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What shapes EMI students' achievement goals? The influence of locus of control, future time perspective, and self-regulated learning

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Abstract: This study investigates the factors influencing academic achievement among students enrolled in English as a Medium of Instruction (EMI) programs in Chinese universities, highlighting how motivational orientations, time perspectives, and control beliefs shape learning outcomes. Grounded in Achievement Goal Theory, Future Time Perspective (FTP), and Locus of Control (LOC), the study collected survey data from 480 undergraduate students in accounting and tourism majors. Partial Least Squares Structural Equation Modeling (PLS-SEM) was employed to test the measurement and structural models. Results indicate that mastery-approach goals, performance-approach goals, and future time perspective significantly predict academic achievement. Moreover, internal locus of control moderates the relationship between motivational constructs and performance, underscoring its importance in the EMI context. By integrating motivation, time perspective, and control belief theories, this study provides a comprehensive framework to explain academic outcomes in EMI higher education. The findings offer actionable insights for designing instructional strategies and support systems that enhance EMI students' motivation, self-regulation, and achievement.

Keywords: *Achievement goal theory, Achievement goal, English as a Medium of Instruction (EMI), Future time perspective, Locus of control.*

1. Introduction

With the rapid advancement of higher education internationalization, English as a Medium of Instruction (EMI) has become a key strategy for non-English-speaking countries to modernize education and enhance global competitiveness [1-3]. EMI refers to the use of English to teach academic content in contexts where English is not the native language, enabling students to simultaneously acquire subject knowledge and improve their English proficiency [4]. As such, many educational institutions regard EMI as an effective approach to enhance teaching quality and attract international talent [5, 6].

Since the early 21st century, China has actively promoted EMI policies through initiatives such as bilingual education pilots, Sino-foreign joint programs, and the establishment of international curricula, resulting in the rapid expansion of EMI courses [7, 8]. For instance, in 2001, the Ministry of Education of China set a target for undergraduate courses to deliver 5% to 10% of instruction in a second language, and has continued to encourage the development of English-taught programs through a series of policy directives [8]. By 2006, over 97% of Chinese higher education institutions had implemented EMI courses [9], and in 2020, an online EMI platform was launched to provide academic resources to students worldwide.

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Empirical studies have demonstrated that EMI can effectively enhance students' disciplinary knowledge and English proficiency, while also broadening their intercultural awareness and global competitiveness [2, 10, 11]. However, academic performance among EMI students remains inconsistent and, in some cases, unsatisfactory [5], raising scholarly concern regarding the underlying mechanisms shaping their learning motivation and achievement goal orientations.

Previous research has identified language comprehension difficulties, cultural adaptation stress, and inadequate instructional preparation by teachers as key obstacles to EMI students' academic achievement [6, 12, 13]. Particularly in EMI contexts, students are required not only to meet the academic demands of specialized disciplines, but also to overcome the cognitive and psychological burden associated with learning through a second language [14]. As such, understanding the achievement goal orientations of EMI students within this dual-challenge environment holds significant theoretical and practical implications for improving their academic outcomes.

Recent studies grounded in Achievement Goal Theory (AGT) have yielded a wealth of findings on the relationship between learning motivation and academic performance. However, there remains a notable research gap concerning the application of Achievement Goal Theory within EMI contexts. According to Achievement Goal Theory, individuals' learning behaviors are driven by their achievement goal orientations, which influence not only their choice of learning strategies but also their overall academic outcomes. While research has highlighted the critical role of self-regulated learning strategies in enhancing academic performance, particularly in relation to mastery goal orientations [15], empirical evidence specific to EMI learners is still limited.

In EMI settings, where students navigate both linguistic challenges and culturally diverse learning environments, little is known about how their achievement goals are constructed and how these, in turn, affect their use of self-regulated learning strategies. Furthermore, future time perspective, a forward-looking motivational cognition, has been shown to positively correlate with learning strategies and achievement motivation [16]. However, whether future time perspective influences self-regulated learning through the promotion of mastery goal orientation remains underexplored within the achievement goal theory framework.

Locus of control is also regarded as a critical individual trait that affects one's achievement goal orientation and behavioral regulation. Nevertheless, its potential role as a moderator between future time perspective and self-regulated learning particularly within the EMI student population, has yet to be systematically examined. In addition, most achievement goal theory based research has been conducted in mainstream language learning environments, with limited attention to EMI learners who must manage the dual demands of language acquisition and academic content mastery under cultural adaptation pressures [17].

Accordingly, this study aims to integrate future time perspective, self-regulated learning, and locus of control within the Achievement Goal Theory framework to construct a more motivation-oriented learning process model, addressing the current theoretical and practical gap in understanding EMI students' academic behaviors.

2. Literature Review and Hypothesis Development

2.1. Achievement Goals

Achievement goals refer to the goal orientations and behavioral intentions that individuals adopt in achievement contexts, particularly in relation to learning and performance. As a central construct in educational psychology, achievement goals are instrumental in understanding students' learning motivation and behavioral outcomes. The theory originated from Nicholls [18] who distinguished between mastery goals—focused on learning and self-improvement—and performance goals—centered on outperforming others and receiving external evaluation.

Building on this foundation, Elliot and McGregor [19] proposed the 2×2 achievement goal framework, which further categorized each goal type into approach and avoidance orientations. This led to four goal types: mastery-approach, mastery-avoidance, performance-approach, and performance-

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avoidance, offering a more nuanced understanding of students' motivational tendencies throughout the learning process. To enhance measurement validity, Elliot and Murayama [20] developed the revised Achievement Goal Questionnaire (AGQ-R), refining the original scale items and validating its psychometric properties, which has since been widely adopted in educational research.

The core focus of achievement goal research lies in examining the goals students adopt when pursuing academic success, as these goals influence their choice of learning strategies, behavioral engagement, and emotional responses. Studies have consistently shown that students who adopt mastery-approach goals are more likely to exhibit high levels of learning motivation, self-regulation, and positive academic emotions [21, 22], whereas those oriented toward performance-avoidance goals tend to experience academic anxiety and lower achievement [23].

Accordingly, achievement goal theory not only provides a framework for explaining individual differences in learning behaviors but also serves as a valuable foundation for designing motivation-oriented instructional strategies. It offers practical implications for educators seeking to foster long-term, sustainable learning motivation among students.

Recent studies have continued to validate the applicability of Achievement Goal Theory in diverse educational settings. A large-scale meta-analysis by Bardach, et al. [24] revealed a strong alignment between students' achievement goals and the goal structures promoted in classrooms. In particular, a mastery-oriented instructional climate was found to significantly foster mastery-approach goals among students, which in turn enhanced their learning motivation and academic performance. Pelletier, et al. [25] applied Achievement Goal Theory within the field of school psychology and emphasized that strengthening students' mastery goal orientations could promote self-improvement and learning engagement. They further recommended the implementation of multiple goal strategies to accommodate individual differences among students.

Struck Jannini, et al. [26] in a systematic review of STEM education, found a consistent positive relationship between mastery-oriented goals and constructive learning strategies and motivation. Their findings also highlighted that students' goal orientations are influenced by both cultural and disciplinary contexts. The authors called for future research to incorporate more qualitative and culturally responsive designs to gain deeper insight into students' motivational processes. Collectively, these studies affirm that achievement goal offers robust predictive power and practical value across varied educational environments.

2.2. Self-Regulated Learning

Self-Regulated Learning originates from Bandura's concept of self-efficacy within social cognitive theory and was later systematically developed by Zimmerman [27] into a comprehensive learning model. This model emphasizes learners as proactive agents who regulate their learning behaviors and outcomes through strategies such as planning, monitoring, and reflection. According to Zimmerman and Risemberg [28] SRL conceptualizes the learning process not as a passive transmission from teacher to student, but as a dynamic and active process whereby learners set goals, select appropriate strategies, and continuously monitor their progress.

The core components of self-regulated learning include goal setting, self-monitoring, self-evaluation, time and environment management, strategic use of learning methods, and self-motivation [29]. These components are essential in helping learners sustain motivation and attention when facing complex or long-term academic tasks. This is particularly critical in higher education contexts, where autonomous learning and adaptability are indispensable for academic success. Self-regulated learning often interacts with other psychological variables such as motivation, self-efficacy, and emotional regulation, making it a key framework for understanding differences in learning outcomes among students.

The importance of self-regulated learning lies in its strong associations with learning motivation, academic achievement, self-efficacy, and learning persistence. Students with high levels of self-regulation are more capable of coping with academic challenges, overcoming procrastination, and

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excelling in autonomous learning environments, ultimately demonstrating superior academic performance Onwubiko [30]. Moghadari-Koosha, et al. [31] found that self-regulated learning, together with self-efficacy and learning motivation, jointly predicts academic achievement, with particularly strong effects observed in health-related disciplines. Moreover, self-regulated learning has been shown to reduce academic anxiety and enhance learning persistence, making it a crucial adaptive mechanism for students in high-demand learning contexts such as EMI programs [32].

In terms of empirical evidence, Neeraja, et al. [33] conducted a survey among university students and found that both self-regulated learning and intrinsic motivation significantly predicted academic achievement. Their regression analysis demonstrated that these factors had a positive influence on GPA. In a separate study involving 400 nursing and medical students, Moghadari-Koosha, et al. [31] reported a significant positive correlation between self-regulated learning and academic performance across disciplines, with self-regulated learning accounting for 19.6% of the variance in academic outcomes. Similarly, Higgins, et al. [34] observed that students with higher levels of self-regulated learning were more adept at mastering complex scientific concepts and maintaining proactive engagement in science-based courses.

Self-Regulated Learning emphasizes learners' active regulation of their learning processes, including the selection of cognitive strategies, monitoring of learning progress, and regulation of emotional states. It is widely recognized as a strong predictor of academic success. According to the three-phase model proposed by Zimmerman and Risemberg [28] students with high self-regulated learning capabilities set specific goals prior to learning, monitor the effectiveness of their strategies during learning, and engage in reflection and adjustment after learning. This cyclical process is essential for enhancing learning efficiency and outcomes.

In the context of EMI, students face dual challenges: mastering academic content while simultaneously overcoming language comprehension barriers. Under such conditions, SRL strategies such as self-monitoring, self-motivation, and time management become particularly crucial. These strategies help students manage cognitive load, improve understanding, and sustain motivation throughout the learning process.

A substantial body of empirical research has also confirmed the positive relationship between self-regulated learning and academic achievement. Moghadari-Koosha, et al. [31] reported that self-regulated learning is the most significant predictor of academic performance in the fields of medicine and nursing, contributing substantially to both classroom learning and practical training outcomes. Similarly, Higgins, et al. [34] found that students in STEM-based EMI programs with high levels of self-regulated learning were more effective in comprehending English-mediated instruction and academic concepts, and demonstrated stronger academic performance overall. In addition, Neeraja, et al. [33] conducted a regression analysis and confirmed that both self-regulated learning and intrinsic motivation significantly predicted undergraduate students' GPA.

Taken together, these theoretical foundations and empirical findings suggest that EMI students with higher levels of self-regulated learning are better equipped to manage the dual demands of language and subject content, ultimately enhancing their academic achievement. Based on this reasoning, the present study proposes the following hypothesis:

H_6: Self-regulated learning positively influences achievement goals among EMI students.

2.3. Future Time Perspective

Future Time Perspective refers to the extent to which individuals are able to form psychological connections between their current actions and future goals. It has emerged as a critical construct in recent research on motivational psychology and learning behavior. Future time perspective theory originated from the behavioral motivation framework developed by Nuttin, et al. [35], which emphasized the temporal extension of goal orientation. That is, the clarity and depth with which individuals plan for future goals determine the direction and strength of their present actions [36].

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Subsequent research has integrated future time perspective into broader frameworks such as social cognitive theory and self-determination theory, positioning it as a cognitive-motivational construct that profoundly influences behavior planning, self-regulation, and learning engagement [37].

The significance of Future time perspective lies in its function as a key variable for explaining and predicting learning motivation, achievement behaviors, and self-regulated learning strategies. Students with a strong future time perspective are more capable of delaying gratification, sustaining effort, and demonstrating higher levels of planning and self-discipline in goal setting and resource allocation [38]. Future time perspective has also been shown to moderate the relationship between academic self-efficacy and performance, with practical implications for enhancing persistence, reducing procrastination, and mitigating academic burnout [39].

In terms of empirical findings, De Volder and Lens [40] in a study involving 251 high school students, found that those with higher GPAs tended to value long-term goals more and perceived current effort as highly instrumental in achieving future outcomes. Similarly, Husman, et al. [41] reported that when classroom activities strengthen students' psychological connections to their future goals, learners demonstrate greater commitment to academic content, along with increased motivational persistence and resilience. Additionally, Stănescu and Iorga [16] found a positive relationship between future time perspective, self-regulated learning, and achievement motivation, suggesting that future-oriented individuals are more likely to adopt effective learning strategies and exert stronger behavioral control.

Future Time Perspective refers to individuals' cognitive, emotional, and motivational connections to their future goals, specifically, the extent to which they perceive their current learning behaviors as meaningful steps toward achieving those future outcomes. According to future time perspective theory developed by Nuttin, et al. [35], when learners view present actions as instrumental to future goal attainment, they are more likely to maintain sustained motivation and engage in effective learning behaviors. Simons, et al. [36] further identified two key dimensions of future time perspective: extension means the temporal scope into the future, and value means the perceived importance of future goals. Both dimensions have been found to significantly predict students' learning engagement, self-regulation, and academic performance.

In the context of EMI, where students face dual challenges of language comprehension and academic content mastery, FTP plays a particularly important role. Students who are able to psychologically link their current learning efforts with future aspirations—such as academic advancement, career development, or international opportunities—are more likely to remain motivated and overcome short-term difficulties. Research suggests that students with a high level of FTP are better able to delay gratification, resist distractions, and engage in goal-directed behaviors, leading to greater persistence and performance in high-pressure and cognitively demanding learning environments [38].

Empirically, De Volder and Lens [40] found that high-achieving secondary school students tended to assign greater value to long-term goals and perceived current academic efforts as highly instrumental in achieving those goals. Similarly, Husman, et al. [41] emphasized that when instructional activities enhance students' psychological connection to their future aspirations, learners exhibit increased classroom engagement and sustained learning motivation.

In EMI contexts, Struck Jannini, et al. [26] observed that future time perspective was strongly associated with learning motivation, academic persistence, and positive affect among students in STEM courses, with especially pronounced effects for non-native English speakers. These findings suggest that future time perspective serves not only as a motivational lens through which students interpret the value of current tasks, but also as a psychological resource for overcoming language barriers and maintaining long-term engagement in demanding academic environments.

Taken together, theoretical and empirical evidence supports the view that future time perspective can help EMI students establish meaningful links between current learning and future academic or career goals. This future-oriented cognition is particularly important in EMI courses, where future time

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perspective may bridge the gap between language learning and disciplinary development. Based on this reasoning, the present study proposes the following hypothesis:

H_2. Future time perspective positively influences achievement goals among EMI students.

2.4. Locus of Control

Locus of Control is a key individual difference variable rooted in social learning theory, originally proposed by Rotter [42] to describe individuals' beliefs regarding the sources of control over life events and behavioral outcomes. Based on this framework, Locus of control is typically categorized into two types: internal locus of control, where individuals believe that outcomes are primarily determined by their own efforts; and external locus of control, where outcomes are attributed to luck, external circumstances, or other people.

Since its introduction, the concept of locus of control has been widely applied across education, psychology, and organizational behavior as a crucial predictor of motivation and performance outcomes [43]. In terms of its conceptual structure, locus of control is not limited to a unidimensional personality trait but can be further divided into subdimensions such as internal effort control and external chance control. For example, Trice's [44] Academic Locus of Control Scale is frequently used to measure students' attributional tendencies regarding academic success and failure, distinguishing whether they attribute results to personal effort or external factors. This distinction is theoretically and practically valuable for understanding students' learning behaviors, tendencies toward self-regulated learning, and motivational orientations [45].

Locus of control is closely related to self-regulated learning. Research has shown that students with an internal locus of control are more likely to engage in proactive learning strategies, such as self-monitoring and sustained effort, which in turn enhances their academic achievement [46]. Internal control beliefs also strengthen self-efficacy and goal orientation, enabling students to effectively cope with academic challenges and maintain a strong motivational foundation. This is especially important for students in EMI programs, who must manage both linguistic and disciplinary demands. For such learners, internal locus of control provides a solid cognitive and motivational basis for attributing outcomes to their own actions and regulating effort accordingly.

Empirical evidence further supports this perspective. Merkine, et al. [47] in a study conducted with Ethiopian university students, found a significant positive correlation between internal locus of control and academic performance, whereas external locus of control was negatively correlated with achievement. This suggests that a strong sense of personal control is a key predictor of academic success. Similarly, Suraj, et al. [43] in a study of Indian university students, reported that locus of control and self-esteem jointly accounted for up to 41% of the variance in academic achievement. Students with an internal locus of control consistently outperformed their externally oriented peers.

In EMI courses, students are required to navigate both linguistic transitions and the mastery of academic content. Individuals with a stronger internal locus of control are more likely to believe that their own actions directly influence learning outcomes, leading them to demonstrate higher levels of persistence and proactive engagement in learning tasks [46]. Internally oriented students are more inclined to set specific learning goals, adopt active learning strategies, monitor their performance, and exhibit greater adaptability and resilience when facing difficulties. Locus of control has also been recognized as a fundamental motivational trait that enhances both learning motivation and self-regulation. Students with an internal locus of control typically display higher self-efficacy and achievement-oriented attitudes, which are conducive to improved academic outcomes [48].

Empirical findings provide consistent support for the link between internal locus of control and academic success. Merkine, et al. [47] reported that university students with an internal locus of control significantly outperformed those with an external locus of control, with the latter showing a negative association with academic achievement. Similarly, Suraj, et al. [43] found that locus of control and self-esteem jointly explained 41% of the variance in academic performance, highlighting the predictive value of internal control beliefs.

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In summary, locus of control serves as a core personality construct that regulates the degree of responsibility and engagement individuals assume in their learning processes. In EMI learning environments, an internal locus of control may enable students to overcome language barriers and proactively adopt effective learning strategies, thereby enhancing academic achievement. Based on this reasoning, the present study proposes the following hypothesis:

H_3. Locus of control positively influences achievement goals among EMI students.

Self-Regulated Learning emphasizes learners' active management of learning strategies, progress monitoring, and ongoing behavioral adjustments, serving as a key mechanism for achieving academic goals. Within the framework of Achievement Goal Theory, the achievement goals individuals adopt during the learning process—such as mastery-approach goals—are closely linked to their use of learning strategies. SRL is often viewed as an important tool for attaining these goals. However, researchers have noted that possessing SRL abilities alone does not guarantee effective translation into motivational or goal-oriented behavior. Individual traits such as locus of control may serve as critical moderators in this process [48].

Empirical evidence supports the theoretical position of locus of control as a moderator. Saddiqua and Loona [48] found that students with an internal locus of control were more likely to internalize mastery goals as stable behavioral patterns. Their study also showed that locus of control significantly moderated the relationship between achievement goals and self-handicapping strategies. In other words, internal control beliefs can strengthen learners' ability to translate self-regulated learning strategies, such as time management and emotional regulation, into long-term goal-directed behavior. Similarly, Satianugraha [46] studying Indonesian university students, found that SRL learners with a stronger internal locus of control demonstrated greater clarity in their learning goals and consistency in their choice of learning strategies, further reflecting the moderating role of locus of control in motivational goal formation.

In summary, locus of control influences whether students attribute responsibility for their learning outcomes to themselves, thereby affecting their use of strategies and the formation of achievement goals. Among students with strong internal control beliefs, self-regulated learning behaviors are more likely to reinforce their achievement goal motivation. In contrast, for those with an external locus of control orientation, even possessing self-regulated learning skills may not translate into internalized goal orientations due to a lack of perceived control.

Accordingly, this study proposes the following hypothesis:

H_4. Locus of control positively moderates the relationship between self-regulated learning and achievement goals.

Locus of control reflects an individual's attributional tendency regarding the causes of outcomes, specifically, whether one believes that results are determined by their own actions (internal locus of control) or by external circumstances beyond their control (external locus of control). Locus of control not only directly influences behavioral choices and motivational investment but is also regarded as a higher-order psychological trait that may moderate how individuals orient themselves toward time and goal setting. Within the framework of future time perspective, an individual's ability to connect present learning efforts with future goals is considered a key predictor of long-term goal orientation and persistence in learning behaviors [36]. However, the strength of future time perspective's influence may vary depending on whether individuals possess a strong sense of personal control.

Theoretically, although future time perspective emphasizes time extension and motivational links to future goals, its influence may be diminished in individuals who lack a strong internal control belief. Even when students possess a high degree of future orientation, if they perceive little control over learning outcomes, they may struggle to internalize goals or sustain motivation for action. Conversely, individuals with an internal locus of control are more likely to believe that their efforts directly shape future results, enabling them to transform future time perspective into meaningful learning motivation and goal-oriented behaviors. Thus, locus of control may function as a key moderating mechanism between future time perspective and achievement goal orientation.

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Empirical studies support this perspective. Afzal and Jami [45] found that individuals with an internal locus of control, when their needs for autonomy and competence are satisfied, are more likely to perceive long-term goals as personal responsibilities and pursue them with greater determination, thereby reinforcing their achievement goal setting. Similarly, Saddiqua and Loona [48] demonstrated that locus of control moderates the relationship between extrinsic motivation and goal internalization, indicating that the sense of control plays a stable regulatory role in goal-directed behavior. While future time perspective has been shown to predict goal setting and delay of gratification, its predictive power may weaken in the absence of internal control beliefs. This is particularly relevant in high-pressure EMI learning environments, where a strong sense of control is essential for transforming future orientation into concrete action strategies.

In sum, locus of control can be conceptualized as a facilitating variable that strengthens the influence of future time perspective on achievement goal orientation. Internally oriented students are more likely to translate future-oriented values into concrete academic goals and sustained motivation. Based on this rationale, the present study proposes the following hypothesis:

H_5: Locus of control positively moderates the relationship between future time perspective and achievement goals.

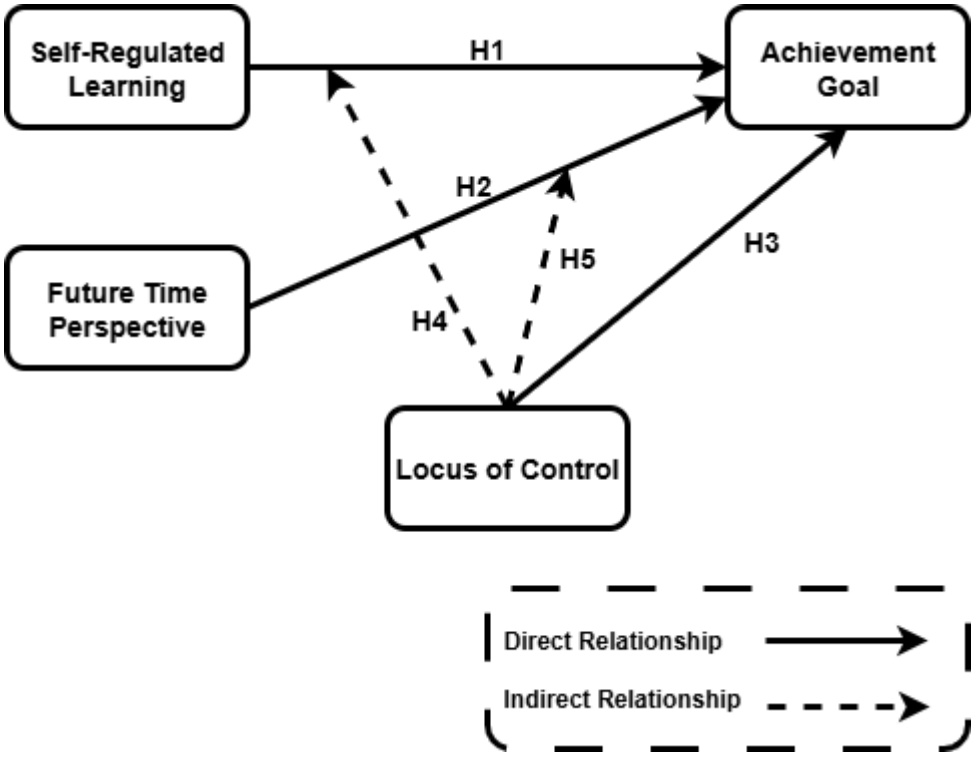

Figure 1.
Conceptual Framework.

3. Research Methodology

3.1. Participants and Data Collection

This study targeted undergraduate students enrolled in EMI courses at universities in Taiwan. To ensure that all participants had relevant EMI learning experience, a purposive sampling method was employed. Students who were currently taking at least one EMI course were invited to complete the questionnaire. The sample included students from various academic years and disciplines to enhance the external validity and representativeness of the findings. The formal data collection period was from

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March 1 to March 31, 2025, lasting one month. The questionnaire was distributed via the Wenjuanxing a Chinese online survey platform and recruitment was conducted through multiple channels, including invitations by university instructors, announcements on student social media platforms, and in-class promotions. A total of 420 valid responses were collected. According to Hair Jr, et al. [49] a minimum sample size should be 10 to 20 times the number of observed variables to ensure model stability and sufficient statistical power. This study's questionnaire consisted of 27 items, indicating that the obtained sample size was adequate to meet analytical requirements.

3.2. Questionnaire Design

This study employed a structured questionnaire as the primary tool for data collection. The questionnaire consisted of two main sections. The first section gathered participants' demographic information, including gender, academic year, and major. The second section focused on the core constructs of the study, encompassing four key variables: self-regulated learning, future time perspective, locus of control and achievement goal. All items were rated on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree) to enhance measurement sensitivity and discriminative power. The measurement instruments for each construct were adapted from well-established and validated scales.

Self-Regulated Learning refers to students' behaviors during the learning process, including goal setting, effort investment, sustained engagement, and learning persistence. These behaviors are driven by both internal and external sources of motivation, as well as individuals' beliefs about control over their learning outcomes. This construct evaluates students' motivational sources and intensity when facing EMI coursework, serving as the psychological foundation for their self-regulated learning behaviors. The items for this construct were adapted from the *Motivated Strategies for Learning Questionnaire (MSLQ)* developed by Pintrich and De Groot [50]. The MSLQ integrates cognitive and social motivational theories and has been widely used across various educational levels to assess learning motivation, with well-documented reliability and validity. The motivational component of the MSLQ includes subdimensions such as intrinsic motivation, extrinsic motivation, and control beliefs, all of which have been found to significantly correlate with academic performance [51, 52]. In this study, representative items from these subdimensions were selected and modified to ensure semantic clarity and cultural appropriateness for the EMI context. A total of five items were included to measure this construct, each reflecting students' degree of agreement with statements related to their motivation. Higher scores indicate stronger tendencies toward motivational self-regulated learning.

In this study, achievement goals are operationally defined as the individual's tendency toward mastery or performance goals exhibited during the learning process. Based on the 2×2 framework of the Achievement Goal Theory proposed by Elliot and Murayama [20] achievement goals are classified into four dimensions: mastery-approach goals, mastery-avoidance goals, performance-approach goals, and performance-avoidance goals. Each type of goal represents a different motivational orientation in which students pursue either competence development or performance evaluation in academic tasks, and these orientations affect their learning strategies, emotional responses, and academic outcomes. This study adopts the Achievement Goal Questionnaire–Revised (AGQ-R) developed by Elliot and Murayama [20] as the measurement instrument. The AGQ-R has demonstrated strong psychometric validity and reliability and is widely used in research on learning motivation in higher education contexts. The scale consists of 12 items, with three items corresponding to each of the four achievement goal types. The four-factor structure of the questionnaire has been supported in multiple studies, making it suitable for assessing students' achievement goal orientations within specific academic courses.

Future Time Perspective refers to an individual's psychological tendency to incorporate future goals and possible outcomes into their present thinking and actions. Future time perspective influences one's self-motivation, goal setting, and behavioral regulation, serving as a key motivational source for promoting delayed gratification and sustained learning engagement. This construct emphasizes the extent to which students value the future and whether they can mentally link their current actions to

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future goals. In this study, Future time perspective is operationalized into two subdimensions: Value, which reflects the degree to which individuals prioritize future goals over immediate needs; and Connectedness, which indicates whether individuals mentally associate their current actions with future aspirations. The measurement items were adapted from the Future Time Perspective Scale developed by Shell and Husman [53] has been widely applied in educational settings to investigate motivation and self-regulated behaviors [54-56]. Previous research has shown that individuals with a strong future orientation are more likely to set long-term goals and exhibit greater self-monitoring capacity [57, 58]. This study retained the original bidimensional structure of the scale and adjusted the item wording to align with the academic and cultural context of the student participants.

Internal Locus of Control refers to an individual's psychological tendency to believe that their actions and efforts can directly influence the outcomes of their life. In academic contexts, internal locus of control affects how students attribute success or failure, thereby influencing their learning motivation, sustained engagement, and problem-solving strategies. Students with a high level of internal control are more likely to believe that their academic performance results from their own efforts and abilities, rather than from luck, other people, or external circumstances. This construct emphasizes students' cognitive tendency to believe "I can control my learning outcomes."

In this study, internal locus of control is operationalized as a single-dimension construct and is treated as a moderating variable to explore its regulatory role in the relationship between motivational factors and learning behaviors. The measurement items were adapted from the Internality Scale developed by Levenson [59] which goes beyond the traditional dichotomous classification of internal vs. external control by dividing locus of control into three subdimensions: internal control, powerful others, and chance. However, to ensure structural parsimony for moderation analysis, this study retained only the internal control subdimension. The Internality Scale has been validated across numerous studies and has demonstrated strong psychometric properties and cross-cultural applicability[59]. It is widely used in education and psychology to investigate individuals' attribution styles and motivational orientations in relation to perceived control over life and learning outcomes.

3.3. Data Analysis

This study adopted Partial Least Squares Structural Equation Modeling (PLS-SEM) as the primary method for data analysis to examine the reliability, validity, and structural relationships among the latent variables in the research model. PLS-SEM is particularly suitable for studies involving multidimensional and complex models with relatively small sample sizes [60]. The data analysis was conducted in two main stages: evaluation of the measurement model and assessment of the structural model.

First, measurement model evaluation. SmartPLS 4.0 software was used to assess the reliability and validity of each construct. Reliability was evaluated using Cronbach's alpha and Composite Reliability (CR), both of which were required to exceed the threshold of 0.70 to ensure internal consistency. Convergent validity was assessed using the Average Variance Extracted (AVE), which needed to be greater than 0.50. To evaluate discriminant validity, the study employed both the Fornell-Larcker criterion and the Heterotrait-Monotrait Ratio (HTMT) to ensure that latent constructs were sufficiently distinct from one another.

Second, structural model assessment. Once the measurement model passed reliability and validity tests, the structural model was analyzed to examine path coefficients and their significance levels. This study used bootstrapping resampling (5,000 iterations) to compute the *t*-values and *p*-values of the structural paths for hypothesis testing. In addition, the model's explanatory power was evaluated using coefficient of determination (R^2) values. According to Hair, et al. [61], R^2 values of 0.75, 0.50, and 0.25 are considered substantial, moderate, and weak, respectively, in terms of explaining the variance of endogenous constructs.

Third, moderation and subgroup analysis. To examine the moderating role of locus of control, the Product Indicator Approach in SmartPLS was used to test interaction effects, with significance

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Vol. 9, No. 9: 1512-1533, 2025
DOI: 10.55214/2576-8484.v9i9.10160

determined by corresponding t-values and p-values. Furthermore, to explore whether demographic characteristics (e.g., gender, academic year) influenced the structural relationships, the study conducted Multi-Group Analysis (MGA) to compare path coefficients across groups and test for significant differences.

4. Research Results

4.1. Demographic Analysis of Participants

The sample consisted predominantly of female respondents, with 314 females (65.4%) and 166 males (34.6%), indicating a clear gender imbalance that may reflect the gender composition of the institution. The distribution of academic year was relatively balanced, covering freshmen to seniors, suggesting good representativeness. Students majoring in accounting accounted for 56.9%, while those majoring in tourism made up 43.1%, providing sufficient sample size for cross-major comparisons. College entrance English scores were mostly concentrated between 91-130 points (74.4%), indicating a generally upper-intermediate level of English proficiency. In terms of regional background, the majority of participants were from Northeast (33.1%), Central (28.3%), and North China (23.8%), revealing a strong regional concentration in the sample, as shown in Table 1.

Table 1.
Demographic Profile of Participants.

Category	Group	Frequency	Percentage
Gender	Male	166	34.6
	Female	314	65.4
Grade	Freshman	139	29.0
	Sophomore	118	24.6
	Junior	101	21.0
	Senior	122	25.4
Major	Accounting	273	56.9
	Tourism	207	43.1
English Exam Score	Under 70	24	5.0
	71-90	69	14.4
	91-110	181	37.7
	111-130	176	36.7
	Above 131	30	6.3
Region	Northeast China	159	33.1
	North China	114	23.8
	Central China	136	28.3
	East China	40	8.3
	Other Regions	31	6.5

4.2. Convergent Validity

In line with the criteria proposed by Fornell and Larcker [62] and Nunnally [63] convergent validity is assessed based on according to the following standards: standardized factor loadings should exceed 0.70, composite reliability (CR) should be greater than 0.70, average variance extracted (AVE) should surpass 0.50, and Cronbach's alpha (α) should be above 0.70. The results of the confirmatory factor analysis indicate that the standardized factor loadings for all constructs range from 0.723 to 0.870, meeting the recommended threshold. The CR values for all constructs fall between 0.903 and 0.955, and the AVE values range from 0.638 to 0.704, both exceeding the respective criteria. Additionally, Cronbach's alpha values are between 0.868 and 0.948, confirming adequate internal consistency reliability. These findings collectively demonstrate that the measurement model possesses satisfactory convergent validity, as shown in Table 2.

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 9, No. 9: 1512-1533, 2025
DOI: 10.55214/2576-8484.v9i9.10160

Table 2.
Convergent Validity Analysis.

Construct	Item	Factor Loading	Cronbach's alpha	Composite Reliability	Average Variance Extracted (AVE)
Achievement Goal Orientation	AGO1	0.805	0.948	0.955	0.638
	AGO2	0.815			
	AGO3	0.850			
	AGO4	0.795			
	AGO5	0.829			
	AGO6	0.801			
	AGO7	0.839			
	AGO8	0.807			
	AGO9	0.801			
	AGO10	0.753			
	AGO11	0.754			
	AGO12	0.723			
Future Time Perspective	FTP1	0.778	0.868	0.903	0.650
	FTP2	0.732			
	FTP3	0.826			
	FTP4	0.863			
	FTP5 <	0.826			
Locus of Control	LOC1	0.767	0.886	0.916	0.687
	LOC2	0.810			
	LOC3	0.859			
	LOC4	0.862			
	LOC5	0.843			
Self-Regulated Learning	SRL1	0.857	0.895	0.922	0.704
	SRL2	0.847			
	SRL3	0.870			
	SRL4	0.781			
	SRL5	0.839			

4.3. Discriminant Validity

Discriminant validity was assessed using the Fornell and Larcker [62] criterion, which stipulates that the square root of the average variance extracted (AVE) for each construct should exceed its correlations with all other constructs. This method ensures that each construct shares more variance with its own indicators than with those of other constructs. The results indicate that, for the majority of constructs, the square root of the AVE is greater than the inter-construct correlations, thereby supporting the presence of discriminant validity. These findings confirm that the reflective constructs in the model are empirically distinct and capture unique dimensions of the studied concepts, as shown in Table 3.

Table 3.
Discriminant Validity Analysis.

	Achievement Goals	Future Time Perspective	Locus of Control	Self-Regulated Learning
Achievement Goals	0.799			
Future Time Perspective	0.561	0.806		
Locus of Control	0.637	0.539	0.829	
Self-Regulated Learning	0.634	0.528	0.661	0.839

4.4. Model Fit

The Goodness of Fit (GOF) index, calculated as $GOF = \sqrt{\overline{AVE}}\, x \sqrt{\overline{R^2}}$, serves as an overall measure of model fit. According to Vinzi [64] GOF values of 0.10, 0.25, and 0.36 represent small, medium, and large effect sizes, respectively. In this study, the GOF value was 0.684, indicating a strong model fit.

$$GOF = \sqrt{\overline{AVE}}\, x \sqrt{\overline{R^2}} = \sqrt{0.670x\ 0.539} = 0.684$$

4.5. Path Analysis

Effect of Future Time Perspective on Achievement Goals: Future time perspective exerted a significant positive effect on achievement goals ($\beta = 0.193$, $SE = 0.045$, $t = 4.261$, $p < 0.001$), suggesting that individuals with a stronger orientation toward the future tend to demonstrate higher levels of achievement goal orientation.

Effect of locus of control on achievement goals: Locus of control showed a significant positive influence on achievement goals ($\beta = 0.299$, $SE = 0.063$, $t = 4.711$, $p < 0.001$), indicating that individuals with a stronger internal locus of control exhibit a clearer orientation toward achievement goals.

Effect of self-regulated learning on achievement goals: self-regulated learning was also found to have a significant positive effect on achievement goals ($\beta = 0.288$, $SE = 0.057$, $t = 5.090$, $p < 0.001$), suggesting that individuals with stronger self-regulated learning skills are more likely to be oriented toward achievement goals, as shown in Table 4.

Table 4.
Path Analysis Results.

Path Relationship	Path Coefficient	Standard Error	t-value	p-value
Future Time Perspective →Achievement Goals	0.193	0.045	4.261	0.000
Locus of Control →Achievement Goals	0.299	0.063	4.711	0.000
Self-Regulated Learning→ Achievement Goals	0.288	0.057	5.090	0.000

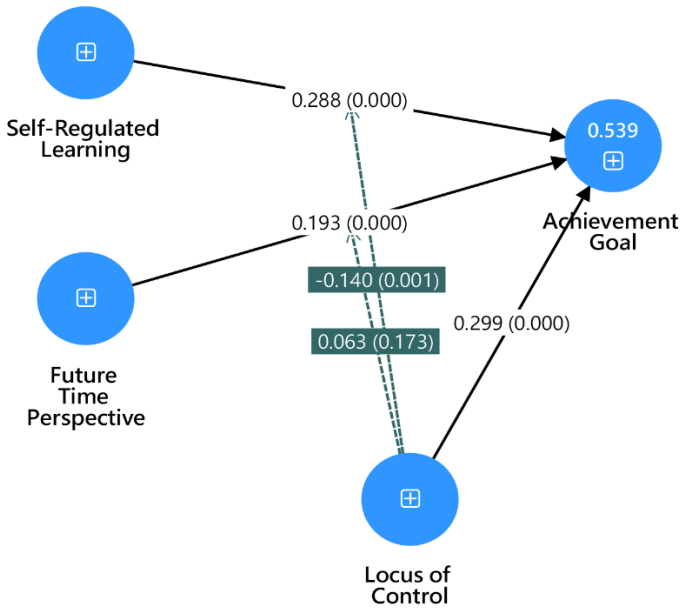

Figure 2.
PLS-SEM Statistical Model Diagram.

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Vol. 9, No. 9: 1512-1533, 2025
DOI: 10.55214/2576-8484.v9i9.10160

4.6. Moderating Effects

Interaction between locus of control and future time Perspective: The interaction effect between locus of control and future time perspective on achievement goal orientation was not statistically significant (β = 0.063, SE = 0.046, t = 1.362, p = 0.173), indicating the absence of a significant moderating effect between these two variables.

Interaction Between Locus of Control and Self-Regulated Learning: The interaction between locus of control and self-regulated learning showed a significant negative effect on achievement goal orientation (β = –0.140, SE = 0.042, t = 3.326, p = 0.001), suggesting that the coexistence of a strong internal locus of control and high self-regulated learning exerts a negative moderating effect on achievement goal orientation, as shown in Table 5.

Table 5.
Moderating Effect Analysis.

Effect	Original Sample (O)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	*p* Values
Locus of Control x Future Time Perspective → Achievement Goals	0.063	0.046	1.362	0.173
Locus of Control x Self-Regulated Learning →Achievement Goals	-0.140	0.042	3.326	0.001

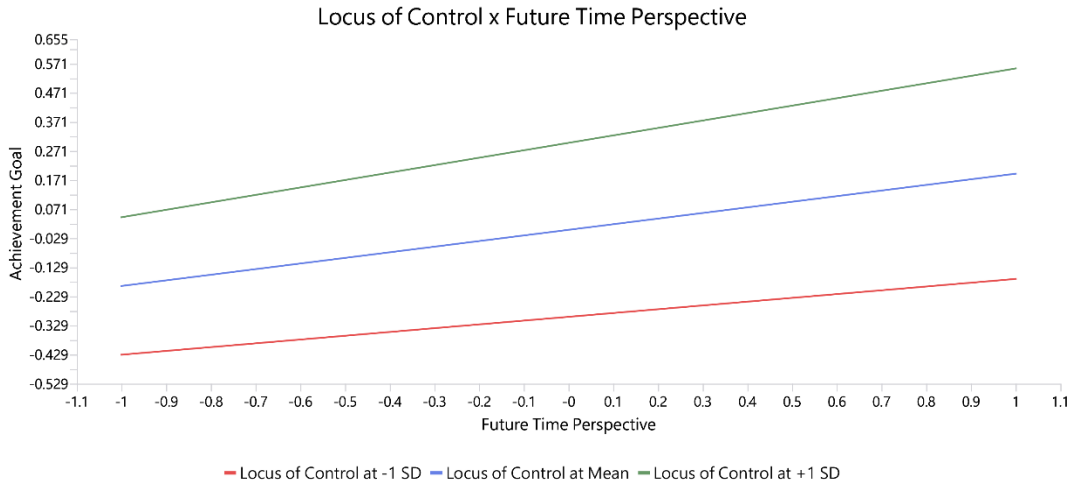

Figure 3.
Illustration of the Moderating Effect of Locus of Control x Self-Regulated Learning →Achievement Goals.

5. Research Conclusions and Discussion

5.1. Research Conclusions

5.1.1. Relationship Between Self-Regulated Learning and Achievement Goals

The results of the analysis demonstrate that self-regulated learning exerts a significant positive influence on achievement goal orientation among students enrolled in EMI programs, thereby supporting Hypothesis H1. Students with stronger self-regulated learning capabilities tend to exhibit clearer achievement-oriented goals, suggesting that such learners are more effective in setting academic objectives, monitoring their progress, and adjusting strategies in response to the challenges posed by EMI contexts.

This finding is consistent with the theoretical framework proposed by Zimmerman and Risemberg [28] which conceptualizes self-regulated learning as a cyclical process encompassing forethought, performance, and self-reflection, and emphasizes its role in enhancing learning outcomes and

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DOI: 10.55214/2576-8484.v9i9.10160

motivational regulation. The present study also aligns with empirical evidence from Moghadari-Koosha, et al. [31] who reported that self-regulated learning is a significant predictor of academic performance and adaptive capacity in demanding programs such as medicine and nursing. Similarly, Neeraja, et al. [33] highlighted the combined role of self-regulated learning and self-motivation in predicting academic success, including GPA outcomes.

While Higgins, et al. [34] emphasized the importance of self-regulated learning in mastering complex content within EMI science and engineering courses, the current study draws from a more diverse sample across academic disciplines. As such, the observed effects of self-regulated learning on achievement goal orientation appear to extend beyond specific subject areas, reflecting a broader trend across fields. This distinction may be attributed to the dual demands of language proficiency and content mastery inherent in EMI settings, which intensify the need for effective self-regulation strategies to sustain academic engagement and goal-directed behavior.

5.1.2. Relationship Between Future Time Perspective and Achievement Goals

The analysis indicates that future time perspective has a significant positive effect on achievement goal orientation among students in English as a Medium of Instruction (EMI) programs, thus supporting Hypothesis H2. This result suggests that when learners cognitively associate present academic tasks with long-term goals, such as academic advancement, career aspirations, or personal development, they are more likely to engage in goal-directed behaviors. Future time perspective appears to enhance students' awareness of the instrumental value of their current efforts and contributes to sustained motivation in demanding educational contexts.

These findings align with the theoretical propositions of Nuttin, et al. [35] who emphasized the role of future time perspective in fostering intrinsic motivation and strategic learning through the perception of present actions as instrumental to future outcomes. Simons, et al. [36] further demonstrated that the "extension" and "valence" dimensions of future time perspective are strong predictors of academic engagement and self-regulatory capacity. The present study corroborates these claims, indicating that students with a stronger future orientation are more inclined to set challenging academic goals and maintain persistent effort toward their attainment.

Consistent with prior empirical evidence, the findings also support the observations of De Volder and Lens [40] who reported that high-achieving students often place greater value on long-term goals and perceive current efforts as directly contributing to those outcomes. Similarly, Husman, et al. [41] noted that reinforcing students' psychological connection to future objectives enhances academic engagement and learning investment. The present study extends these insights to the EMI context, echoing recent findings by Struck Struck Jannini, et al. [26] which demonstrated that future time perspective improves persistence and positive affect among non-native students in STEM-based EMI courses.

While future time perspective was found to significantly predict achievement goal orientation, its effect was moderate compared to the influence of self-regulated learning ($\beta = 0.288$). This difference may reflect the functional role of future time perspective as a motivational construct whose impact is maximized through interaction with cognitive-regulatory strategies. This interpretation is in line with Lens and Seginer [38], who proposed that future time perspective moderates goal-setting and resource allocation processes within the learning environment.

5.1.3. Relationship Between Locus of Control and Achievement Goals

The analysis reveals a significant positive relationship between locus of control and achievement goals, supporting Hypothesis H3. Within the context of EMI, students with a stronger internal locus of control are more likely to attribute academic success to personal effort and self-directed action, thereby exhibiting a more clearly defined orientation toward achievement goals. Such individuals typically engage in active goal setting, monitor their academic progress, and implement adaptive strategies in

Edelweiss Applied Science and Technology
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Vol. 9, No. 9: 1512-1533, 2025
DOI: 10.55214/2576-8484.v9i9.10160

response to challenges, underscoring the role of locus of control as a key determinant of academic motivation and behavioral regulation.

This finding aligns with Rotter [42] conceptualization of locus of control, which posits that individuals with an internal orientation perceive outcomes as contingent upon their own behaviors, leading to greater accountability and task engagement. Trice [44] development of the Academic Locus of Control Scale further highlights the relevance of attributional style in explaining variation in academic performance. In line with these theoretical underpinnings, the present study's findings are consistent with those reported by Merkine, et al. [47] and Suraj, et al. [43] both of which identified a stable, positive association between internal locus of control and academic achievement, and a negative association between external control beliefs and performance.

The observed relationship may also be interpreted in light of its interactions with related constructs such as self-efficacy and self-regulated learning. For example, Satianugraha [46] emphasized that internal control beliefs strengthen learners' sense of responsibility for academic outcomes and promote the use of self-regulatory learning strategies. Similarly, Saddiqua and Loona [48] found that students with a strong internal locus of control demonstrate higher resilience and adaptive capacity when managing academic demands, particularly in EMI settings characterized by both linguistic and disciplinary challenges.

It is noteworthy that the path coefficient for locus of control exceeds those of self-regulated learningand future time perspective, suggesting its comparatively stronger predictive value within the proposed model. This may reflect the foundational role of locus of control as a stable cognitive-personality construct that shapes long-term learning behavior. In academic environments that emphasize learner autonomy, such as EMI courses, internal control beliefs may serve as a critical mechanism driving sustained achievement-oriented behavior.

5.1.4. Moderating Role of Locus of Control in the Relationship Between Self-Regulated Learning and Achievement Goals

This study investigated the moderating role of locus of control in the relationship between self-regulated learning and achievement goal orientation. The results revealed a significant negative interaction effect, thereby disconfirming Hypothesis H4. Rather than enhancing the positive influence of self-regulated learning, a stronger internal locus of control was found to attenuate the relationship, suggesting that the combination of high self-regulated learning and internal control beliefs does not necessarily produce additive motivational outcomes. This pattern indicates a potential nonlinear interaction, in which excessive self-directed responsibility may lead to diminishing returns in goal-oriented behavior.

This finding stands in contrast to earlier studies that emphasized the reinforcing role of internal control beliefs. Prior research, such as Saddiqua and Loona [48] and Satianugraha [46] reported that an internal locus of control strengthens the translation of self-regulated learning strategies into sustained achievement goals by promoting goal internalization and long-term motivation. The current results, however, suggest that under specific conditions—particularly in the context of EMI courses characterized by high linguistic and cognitive demands, this interaction may instead introduce psychological strain. One possible explanation is that the concurrent presence of high self-regulated learning and strong internal locus of control may lead to an intensified sense of individual accountability for academic outcomes, which in turn could increase vulnerability to stress, anxiety, or maladaptive perfectionism. In high-pressure learning environments, such internalized responsibility may hinder rather than support consistent engagement with achievement goals. Another potential mechanism involves attributional dynamics. In EMI contexts, students with strong internal control beliefs who encounter persistent challenges may attribute failure to personal inadequacy, contributing to decreased motivation and heightened risk of academic burnout. Furthermore, internal locus of control may be associated with overly ambitious or idealized goal setting. When these goals are not realized, despite the application of self-regulated learning strategies, the resulting gap between expectation and outcome

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Vol. 9, No. 9: 1512-1533, 2025
DOI: 10.55214/2576-8484.v9i9.10160

may lead to frustration and reduced perseverance. This interpretation is consistent with the expectancy–value framework proposed by Eccles and Wigfield [65] which highlights the emotional consequences of discrepancies between high performance expectations and actual achievement.

In sum, the unexpected negative interaction between locus of control and self-regulated learning observed in this study prompts an important theoretical reconsideration: the coexistence of strong internal control beliefs and high self-regulated learning capacities does not necessarily yield cumulative or linear benefits. Particularly in high-challenge learning environments, such a combination may give rise to heightened self-blame, cognitive overload, or a mismatch in learning strategies. This finding suggests that efforts to enhance students' self-regulated learning and internal control should be accompanied by attention to emotional regulation and self-perceptions, in order to prevent excessive emphasis on individual responsibility from undermining students' adaptive capacity.

The study also examined whether locus of control moderates the relationship between future time perspective and achievement goal orientation. The interaction term was not statistically significant, providing no support for Hypothesis H5. In other words, individual differences in locus of control did not significantly enhance or diminish the predictive strength of future time perspective on achievement goal orientation. This suggests that students' future orientation, defined by the extent to which current actions are psychologically connected to long-term goals, functions independently of their perceived control over outcomes.

This finding deviates from theoretical models which posit a synergistic effect between future time perspective and internal control beliefs. For instance, prior research [35, 36] has argued that future time perspective enhances long-term motivation and persistence, and that control beliefs can facilitate the internalization of goals, particularly in complex learning contexts. Empirical evidence [45, 48] has further suggested that locus of control may act as a motivational amplifier in high-pressure environments such as EMI programs. The absence of a significant interaction in this study indicates that the relationship between these constructs may not be adequately captured through a linear moderation model.

Several factors may account for this outcome. First, future time perspective may serve as a self-contained motivational system, already incorporating the learner's perceived agency toward future goals. As such, the additive contribution of locus of control may be minimal. Second, the complex learning environments typical of EMI programs, which is marked by linguistic challenges, cultural adjustment, and diverse instructional practices, may obscure the interplay between individual traits such as future time perspective and locus of control. Additionally, although both constructs are rooted in motivational personality theory, they may operate through distinct psychological mechanisms, locus of control by shaping responsibility and attributional style, and future time perspective through temporal extension and future goal valuation. These mechanisms may exert independent effects on goal orientation, rather than interactively reinforcing each other.

In conclusion, although both locus of control and future time perspective demonstrated direct positive associations with achievement goal orientation, their interaction did not yield significant effects. This suggests that motivational traits do not necessarily combine in uniform or linear ways. Future research should consider alternative explanatory models, such as mediation or moderated mediation, as well as incorporate contextual or affective variables (e.g., perceived academic support, self-efficacy, anxiety) to better understand the dynamic interactions among motivational dispositions in academically complex settings.

5.2. Discussion

5.2.1. Theoretical Contributions

This study examined the effects and interactions of self-regulated learning, future time perspective, and locus of control on achievement goals among Chinese university students enrolled in EMI courses. The findings offer the following three primary theoretical contributions:

Edelweiss Applied Science and Technology
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Vol. 9, No. 9: 1512-1533, 2025
DOI: 10.55214/2576-8484.v9i9.10160

First, addressing a theoretical gap by focusing on a specific learner population. While Achievement Goal Theory has been widely applied in educational psychology, empirical research within EMI contexts remains limited, particularly in relation to non-native English-speaking students who must navigate both linguistic and disciplinary challenges. By providing empirical evidence from this underexplored population, the study extends the applicability of Achievement Goal Theory to non-Anglophone higher education settings. The findings demonstrate that even in environments marked by significant language-related demands, students with high levels of self-regulated learning and future time perspective exhibit strong achievement goal orientations, highlighting the cross-cultural and cross-linguistic robustness of Achievement Goal Theory.

Second, advancing the integrative application of motivational constructs within the Achievement Goal Theory framework. This study proposed and tested a multivariable motivational model integrating future time perspective, self-regulated learning, and locus of control as predictors of achievement goal orientation. All three constructs were found to be significant positive predictors, indicating their mutually reinforcing roles in shaping academic motivation. Notably, self-regulated learning and locus of control yielded stable standardized path coefficients, underscoring their centrality as psychological mechanisms related to learner agency and attribution of outcomes. By adopting this integrative approach, the study contributes to a deeper understanding of how Achievement Goal Theory can be complemented by constructs from Social Cognitive Theory, particularly in high-challenge academic environments. The model demonstrates predictive validity under the dual pressures of language and content mastery inherent in EMI settings.

Third, clarifying interaction effects and delineating theoretical boundaries. Although locus of control is often conceptualized as a moderating personality trait, this study revealed context-specific and non-linear features of its moderating function. Specifically, locus of control did not significantly moderate the relationship between future time perspective and achievement goal orientation, and its interaction with self-regulated learning produced a significant negative effect ($\beta = -0.140$, $p < .01$). This challenges conventional assumptions that internal control beliefs consistently enhance motivation and goal pursuit. Instead, the findings suggest that under conditions of excessive self-responsibility or high autonomy pressure, internal locus of control may function as a source of emotional burden and motivational suppression. These insights prompt critical reflection on moderation theory and provide a methodological basis for incorporating multilevel moderation frameworks in future motivational research.

In summary, this study contributes to a more nuanced understanding of the psychological mechanisms underlying academic motivation among EMI students. It expands the theoretical boundaries of achievement goal theory in cross-context, high-demand learning environments, and offers empirical foundations that are of practical relevance for both educational psychology research and the design of motivational interventions.

5.2.2. Practical Implications

This study examined the effects of self-regulated learning, future time perspective, and locus of control on achievement goal orientation among students enrolled in EMI courses. All three constructs were identified as significant predictors, with locus of control demonstrating a non-linear moderating role in specific interactions. Based on the findings, the following practical recommendations are proposed:

First, curriculum design should incorporate self-regulated learning and goal-oriented instructional strategies to enhance students' motivation and academic engagement. EMI course designers should intentionally incorporate elements that promote self-regulated learning, including clear goal-setting frameworks, formative assessments, autonomous learning modules, and reflective learning tools. Structured task planning and timely feedback can help students strengthen goal management and strategic adjustment, thereby enhancing their motivation and engagement. Additionally, aligning course content with students' future development, such as career pathways or advanced study, can

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 9, No. 9: 1512-1533, 2025
DOI: 10.55214/2576-8484.v9i9.10160

reinforce the perceived utility and intrinsic value of learning, fostering long-term motivation driven by future time perspective.

Second, instructional practice should focus on promoting students' internal locus of control through deliberate pedagogical guidance and supportive teaching strategies. In EMI classrooms, instructors serve as key agents in regulating student motivation. Teachers are encouraged to adopt language and behaviors that reinforce internal control beliefs, for instance, supporting autonomous decision-making, emphasizing the link between effort and achievement, and providing positive reinforcement. However, for students with high self-imposed standards or those under significant pressure, educators should avoid overemphasizing performance outcomes or framing academic responsibility solely in individualistic terms, as this may increase anxiety or lead to burnout. Pedagogical approaches such as group discussions, role-playing activities, and teacher self-disclosure may help students normalize academic challenges and develop more resilient control beliefs.

Third, student support services should aim to establish future-oriented learning guidance mechanisms that help students connect present efforts with long-term academic and career goals. Educational institutions should offer tailored support systems for EMI students, such as strategy coaching and time management workshops that target the development of future time perspective and self-regulated learning skills. These may include activities like future goal mapping, action planning, short-term and long-term goal setting, and reflective journaling, supplemented by peer feedback. Such interventions not only enhance students' self-regulation strategies but also help them construct a meaningful connection between present efforts and future outcomes, enabling goal-directed and executable learning behaviors.

The findings suggest that the effectiveness of motivational learning strategies depends not only on the presence of specific skills but also on the interaction between individual beliefs and temporal orientations. Accordingly, instructional and advisory practices within EMI contexts should move beyond single-variable approaches and adopt integrative, multidimensional frameworks to better support students' academic adaptation and resilience in high-challenge environments.

5.3. Research Limitations and Future Directions

While this study provides empirical evidence and theoretical insights into the influence of self-regulated learning, future time perspective, and locus of control on achievement goal orientation among EMI students, several limitations should be acknowledged. These limitations offer directions for future research:

First, the sample was drawn exclusively from a limited number of higher education institutions in China, with a focus on students enrolled in EMI programs within accounting and tourism disciplines. This may constrain the generalizability of the findings. Students in different academic domains may vary considerably in language demands, learning strategies, and motivational structures. Future research should broaden the sampling scope to include students from natural sciences, engineering, and medicine, fields often associated with higher cognitive and linguistic load, to enhance the external validity and applicability of the results.

Second, the study employed a cross-sectional survey design, which restricts the ability to draw strong causal inferences among the variables. Although structural relationships were examined through PLS-SEM path analysis, the design does not account for the temporal dynamics between psychological constructs and behavioral outcomes. Longitudinal or experimental designs are recommended in future research to track changes in students' motivation and learning behaviors over an entire semester or academic year, thereby allowing for more robust causal interpretations.

Third, the moderating role of locus of control yielded partially unexpected results, suggesting the potential influence of unmeasured variables or contextual factors. Specifically, the negative interaction effect between locus of control and self-regulated learning on achievement goals deviates from some prior findings and suggestions that the coexistence of strong internal control and high self-regulated learning may trigger psychological strain, such as excessive self-blame or pressure. Future studies

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 9, No. 9: 1512-1533, 2025
DOI: 10.55214/2576-8484.v9i9.10160

should incorporate potential mediators such as academic stress, self-efficacy, or anxiety to clarify the underlying mechanisms of moderation failure or reversal. Additionally, the role of contextual moderators, such as classroom support or teacher feedback, should be explored to determine the conditions under which locus of control operates effectively.

Fourth, the study relied primarily on self-report questionnaires, which may introduce social desirability bias and common method variance. While efforts were made to mitigate these risks through instrument design and statistical techniques, future research is encouraged to adopt multi-method approaches, such as qualitative interviews, academic performance records, or classroom observations, to triangulate findings and enhance the reliability and interpretive depth of the results.

In sum, although this study contributes to the understanding of motivational processes and achievement goals in EMI contexts, further refinement is needed regarding sample representativeness, research design, and interpretation of moderation mechanisms. Future studies should adopt multi-disciplinary, longitudinal, and multi-level methodological approaches to integrate individual psychological traits with instructional and contextual variables. Such efforts will help construct more context-sensitive and theoretically comprehensive models of learning motivation, thereby advancing the understanding of academic success among EMI students.

Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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