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# Exploring the Impacts of Academic Self-Efficacy on Learning Engagement and Academic Success Among Chinese Master's Students

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**Abstract.** This study examines the correlation of academic self-efficacy, learning engagement, and academic achievement among Chinese master's students. Reviewing prior research reveals that while there is ample theoretical knowledge on the positive impact of self-efficacy on academic achievement, there is a lack of detailed case studies providing practical guidance, particularly in the context of Chinese students. This paper builds this gap using a quantitative research design that allows the collection of primary data in the form of structured questionnaires and testing hypotheses using multiple regression analysis to draw inferences from a sample size of 214. The research finds that: (1) academic self-efficacy significantly and positively impacts academic achievement. The dimensions of grades, verbalising, and studying contribute positively, whereas attendance shows no significant effect; (2) academic self-efficacy positively influences learning engagement, with grades, studying, and attendance playing significant roles, while verbalising does not; and (3) learning engagement significantly improves academic achievement, indicating that higher engagement correlates with greater academic success. The results of R-square of 0.514 indicate 51.4% variance in academic achievement, showing a significant impact of self-efficacy and learning engagement. Based on this, the study recommends that universities and institutions build confidence in students' academic abilities and adopt proactive learning habits to enhance self-efficacy.

**Keywords:** academic self-efficacy; academic achievement; Chinese master's students; learning engagement; multiple regression analysis

## 1. Introduction

Graduate education is central to cultivating high-calibre talent and plays a pivotal role in driving scientific innovation and national progress in China (Yang et al., 2023). The quality of graduate education directly impacts the training of advanced professionals, particularly given the dual pressures of global competition and China's modernisation goals (Xu et al., 2022; Zhang, 2024). Over the past decade,

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China has witnessed rapid expansion in its graduate education system. By 2023, the number of newly enrolled graduate students had risen to approximately 1.3 million, with 1.15 million being master's students (National Bureau of Statistics of China, 2023). This figure marks a near doubling of enrolments since 2011, making master's students the dominant cohort within China's graduate education landscape.

However, this growth has brought significant challenges. Concerns about the declining quality of master's education have sparked considerable public debate (Chan & Zhang, 2021; Dong et al., 2024). The expansion has exposed issues such as uneven academic standards and insufficient research skills among students. These challenges highlight the need for strategies to improve the quality of master's education in China. Academic achievement is often regarded as a key indicator of graduate education quality (Liu et al., 2020).

Academic achievement, however, is not limited to acquiring professional knowledge. It also involves the ability to think critically, solve problems, innovate, and apply knowledge across varying contexts (Wang et al., 2018). Previous studies have identified significant obstacles faced by Chinese master's students in achieving these goals. For instance, Liu et al. (2020) reported that many master's students lack the research skills needed to conduct independent, high-level projects. Similarly, Li et al. (2022) noted deficiencies in students' innovative and practical research capabilities, with nearly half of master's students producing no research outputs or publications during their studies (Qiu & Li, 2021). Sun (2023) further highlighted that some students struggle to apply professional knowledge flexibly, especially in interdisciplinary or innovative contexts. These findings point to an urgent need for initiatives aimed at enhancing the academic performance of master's students.

While much research has focused on external factors influencing academic achievement, such as policy frameworks (Tang, 2022), social support systems (Zhang et al., 2024), and family dynamics (Liu et al., 2020), the role of individual factors is often overlooked. Yet, at the master's level, academic success depends heavily on personal attributes such as motivation, learning engagement, and self-efficacy (Lu et al., 2022; Wu et al., 2020). Adopting a micro-level perspective to explore how these individual factors shape academic achievement is, therefore, essential.

One critical factor is academic self-efficacy, which refers to a person's belief in their ability to perform academic tasks effectively. Academic self-efficacy has been shown to significantly influence learning behaviours and outcomes (Alhadabi & Karpinski, 2020; Hwang et al., 2016). For example, Kolo et al. (2017) identified academic self-efficacy as a key determinant of academic success among university students. At the master's level, where students face substantial academic and research pressures, a lack of self-efficacy can lead to feelings of inadequacy, disengagement, and even dropout (Hwang et al., 2016). Self-efficacy influences motivation, learning engagement, and persistence, making it a reliable predictor of academic achievement (Alhadabi & Karpinski, 2020; Mehmood et al., 2019).

Academic self-efficacy influences LE, which in turn shapes academic outcomes (Honicke & Broadbent, 2016; Luo et al., 2023; Olivier et al., 2019). Despite its significance, the relationship between academic self-efficacy and academic achievement remains insufficiently understood, particularly in terms of how self-efficacy interacts with learning engagement for master's students in Chinese universities. The existing studies focus on the psychological effects of academic self-efficacy and LE (Chen, 2024; Wang et al., 2017). However, the mechanisms through which academic self-efficacy and LE jointly affect academic achievement remain unclear, particularly in the context of Chinese master's students.

To address this gap, this study explores the relationship between academic self-efficacy, LE, and academic achievement among Chinese master's students, focusing on three key questions:

1. How does academic self-efficacy influence academic achievement?
2. How does academic self-efficacy affect learning engagement?
3. How does learning engagement impact academic achievement?

The objectives of this research are threefold:

1. To investigate the effect of academic self-efficacy on academic achievement.
2. To examine how academic self-efficacy shapes learning engagement.
3. To assess the influence of learning engagement on academic achievement.

This study offers both theoretical and practical contributions. Theoretically, it extends the application of self-efficacy and learning engagement literature to the context of master's students from China (Chen, 2024; Wang et al., 2017), using quantitative methods. This study provides a more nuanced understanding of how these factors influence academic achievement. Practically, the findings can inform teaching strategies and learning environments that foster self-efficacy and engagement among master's students. By identifying actionable pathways for improving academic performance, this research aims to support the development of high-quality talent in Chinese universities and contribute to the broader goal of enriching graduate education. Its aims are beneficial for policy makers and educators to design and implement strategies such as course structure modifications and workshops on self-efficacy to enhance academic self-efficacy and LE.

## 2. Literature Review

Academic self-efficacy plays a pivotal role in fostering learning engagement (LE) and academic achievement among postgraduate students (Luo et al., 2023; Noreen et al., 2018; Wu et al., 2020). Higher levels of academic self-efficacy equip students with the confidence to set clear goals, adopt effective learning strategies, and actively engage in academic tasks (Brown et al., 2016; Khan, 2023; Li et al., 2022; Satici & Can, 2016). Academic self-efficacy influences how students approach learning challenges, with those possessing high academic self-efficacy demonstrating resilience, seeking appropriate assistance, and adapting their learning methods effectively (Celik, 2022; Gutiérrez & Tomás, 2019). For Chinese

graduate students, this is particularly relevant due to their significant academic workloads and research pressures, where academic self-efficacy emerges as a critical determinant of academic success. This section explores academic self-efficacy, LE, and academic achievement through existing literature, leading to the development of a conceptual framework for this study.

**2.1 Academic Self-Efficacy**

Self-efficacy, as defined by Bandura (1977), is an individual's belief in their ability to successfully perform a specific task in a given context. His social cognitive theory explains the role of observation learning and social experiences. According to Bandura, an individual learning by observing others and their behaviour is influenced by the interaction of personal factors, environmental influences, and behaviour patterns. Based on this, Bandura (1986, 1993) primarily identifies four primary sources of self-efficacy: mastery experience, vicarious experience, verbal persuasion, and physiological states. Among these, mastery experience is the most influential as it builds self-efficacy through successful task completion. Vicarious experience strengthens self-belief by observing others achieve success in similar tasks. Verbal persuasion involves encouragement and support from others, fostering confidence. Finally, physiological states influence self-efficacy, with stress and anxiety diminishing it, while relaxation and positive emotions increase it.

Expanding on Bandura's framework, Sander and Sanders (2009) define academic self-efficacy as university students' confidence in their academic abilities. Similarly, Pintrich and De Groot (1990) highlight students' belief in their capacity to complete academic tasks. While these definitions emphasise confidence, they may oversimplify academic self-efficacy by neglecting other essential factors such as adaptability and resilience. Academic self-efficacy is typically measured using four dimensions: grades, verbalising, studying, and attendance (Sander & de la Fuente, 2022; Sander & Sanders, 2009). The study employs these four dimensions by adopting Sander's approach, a valuable and effective method for comprehending students' self-efficacy and developing tools for improvement, which is the primary goal of the research. Grades represent confidence in achieving high marks, though this focus on outcomes may undervalue the learning process itself. Verbalising reflects confidence in class participation, which does not necessarily equate to understanding or mastery. Studying denotes confidence in planning and preparation, yet effective strategies are crucial for ensuring success. Attendance captures confidence in attending classes regularly, but this alone does not guarantee meaningful engagement in learning activities.

The role of academic self-efficacy in influencing university students' motivation, engagement, and academic success is significant (Alemayehu & Chen, 2023; Martins & Santos, 2019). High academic self-efficacy empowers students to face challenges, actively participate in classroom discussions, and engage more deeply in their studies, often resulting in better learning outcomes (Luo et al., 2023). However, excessively high academic self-efficacy can lead to complacency, where students underestimate task difficulty, overlook potential challenges, and fail to prepare adequately. This overconfidence can result in missed study goals or lower

academic performance (Soner, 2019). Conversely, low academic self-efficacy often leads to self-doubt, decreased motivation, and disengagement, posing significant obstacles to academic achievement (Adams et al., 2020).

Academic self-efficacy, defined as the belief in one's ability to achieve academic goals, is a key factor influencing academic performance (Bandura, 1986, 1997). High academic self-efficacy allows students to set ambitious goals, adopt effective strategies, and persist in the face of challenges, resulting in better academic outcomes (Alegre, 2014; Bhati et al., 2022). Graduate students with high academic self-efficacy are particularly equipped to handle the demanding academic tasks and research requirements of their programmes. They are proactive in seeking feedback, collaborating with mentors and peers, and refining their work, contributing to greater research productivity and academic success (Cheng et al., 2019; Lu et al., 2022; Mehmood et al., 2019; Salimi et al., 2022). There is a variation in how gender, age, major, and economic background impact self-efficacy (Satici & Can, 2016). Studies show that males and females tend to show strengths in different subjects (Huang, 2013). This takes gender, age, and major variables to test the hypothesis and its correlation with self-efficacy.

*Hypothesis 1: Academic self-efficacy positively influences the academic achievement of Chinese master's students.*

Academic self-efficacy also influences coping mechanisms. Students with high academic self-efficacy are more likely to adopt positive strategies, such as seeking help and improving study methods, while those with low academic self-efficacy may exhibit avoidance behaviours that hinder academic progress (Al-Abyadh et al., 2022). Beyond academic performance, high academic self-efficacy supports mental well-being by reducing stress, enhancing academic satisfaction, and improving overall psychological resilience (Azila-Gbettor et al., 2022; Hauck et al., 2020; Shehadeh et al., 2020; Zhen et al., 2017).

**2.2 Learning Engagement**

Learning engagement (LE) refers to the degree of cognitive, emotional, and behavioural investment that students dedicate to their studies. Fredricks et al. (2004) define LE as the extent to which students are actively involved in the learning process. For graduate students, LE includes their effort and active participation in academic activities, research, and other related tasks. According to Zimmerman and Schunk (2003), students actively control their learning processes through planning, monitoring, and evaluating their actions. It reflects their cognitive and emotional investment in academic work, as well as their engagement in essential learning activities, including overcoming challenges and frustrations (Cazan, 2015). LE is often conceptualised as a multidimensional construct comprising three key facets (Chhetri & Baniya, 2022; Park & Yun, 2018):

1. Behavioural engagement, which pertains to students' participation in classroom activities and extracurricular pursuits.
2. Emotional engagement, which captures students' emotional responses to learning tasks and their affective connection to academic activities.
3. Cognitive engagement, which represents the mental effort and strategic thinking students invest in their learning processes.

This multidimensional perspective highlights the comprehensive nature of LE and its significance in shaping students' overall academic experiences. Various factors influence LE, which are broadly categorised into personal and environmental aspects. Personal factors include academic self-efficacy, intrinsic motivation, interest, and personality traits (Azila-Gbettor et al., 2021; Wu et al., 2020). Environmental factors, on the other hand, include teaching methods, peer support, school resources, and family environments (Yang & Wang, 2019). Research by Noreen et al. (2018) and Alemayehu and Chen (2023) demonstrates that higher academic self-efficacy can significantly improve LE by boosting students' confidence and proactivity, particularly when tackling complex tasks. However, external factors, such as the quality of the learning environment, teacher support, and peer interactions, also play a substantial role in influencing engagement (Tao et al., 2023).

Learner engagement (LE) is widely recognised as a critical determinant of students' academic performance and success. High levels of engagement are often associated with better academic outcomes, including the ability to complete tasks effectively and contribute meaningfully to research (Northey et al., 2018; Raza et al., 2020). However, the relationship between LE and academic achievement is not always linear or straightforward. While highly engaged students may achieve strong academic results, some studies highlight the potential downsides of over-engagement. For instance, Caruth (2018) and Firat et al. (2019) suggest that excessive engagement can lead to stress and burnout, ultimately impairing academic performance. Similarly, Gutiérrez and Tomás (2019) and Kim et al. (2019) highlight the nuanced nature of LE, noting that its effectiveness often depends on a balance of personal and environmental factors. Understanding the complex interplay between LE, academic performance, and external influences is essential for fostering an optimal learning environment that supports students' academic and personal growth.

Academic self-efficacy also significantly affects LE, which includes behavioural, cognitive, and emotional dimensions (Fredricks et al., 2004). Students with high academic self-efficacy exhibit greater motivation, persistence, and cognitive flexibility, enabling them to engage deeply with complex academic tasks (Noreen et al., 2018; Wu et al., 2020). Such students employ proactive strategies like goal setting, self-monitoring, and time management (Rigg et al., 2013; Shi & Ko, 2022). For Chinese graduate students, high academic self-efficacy is crucial in sustaining motivation and engagement amid high workloads and research demands (Yang & Wang, 2019; Zhong et al., 2020). These students actively participate in classroom discussions, research collaborations, and academic societies, enriching their learning experiences and academic capabilities (Han et al., 2021; Luo et al., 2023). Additionally, high academic self-efficacy fosters positive emotional experiences such as satisfaction and pride, further increasing LE (Chen et al., 2023; Fokkens-Bruinsma et al., 2021).

*Hypothesis 2: Academic self-efficacy positively influences the learning engagement of Chinese master's students.*

**2.3 Academic Achievement**

Academic achievement (AA) entails the knowledge, skills, and research capacities that graduate students acquire throughout their academic journey (Banarjee & Kumar, 2014; Michael et al., 1983). It is developed through three primary domains: coursework, research activities, and social practice. Coursework involves completing assignments, exams, and projects, which help students master professional knowledge and enhance their academic competencies. Research activities focus on building students' capabilities to conduct effective research, fostering innovative thinking, and engaging in academic projects, paper writing, and conference presentations. Social practice, on the other hand, allows students to apply theoretical knowledge in real-world contexts, such as internships and volunteer services, which contribute to their practical skills and holistic development (Rudakov & Roshchin, 2019). Collectively, these dimensions provide a comprehensive measure of graduate students' growth, reflecting their proficiency in academics, research, and practical applications (Byrne, 2022).

Academic achievement is often seen as a symbol of graduate students' development and a predictor of their career prospects. While it reflects academic abilities and professional competencies (Brown et al., 2016), this perspective may oversimplify the multifaceted nature of academic success. High levels of academic achievement often signify students' proficiency and confer recognition within the academic community (Amida et al., 2021). However, focusing solely on academic achievement risks overlooking critical skills such as creativity and critical thinking. Although strong academic records and research experience enhance career competitiveness (Alhadabi & Karpinski, 2020; Banarjee & Kumar, 2014), they are not the sole determinants of career success. Factors like networking, resilience, and interpersonal skills also play essential roles. Furthermore, strong academic achievement can facilitate access to advanced doctoral programmes and academic opportunities (Caruth, 2018; Celik, 2022), yet overemphasis on academic achievement risks marginalising students who excel in non-academic areas.

Several factors influence academic achievement, including personal and external elements. Personal factors such as academic self-efficacy, motivation, and time management directly affect academic achievement. High academic self-efficacy can increase students' confidence and encourage active engagement in learning and research (Bouih et al., 2021). However, excessive self-confidence can lead to overconfidence, causing the neglect of essential details and ultimately hindering performance. External factors, such as the learning environment, teacher support, peer relationships, and institutional resources, also play significant roles (Descals-Tomás et al., 2021). A conducive learning environment and adequate resources can promote academic achievement (Rafiq et al., 2022), but overreliance on these external factors may undervalue individual adaptability and resilience

Learning engagement (LE), which includes behavioural, cognitive, and emotional involvement, directly influences academic achievement (Fredricks et al., 2004; Lin, 2020). High LE promotes deep understanding and critical thinking through active participation in learning activities and the adoption of self-regulated learning strategies (Caruth, 2018; Vizoso et al., 2018). Emotional engagement, such as

satisfaction and intrinsic motivation, further reinforces such behaviours, driving improved academic outcomes (Ketonen et al., 2016; Martínez et al., 2019).

In the context of Chinese graduate education, LE plays a critical role in meeting the demands of coursework, research, and social practice. Engaged students are more likely to participate actively in research projects, internships, and academic discussions, fostering their research capabilities and practical skills (Anokye-Effah & Nkwantabisa, 2022; Ayala & Manzano, 2018). Furthermore, students with high LE demonstrate stronger adaptability and creativity, translating into better academic outputs (Glapaththi et al., 2019; Luo et al., 2023).

*Hypothesis 3: Learning engagement positively influences the academic achievement of Chinese master's students.*

## 4. Methodology

This study employs a self-administered questionnaire as the primary data collection method, adopting a deductive and positivist approach. Positivism emphasises the testing of research hypotheses through observed and measurable data, making it well-suited to the structured survey and quantitative analysis methods used in this research (Bell et al., 2018; Ghauri & Grønhaug, 2019; Saunders et al., 2019). By using quantitative techniques, this study objectively examines the impacts of academic self-efficacy on academic achievement and LE among Chinese master's students.

Quantitative methods allow for the collection of large-scale data, facilitating the objective measurement of variables such as academic self-efficacy, LE, and academic achievement. The structured format of the survey ensures standardised data collection, which can then be statistically analysed to identify relationships between variables and rigorously test hypotheses. This approach improves the reliability, validity, and generalisability of findings (Hair et al., 2019; Saunders et al., 2019). The focus of this paper is to test the hypothesis of the correlation between variables, emphasising a quantitative study approach centered on hypothesis testing and large-sample analysis (Bell et al., 2018; Bryman & Bell, 2019). Additionally, quantitative methods allow for comparison between different groups and variables and identify developing trends (Yilmaz, 2013).

The questionnaire is designed to align with the research objectives and is divided into four sections. The first section gathers demographic information, which serves as the independent variable. This includes gender, grade, and major of the respondents. The subsequent three sections use Likert five-point scales to measure the study's key dependent variables: academic self-efficacy, LE, and academic achievement. Respondents rate the extent to which they agree with specific item expressions for each dependent variable. The average scores of these items represent the values of the respective variables. The following subsections detail the measurement items for each variable.

### 3.1 Measurement Scale for Academic Self-Efficacy

Academic self-efficacy was measured using a 17-item scale covering four facets: grades, verbalising, studying, and attendance (see Appendix A). The scale, informed by the research of Pintrich and De Groot (1990) and Luo et al. (2023), assessed the extent to which students felt confident in their ability to perform various academic tasks. Responses were recorded on a five-point Likert scale, ranging from "1 = Not at all confident" to "5 = Very confident," providing a comprehensive measure of academic self-efficacy.

### 3.2 Measurement Scale for Learning Engagement

Learning engagement (LE) was measured using a six-item scale (Table 1) based on items from Schaufeli (2002) and Noreen et al. (2018). The scale assessed key aspects of engagement, such as active participation in discussions, connecting course material to personal interests, and maintaining motivation outside class. Respondents rated their engagement on a five-point Likert scale, ranging from "1 = Strongly Disagree" to "5 = Strongly Agree", with higher scores indicating stronger levels of engagement. This method ensured a well-rounded evaluation of students' behavioural, cognitive, and emotional involvement in learning.

**Table 1: Measures of Learning Engagement**

| Symbol | Items | References |
|---|---|---|
| LEE1 | Finding ways to make the course material relevant to my life | Schaufeli, 2002; Noreen et al., 2018 |
| LEE2 | Looking over class notes between classes to make sure I understand the material | |
| LEE3 | Finding ways to make the course interesting to me | |
| LEE4 | Thinking about the course between class meetings | |
| LEE5 | Really desiring to learn the material | |
| LEE6 | Participating actively in small group discussions | |

### 3.3 Measurement Scale for Academic Achievement

Academic achievement was assessed using a six-item scale (Table 2) adapted from Luo et al. (2023). The scale evaluated various aspects of academic performance, including coursework quality, examination scores, knowledge application, peer and teacher recognition, and participation in academic discussions. Respondents rated their level of agreement with each statement on a five-point Likert scale, ranging from "1 = Strongly Disagree" to "5 = Strongly Agree". Higher scores indicated greater levels of academic achievement, capturing both objective performance and perceived academic success.

**Table 2: Measurement Scale for Academic Achievement**

| Symbol | Items | Reference |
|---|---|---|
| AAC1 | I am satisfied with the quality of the coursework and projects I complete | Luo et al., 2023 |
| AAC2 | I usually achieve high scores in examinations | |
| AAC3 | I can effectively master and apply new knowledge I learn | |
| AAC4 | My academic performance is often recognised by teachers and peers | |
| AAC5 | I usually meet or exceed the learning requirements of the courses | |
| AAC6 | I perform well in academic discussions and debates | |

### 3.4 Sampling

The target population for this study comprised current Chinese master's students from universities in China, all aged 18 years or older from all the available fields of study or courses. To collect data, the study employed a combination of convenience sampling and snowball sampling techniques. Convenience sampling was used for its efficiency and ease of accessing participants, while snowball sampling facilitated the recruitment of additional respondents through referrals, ensuring a larger sample size (Bell et al., 2018; Saunders et al., 2019).

The survey began with the researcher's acquaintances at Shanghai Jiao Tong University (SJTU) and Wuhan University. Participants were invited to complete the survey and encouraged to refer 2–5 peers from the same universities, gradually increasing the sample size. After reaching about 80 participants, the study noticed repeated respondents. To avoid this, the questionnaire was distributed widely online and asked for more referrals. After reaching around 402 participants, the study found that no new referrals were being generated from either immediate or connected respondents. The surveys were distributed via WeChat, which allowed for rapid and efficient data collection. The study aimed to gather over 200 valid responses for statistical analysis, which is a good sample size for multiple regression analysis (Jenkins & Quintana-Ascencio, 2020).

### 3.5 Data Analysis

The statistical analysis for this study was conducted using SPSS version 22.0. Descriptive statistics were utilised to summarise the demographic characteristics of respondents, including gender, grade, and major, through frequency analysis. Reliability was tested using Cronbach's Alpha coefficient to assess the internal consistency of the measurement items, with a threshold value of 0.7 considered acceptable (Hair et al., 2018; Stevens, 2017). Following this, Pearson correlation analysis was performed to examine the relationships between the independent variables—academic self-efficacy and learning engagement—and the dependent variable, academic achievement. This step was crucial as a precursor to the regression analysis.

The primary method for hypothesis testing involved two multiple linear regression models. The first model assessed the effects of academic self-efficacy (Hypothesis 1) and LE (Hypothesis 3) on academic achievement, while the second model examined the influence of academic self-efficacy (Hypothesis 2) on learning engagement. Independent demographic variables, such as gender, grade, and major, were controlled in both models to ensure the robustness of the analysis. A p-value of 0.05 was used as the threshold for determining the statistical significance of the regression coefficients (Anderson et al., 2019).

### 3.6 Ethical Considerations

Throughout this research, ethical standards were rigorously observed, including informed consent, risk avoidance, privacy protection, and confidentiality, to ensure the appropriate treatment of participants (Bell et al., 2018; Saunders et al., 2019). All participants were provided with an information sheet explaining the purpose of the research and the reasons for their invitation to participate. Informed consent forms were obtained, and respondents were assured that their participation was entirely voluntary.

To minimise risks, the distribution and collection of questionnaires were conducted via social media platforms, avoiding face-to-face interactions and eliminating potential physical risks. The survey questions were carefully reviewed to ensure they contained no sensitive or potentially distressing content, thereby preventing psychological discomfort among respondents. Privacy and confidentiality were also prioritised. The questionnaire was anonymous, and returned responses were assigned unique IDs, ensuring that individual participants could not be identified. Survey data were encrypted and securely stored on the researcher's computer, accessible only to the research team.

## 4. Findings

The research findings reveal significant insights into how academic self-efficacy and student engagement (LE) affect the academic performance of master's students in China. A total of 400 questionnaires were distributed for this study, and 218 were returned, yielding a response rate of 54.5%. Of the returned questionnaires, four were excluded due to missing over ten responses, leaving 214 valid responses for analysis. These valid responses formed the basis for the statistical analyses conducted in this study. This section begins by presenting the demographic characteristics of the respondents using frequency analysis. The demographics are reported in terms of gender (Figure 1), age (Figure 2), and major (Figure 3). These descriptive statistics provide a foundational understanding of the respondent population and help contextualise subsequent analyses. As shown in Figure 1, the gender distribution of the sample is relatively balanced, with 52.34% of respondents identifying as female and 47.66% as male. Figure 2 illustrates the age distribution, revealing that participants in the 18 to 25-year and 26 to 35-year age groups made up similar proportions. This indicates that the majority of respondents were young adults, which aligns with the study's target population of Chinese master's students.

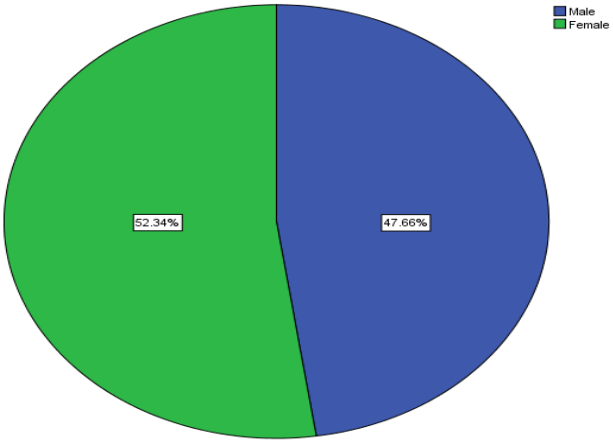


**Figure 1: Gender Distribution (N = 214)**

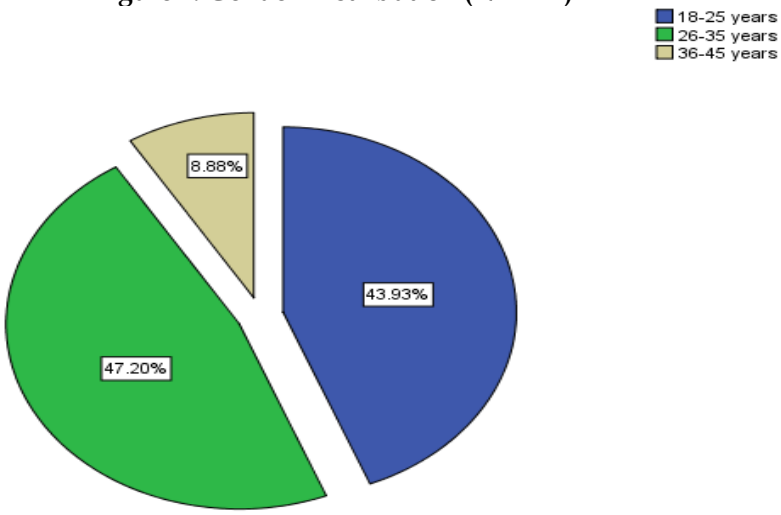


**Figure 2: Age Distribution (N = 214)**

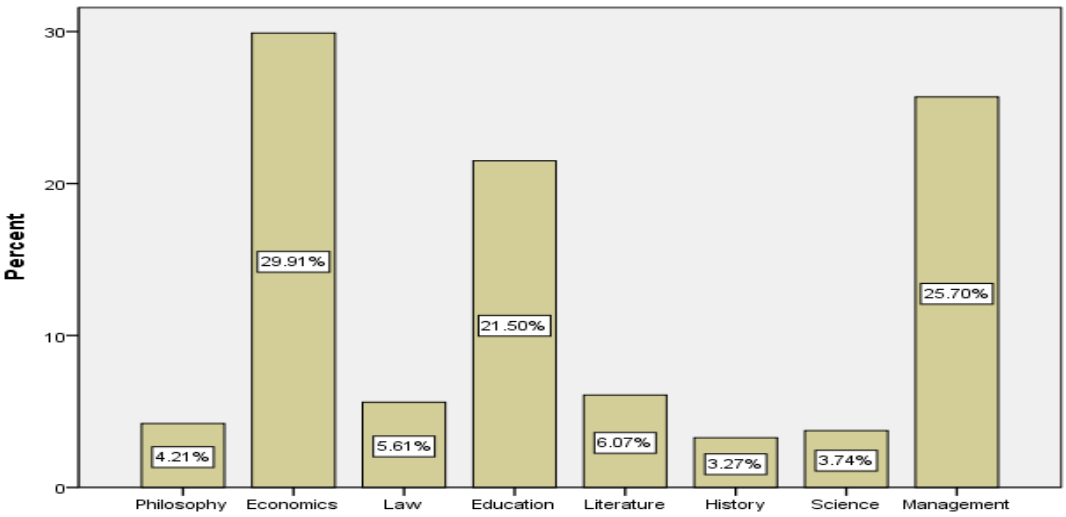


**Figure 3: Major Distribution (N = 214)**

Figure 3 displays the distribution of respondents across different majors. The majority of participants were concentrated on economics (29.91%), management (25.70%), and education (21.50%). In contrast, the representation from other majors, including philosophy, law, literature, history, and science, was relatively low, with each accounting for less than 10% of the sample.

### 4.1 Reliability Test

The reliability test results, presented in Table 3, showed that all variable measurement scales achieved Cronbach's Alpha coefficients above the acceptable threshold of 0.7. This indicates that the survey scales exhibit an adequate level of internal consistency and meet the requirements for reliability.

**Table 3: Reliability Test (N = 214)**

| Variables/Scales | Number of items | Cronbach's Alpha |
|---|---|---|
| Grades | 6 | .768 |
| Verbalising | 4 | .743 |
| Studying | 4 | .757 |
| Attendance | 3 | .723 |
| Learning Engagement | 6 | .799 |
| Academic Achievement | 6 | .795 |

### 4.2 Pearson Correlation Analysis

The Pearson correlation analysis results are summarised in Table 4. All four facets of academic self-efficacy—grades, verbalising, studying, and attendance—were positively and significantly correlated with learning engagement. Furthermore, these dimensions of academic self-efficacy, as well as learning engagement, showed positive and significant correlations with academic achievement.

**Table 4: Pearson Correlation Analysis (N = 214)**

| | GRA | VER | STU | ATT | LEN | AAC |
|---|---|---|---|---|---|---|
| Grades (GRA) | 1 | | | | | |
| Verbalising (VER) | .564*** | 1 | | | | |
| Studying (STU) | .624*** | .590*** | 1 | | | |
| Attendance (ATT) | .416*** | .564*** | .398*** | 1 | | |
| Learning engagement (LEN) | .552*** | .541*** | .647*** | .489*** | 1 | |
| Academic achievement (AAC) | .574*** | .560*** | .629*** | .419*** | .579*** | 1 |

Note: *< 0.05, **p< 0.01, ***p< 0.001 (2-tailed)

### 4.3 Multiple Linear Regressions

*4.3.1 Tests of Hypothesis 1 and Hypothesis 3*

The first regression model tested the effects of the four facets of academic self-efficacy (Hypothesis 1) and learning engagement (Hypothesis 3) on academic achievement, with gender, age, and major included as control variables.

**Table 5: Regression Output: Academic Achievement as the Dependent Variable (N=214)**

| Model | Unstandardised Coefficients | | Standardised Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|
| | B | Std. Error | Beta | | | Tolerance | Variance Inflation Factor (VIF) |
| (Constant) | .113 | .275 | | .412 | .681 | | |
| GRA | .229** | .079 | .196 | 2.913 | .004 | .527 | 1.898 |
| VER | .183* | .072 | .179 | 2.560 | .011 | .485 | 2.062 |
| STU | .283** | .084 | .250 | 3.377 | .001 | .434 | 2.303 |
| ATT | .041 | .064 | .040 | .642 | .522 | .610 | 1.641 |
| LEN | .212** | .075 | .196 | 2.814 | .005 | .489 | 2.044 |
| Gender | -.106 | .066 | -.079 | -1.605 | .110 | .982 | 1.019 |
| Age | .080 | .053 | .076 | 1.515 | .131 | .940 | 1.063 |
| Major | .008 | .009 | .045 | .911 | .363 | .977 | 1.024 |
| R-square= .514; f-statistics= 27.069***, Sig. (F)= 0.000 | | | | | | | |

Note: Dependent Variable: AAC= Academic achievement
Independent Variables: GRA= Grades, VER= Verbalising, STU= Studying, ATT= Attendance, LEN= Learning engagement
Controlling Variables: Gender, Age, and Major
Method: Enter
*< 0.05, **p< 0.01, ***p< 0.001

The model achieved an R-square of .514, indicating that 51.4% of the variance in academic achievement could be explained by the independent and control variables. This represents a moderately strong explanatory power for the model. Among the facets of academic self-efficacy, grades (B = .229**, $p < 0.01$), verbalising (B = .183*, $p < 0.05$), and studying (B = .283**, $p < 0.01$) had positive and significant effects on academic achievement. However, attendance (B = .041, $p > 0.05$) was not significant. Learning engagement also showed a significant positive effect on academic achievement (B = .212**, $p < 0.01$).

The non-significance of attendance could be attributed to the possibility that attendance alone does not ensure active participation or engagement in academic tasks. Similarly, verbalising, while significant in Hypothesis 1, showed lower explanatory power, potentially due to variations in classroom dynamics or cultural factors influencing participation in Chinese academic settings.

*4.3.2 Test of Hypothesis 2*

The outcomes of the test for Hypothesis 2 are presented in Table 6, where learning engagement was taken as the dependent variable, and the four facets of academic self-efficacy—grades, verbalising, studying, and attendance—were treated as independent variables. Additionally, gender, age, and major were included as control variables. As shown in Table 6, the model performed well, with the F-statistic significant at the 0.001 level, indicating a good fit. Collinearity diagnostics confirmed the absence of multicollinearity, as all VIF values were below 5. The tolerance values exceed the critical threshold of 0.2, The results confirm that multicollinearity is not a significant concern, ensuring that regression estimates remain reliable. The R-square value was .511, demonstrating that the four facets of academic self-efficacy and the demographic variables collectively explained 51.1% of the variance in learning engagement.

**Table 6: Regression Output: Learning Engagement as the Dependent Variable (N= 214)**

| Model | | Unstandardised Coefficients | | Standardised Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| | (Constant) | .475 | .252 | | 1.889 | .060 | | |
| | GRA | .157* | .072 | .145 | 2.187 | .030 | .539 | 1.855 |
| | VER | .079 | .066 | .084 | 1.205 | .229 | .488 | 2.047 |
| | STU | .443*** | .071 | .423 | 6.234 | .000 | .516 | 1.937 |
| | ATT | .208*** | .057 | .220 | 3.641 | .000 | .649 | 1.541 |
| | Gender | -.004 | .061 | -.003 | -.064 | .949 | .982 | 1.019 |
| | Age | -.082 | .049 | -.084 | -1.688 | .093 | .953 | 1.049 |
| | Major | -.001 | .008 | -.005 | -.096 | .923 | .977 | 1.024 |
| | R-square= .511; F-statistics= 30.714***, Sig. (F)= 0.000 | | | | | | | |

Note: Dependent Variable: LEN= Learning engagement
Independent Variables: GRA= Grades, VER= Verbalising, STU= Studying, ATT= Attendance
Controlling Variables: Gender, Age, and Major
Method: Enter
*< 0.05, **p< 0.01, ***p< 0.001

Regarding the regression coefficients, three facets of academic self-efficacy—grades (B = .157*, p < 0.05), studying (B = .443***, p < 0.001), and attendance (B = .208***, p < 0.001)—showed positive and significant effects on learning engagement. However, verbalising (B = .079, p > 0.05) did not have a significant impact. In conclusion, academic self-efficacy positively influences learning engagement among Chinese master's students, providing empirical support for Hypothesis 2.

## 5. Discussion

### 5.1 Academic Self-Efficacy and Academic Achievement

This study highlights the positive influence of academic self-efficacy on academic achievement among Chinese master's students, providing empirical support for Hypothesis 1. These findings align with prior research (Azila-Gbettor et al., 2021; Azila-Gbettor et al., 2022; Hauck et al., 2020; Zhen et al., 2017), which emphasises that students with stronger self-efficacy are more likely to excel academically. Academic self-efficacy reflects a student's belief in their ability to successfully complete academic tasks. Higher self-efficacy motivates students to invest more time and effort in their studies, leading to enhanced academic performance. This study reinforces the notion that academic self-efficacy is one of the key determinants of educational success. These findings align with the social cognitive theory of Bandura (1993) that emphasises an individual's belief in their ability to succeed in accomplishing a task.

The results also reveal that the dimensions of academic self-efficacy—grades, verbalising, and studying—have significant positive effects on academic achievement. Confidence in achieving good grades encourages students to plan effectively, invest time, and strive for excellence in exams and assignments (Zhen et al., 2017). Verbalising, which reflects confidence in managing study tasks and independent learning, supports better time management and reduces procrastination, thus improving study efficiency (Cheng et al., 2019; Salimi et al., 2022). Similarly, studying, which encompasses confidence in answering questions, giving presentations, and engaging in academic discussions, fosters verbal communication, critical thinking, and knowledge mastery, all of which enhance academic performance.

Interestingly, the study found that attendance did not significantly influence academic achievement. This could be due to the unique learning behaviours of Chinese master's students, who often engage in self-directed study or use other sources for learning, such as online or tutoring. Additionally, it could be because attendance is not part of the assessment for all the courses. They allocate significant time to independent research and data analysis outside of class (Salimi et al., 2022; Zhen et al., 2017). Attendance alone may not strongly influence academic success in this context, as these students rely more on self-regulation and independent study than traditional classroom participation.

### 5.2 Academic Self-Efficacy and Learning Engagement

The findings also demonstrate that academic self-efficacy has a direct relationship with learning engagement among Chinese master's students, supporting

Hypothesis 2. This aligns with prior research (Luo et al., 2023; Wu et al., 2020), which shows that students with high self-efficacy are more motivated and active in learning environments, leading to better outcomes. These findings highlight the importance of fostering academic self-efficacy in students. Educators and institutions could achieve this by creating supportive learning environments, providing constructive feedback, and encouraging self-reflection practices to help students recognise their capabilities and achievements. Interventions such as workshops and counselling sessions designed to build self-efficacy could further enhance learning engagement and academic performance.

The study found that the dimensions of grades, studying, and attendance within academic self-efficacy positively influence learning engagement. Confidence in achieving high grades motivates students to study attentively, make reasonable plans, and review course content comprehensively for mastery (Luo et al., 2023; Zhong et al., 2020). Similarly, studying boosts confidence in participating in academic discussions and presenting ideas, which enhances knowledge internalisation and fosters learning enthusiasm (Shi & Ko, 2022). Attendance also contributes directly to engagement, as regular attendance promotes collaboration, class participation, and deeper involvement in shared learning activities.

However, verbalising did not show a significant impact on learning engagement. This finding differs from earlier studies (Adams et al., 2020) and may be explained by the autonomous and flexible learning environments of Chinese master's students. This may have potential cultural factors such as passive learning styles, fear of speaking up in the class, and teacher-centered approach (Zhao, 2025), While verbalising helps students organise study plans and manage tasks, its immediate impact on learning engagement may be less pronounced than other dimensions. Additionally, factors such as motivation, access to resources, and peer support may mediate learning engagement, diminishing the role of verbalising. Sampling limitations could also have influenced this finding, as the sample primarily included students from specific disciplines, such as economics, management, and education, limiting generalisability to other fields.

**5.3 Learning Engagement and Academic Achievement**

The study also establishes that learning engagement significantly enhances academic achievement, supporting Hypothesis 3. This finding is consistent with previous research (Anokye-Effah & Nkwantabisa, 2022; Bertheussen & Myrland, 2016; Luo et al., 2023), which shows that engaged students tend to perform better academically. Learning engagement involves active participation, effort, and interest in academic activities, which improves understanding and mastery of course material. The theory of student involvement supports this relationship, asserting that engagement is a critical determinant of academic success.

For Chinese master's students, learning engagement plays a particularly important role in enhancing academic achievement ($B = .212^{**}$, $p < 0.01$). Behaviours such as promptly reviewing course notes help students consolidate their knowledge and fully comprehend course content, improving test performance and the practical application of knowledge (Ayala & Manzano, 2018;

Luo et al., 2023). Sustained attention to course material between classes also ensures long-term retention and coherent understanding. Participation in group discussions enables the exchange of diverse perspectives, fostering critical thinking and deeper insights into learning materials.

High levels of learning engagement also make students more proactive, improving their academic performance both inside and outside the classroom. For instance, students who connect course content to real-life applications often develop a positive attitude toward learning, which enhances their intrinsic motivation and persistence (Anokye-Effah & Nkwantabisa, 2022). Similarly, making courses interesting encourages students to remain active and motivated, helping them overcome academic challenges with greater confidence. Overall, learning engagement stimulates interest, cultivates intrinsic motivation, and fosters positive learning behaviours, which collectively lead to enhanced academic performance.

## 6. Limitations

This study acknowledges several limitations that may influence its findings and their broader applicability. Firstly, the relatively small sample size of 214 respondents limits the representativeness of the results. While the study provides valuable insights, the majority of respondents were from fields such as economics, management, and education. The study habits, academic pressures, and requirements of master's students in other disciplines may differ significantly, potentially affecting the relationships among academic self-efficacy, learning engagement, and academic achievement. In addition, the snowball sampling method introduces bias, as participants are recruited through referrals, which may not accurately represent the broader population. Therefore, the findings cannot be generalized. To enhance the generalisability and robustness of future research, expanding the sample size to include students from a wider range of disciplines is essential.

Another limitation stems from the reliance on self-reported measures for academic achievement. Respondents may have provided inaccurate or overly positive responses due to social desirability bias or self-perception bias, which could impair the validity of the results. Future studies could address this issue by incorporating more objective indicators of academic achievement, such as course grades, academic publications, and supervisor evaluations. These objective metrics would provide a more accurate and reliable assessment of students' academic performance, reducing the potential for bias introduced by self-reporting.

Furthermore, this study employed a purely quantitative approach, which, while effective in identifying relationships and correlations between variables, may not provide a comprehensive understanding of the underlying mechanisms. Quantitative analysis is limited in uncovering the specific processes through which academic self-efficacy influences learning engagement and academic achievement. Incorporating qualitative methods, such as interviews or focus groups, could provide richer, more nuanced insights into students' experiences

and perspectives. For instance, interviews could explore students' perceptions of their self-efficacy, learning engagement, and academic challenges, offering a deeper understanding of how these factors interact in different contexts.

## 7. Conclusion

This study highlights the important connections between academic self-efficacy, learning engagement, and academic achievement among Chinese master's students. Using a quantitative approach with 214 valid responses, the research sheds light on how these factors interact. Academic self-efficacy emerged as a key driver of both academic performance and learning engagement. Specific dimensions like grades, verbalising, and studying significantly influenced academic achievement, while grades, studying, and attendance played a notable role in enhancing learning engagement. Interestingly, attendance had no significant impact on academic achievement, and verbalising did not notably influence learning engagement, suggesting the need to explore the contextual factors that shape these dynamics.

The findings suggest that students with higher levels of academic self-efficacy are more likely to employ effective learning strategies, such as setting clear goals, managing their study schedules, and actively engaging in academic discussions. These behaviours contribute to better academic outcomes. Similarly, learning engagement, marked by consistent participation in class, regular review of materials, and collaborative discussions, was identified as a key factor in driving academic success. Together, these insights deepen our understanding of how self-efficacy and engagement contribute to students' academic achievements.

The study also points to practical implications for students, educators, and institutions. For students, building confidence in their academic abilities and adopting proactive learning habits are essential. Educators and universities can play a significant role in supporting this process by fostering positive learning environments, providing constructive feedback, and offering resources such as workshops or mentoring programmes. Supervisors, in particular, can help by setting realistic goals, offering guidance, and encouraging research initiatives to build both self-efficacy and engagement.

While the findings provide valuable insights, the study acknowledges certain limitations. The sample size was relatively small, and given its limited applicability, the results are robust in explaining the correlation between self-efficacy, LE, and academic achievement. Certainly, future research should consider larger and more diverse samples to capture a fuller picture of these dynamics. Increasing the sample size and further research on contextual factors that influence the relationship between attendance and academic achievement, as well as verbalising and learning experience (De Clercq, Galand, Hospel, & Frenay, 2013, p. 765), will aid in understanding why these dimensions did not impact the outcomes and provide a more comprehensive view.

This research highlights the critical roles of academic self-efficacy and learning engagement in promoting academic achievement. The findings offer practical

guidance for creating supportive educational environments that empower students and improve their academic performance, contributing to the overall improvement of graduate education in China.

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# 9. Appendix

**Appendix A: Measurement Scale for Academic Self-Efficacy**

| Facets | Symbol | Items | References |
|---|---|---|---|
| Grades | GRA1 | Produce your best work under examination conditions | Pintrich & De Groot, 1990; Luo et al., 2023 |
| | GRA2 | Attain good grades in your work | |
| | GRA3 | Produce coursework at the required standard | |
| | GRA4 | Write in an appropriate academic style | |
| | GRA5 | Pass assessments at the first attempt | |
| | GRA6 | Produce your best work in coursework assignments | |
| Verbalising | VER1 | Study effectively on your own in independent/ private study | |
| | VER2 | Manage your workload to meet coursework deadlines | |
| | VER3 | Plan appropriate revision schedules | |
| | VER4 | Remain adequately motivated throughout | |
| Studying | STU1 | Respond to questions asked by a lecturer in front of a full lecture theatre | |
| | STU2 | Give a presentation to a small group of fellow students | |
| | STU3 | Engage in profitable academic debate with your peers | |
| | STU4 | Ask lecturers questions about the material they are teaching during a lecture | |
| Attendance | ATT1 | Attend most taught sessions | |
| | ATT2 | Be on time for lectures | |
| | ATT3 | Attend tutorials | |