself differently now?

4. Autonomy & Ownership:

- Do I now feel more responsible for my learning?

- What is one task I've started more confidently than before?

5. Group Experience:

- What did I learn from others?

- What role do I play in a group setting?

6. Looking Forward:

- What is one mindset or sentence I want to carry with me?

- What commitment do I want to make for my future learning?

Finish with: “The sentence I want to remember from this course is: _____.”

2. Peer Evaluation Form

Please complete anonymously. Evaluate one peer with whom you interacted most frequently during the course. Use the rating scale: 1 (Never) to 5 (Always).

Peer Identifier (e.g., Group 3 - A): _____

My Group Number (optional): _____

Evaluation Dimension	Evaluation Criteria	Rating (1–5)
Engagement in Collaboration	Actively participates in group tasks and takes responsibility	
Listening and Responsiveness	Listens to others and responds constructively	
Expression and Sharing	Clearly communicates ideas and shares experiences	
Emotional Support	Respects others and shows encouragement	
Contribution	Provides key ideas or content to group tasks	

□□□ One thing I learned from this peer:

_____

A sentence I would like to say to them:

_____

2. Teacher Evaluation Form

This form is used to evaluate the overall performance of students in the Self-Regulated Learning and Academic Procrastination course.

✓ Please mark each item: Excellent (5) | Good (4) | Average (3) | Needs Improvement (2) | Not Yet Demonstrated (1)

Student Name: _____ Student ID: _____

Instructor: _____ Group Number: _____

Dimension	Evaluation Item	Evaluation Description	Rating (1–5)
□□□ Cognitive Awareness	Understanding of Procrastination Types	Identifies 6 types of procrastination and their impact on learning	
□□□ Strategy Mastery	Application of Coping Strategies	Selects and applies course strategies to regulate procrastination	
□□□ Behavioral Execution	Initiation and Persistence	Applies strategies inside and outside the classroom	
□□□ Emotional Language	Constructive Action Language	Transforms negative emotion into motivational self-talk	
□□□ Collaboration	Group Interaction & Listening	Participates in group discussions and provides encouragement	
□□□ Reflection & Transfer	Self-Awareness and Forward Planning	Shows growth awareness and develops future learning plans	

□□□ Instructor's Overall Comment:

_____

_____

_____

VITA