Motivational Beliefs, Self-Regulated Learning and English Achievement among Chinese High School Students: A Structural Equation Modeling Analysis

Zhiyao Chen[1], Nithipong Yothachai[2], Apisak Sukying[1]

[1] Department of Western Languages and Linguistics, Faculty of Humanities and Social Sciences, Mahasarakham University, Maha Sarakham, 44150, Thailand

[2] Department of English Education, Faculty of Education and Human Development, Chaiyaphum Rajabhat University, Chaiyaphum, 36000, Thailand

Correspondence: Apisak Sukying, Department of Western Languages and Linguistics, Faculty of Humanities and Social Sciences, Mahasarakham University, Maha Sarakham, 44150, Thailand.

Received: November 7, 2025 Accepted: January 7, 2026 Online Published: April 10, 2026

doi:10.5430/wjel.v16n4p288 URL: https://doi.org/10.5430/wjel.v16n4p288

Abstract

This study examines the relationships between motivational beliefs (intrinsic motivation and self-efficacy) and self-regulated learning (SRL) strategies (goal-setting and planning, monitoring, and effort regulation) in relation to English achievement. A total of 237 grade 10 students were sampled from one public high school in the southwest of China. A self-reported questionnaire assessed participants' intrinsic motivation and self-efficacy, as well as their strategies for SRL, including goal setting and planning, monitoring, and effort regulation. Standardized monthly test scores were used as an indicator of English achievement. Structural equation modeling indicated a good model fit (χ^2/df =1.47; CFI =.95, RMSEA=.045). SEM analysis revealed that intrinsic motivation was a significant predictor of monitoring (β =.28) and effort regulation (β =.29). In contrast, self-efficacy strongly predicted all SRL strategies (β =.35-.59). The broad type of SRL strategies played a significant role in English achievement, and the specific categories: goal setting and planning was the most contributive SRL strategy to English achievement (β =.22), and then by monitoring (β =.18) and effort regulation (β =.15). It was found that SRL strategies mediated the relation between these motivational beliefs and achievement. These results highlight the significant role of SRL strategies in mediating between motivation and academic performance and the need to encourage goal setting, monitoring, and effort regulation in EFL classrooms to improve learner autonomy and academic success.

Keywords: self-regulated learning strategies, motivational beliefs, intrinsic motivation, self-efficacy, English achievement

1. Introduction

Self-regulated learning (SRL) is a foundational process that enables learners to actively engage in their education by setting goals, monitoring progress, and regulating their learning strategies to achieve desired outcomes (Zimmerman, 2002; Zimmerman & Schunk, 2011). SRL incorporates cognitive, motivational, and behavioral components, enabling learners to take control of their learning processes and adapt to challenges (Pintrich, 2000; Zimmerman, 2002). It is a dynamic and cyclical process through which learners actively set goals, monitor progress, and regulate their behaviors to achieve desired outcomes (Zimmerman & Schunk, 2011). This process equips learners with the tools to address complex academic demands by fostering strategic planning, self-monitoring, and reflective evaluation (Zimmerman, 2000). In language education, particularly English as a Foreign Language (EFL), SRL strategies such as goal setting, monitoring, and effort regulation are critical for fostering language proficiency (Bai & Wang, 2023; Pintrich, 2000). These strategies are especially vital for EFL learners who often face limited opportunities for authentic language exposure beyond the classroom (Chen & Sukying, 2024; Kormos & Csizér, 2014; Sukying, 2021). However, research suggests that many EFL learners use SRL strategies only to a moderate or low extent, which can hinder their language acquisition and academic progress (Bai & Guo, 2021; Guo, Bai, Zang, Wang, & Song, 2023).

Motivational constructs, such as intrinsic motivation and self-efficacy, are central to the effective adoption of SRL strategies. Intrinsic motivation, characterized by the internal drive to engage in learning activities for personal satisfaction and curiosity, plays a crucial role in sustaining effort and fostering deep engagement with tasks (Pintrich, Smith, Garcia, & McKeachie, 1993; Ryan & Deci, 2000). This type of motivation helps learners persist through challenges and maintain interest in their studies, even in the absence of external rewards. Similarly, self-efficacy, defined as learners' belief in their ability to succeed in specific tasks, has been consistently linked to greater persistence, the use of adaptive strategies, and improved academic performance (Bandura, 1997; Zimmerman, 2000). Learners with strong self-efficacy are more likely to take ownership of their learning processes and approach tasks with confidence and resilience. Research in EFL contexts has shown that intrinsic motivation and self-efficacy significantly influence learners' SRL behaviors, enabling them to adopt effective learning

strategies and achieve better academic outcomes (Chen, Lin, Chen, & Fu, 2023; Teng & Zhang, 2020).

In China, SRL strategies are particularly crucial for EFL learners who often rely on self-directed learning to overcome limited opportunities for natural language interaction outside the classroom (Bai & Wang, 2020; Kormos & Csizér, 2014). Despite the recognized importance of SRL, much of the existing research has focused on university-level learners (Bai & Guo, 2021; Shen, Wang, Yang, & Yu, 2023), with relatively little attention given to high school students. Adolescence is a crucial period for language learning, during which high school students experience significant cognitive, social, and emotional growth, influencing their long-term language proficiency and academic trajectories (Çelik & Yeşilel, 2023). However, high school EFL learners in China face unique challenges, particularly in underdeveloped regions where disparities in educational resources and instructional practices persist. Addressing these challenges requires targeted research to understand the specific needs of high school EFL learners and to develop strategies that promote effective self-regulation.

This study aims to address these gaps by investigating the relationships between intrinsic motivation, self-efficacy, SRL strategies, and English learning achievement among Chinese high school EFL learners. We use structural equation modeling (SEM) to examine how intrinsic motivation and self-efficacy predict SRL strategy use and how these strategies, in turn, contribute to English language learning outcomes.

2. Literature Review

2.1 The Relationship between Motivational Beliefs and Self-Regulated Learning

Motivational beliefs encompass intrinsic motivation and self-efficacy. Intrinsic motivation refers to engaging in activities for their inherent enjoyment and satisfaction (Ryan & Deci, 2000). It plays a pivotal role in sustaining learners' interest and effort in language learning, contributing to better academic outcomes (Matsuzaki Carreira, 2012; Noels, Pelletier, Clément, & Vallerand, 2000). For example, Bai and Wang (2023) demonstrated that intrinsic motivation drives SRL behaviors, such as goal setting and effort regulation, which, in turn, positively impact English proficiency. Intrinsically motivated learners also demonstrate higher resilience, creativity, and engagement levels, particularly in EFL contexts (Shen et al., 2023).

Intrinsic motivation is typically categorized into three dimensions: motivation to know, achieve, and experience stimulation (Vallerand & Ratelle, 2002). These dimensions emphasize curiosity, mastery, and the joy of language learning activities. For instance, Bai and Guo (2021) noted that intrinsic motivation enhances learners' willingness to undertake challenging tasks, promoting deeper engagement and academic success. Ryan and Deci (2020) further explained that intrinsic motivation promotes autonomy, a key factor in sustained progress in second language acquisition. This autonomy allows learners to take greater responsibility for their learning journey, fostering both capability and long-term success.

Self-efficacy, defined by Bandura (2006) as the belief in one's ability to succeed in specific tasks, is another critical predictor of learners' engagement and persistence. Research has consistently shown that high self-efficacy is associated with greater use of SRL strategies, such as planning, monitoring, and self-assessment (Zimmerman, 2000; Chen et al., 2023). Teng (2021) also noted that self-efficacy significantly predicts the execution of metacognitive strategies, which enables learners to reflect on and regulate their learning processes. Self-efficacy also mediates the effects of motivational factors and the effectiveness of SRL strategies, allowing the learners to maintain focus and adapt to challenges (Shen et al., 2023). Notably, learners with strong self-efficacy are more prone to persist through difficulties, exhibiting greater resilience and adaptability, which is essential for overcoming language learning obstacles (Chen et al., 2023).

Intrinsic motivation and self-efficacy are fundamental components of self-regulated learning (SRL) and play a vital role in English learning achievements. Intrinsic motivation encourages learners to engage with challenging tasks and persist through difficulties, fostering the adoption of adaptive learning behaviors (Ryan & Deci, 2020; Teng, 2021). Bai and Wang (2023) demonstrated that intrinsic motivation significantly enhances the use of cognitive and metacognitive strategies, while Teng (2021) identified intrinsic goal orientation as a strong predictor of effective SRL, particularly in sustaining effort and strategic planning. This suggests that learners with higher intrinsic motivation are more likely to approach their studies with enthusiasm and determination, ultimately achieving better outcomes.

Self-efficacy complements intrinsic motivation by building learners' confidence in executing strategies effectively. Studies have consistently shown that self-efficacy predicts critical SRL behaviors, such as planning, monitoring, and self-assessment (Chen et al., 2023; Zimmerman, 2000). Self-efficacy also fosters the use of motivational regulation strategies, which are essential for maintaining effort and engagement (Teng, 2021), and is a key determinant of learners' ability to self-monitor progress and adapt learning behaviors, which are critical for overcoming language challenges (Bai, Chao, & Wang, 2019).

The relationship between intrinsic motivation and self-efficacy significantly enhances SRL behaviors, as documented in several studies. Bai and Wang (2023) observed that these constructs collectively improve language learning outcomes, while Chen et al. (2023) noted that learners with high intrinsic motivation and self-efficacy demonstrate greater persistence and adaptability in employing SRL strategies, even under demanding conditions. Teng, Yuan, and Sun (2020) emphasized that motivational regulation, driven by these constructs, is pivotal in improving EFL learners' writing performance. This interaction underscores the importance of addressing both intrinsic motivation and self-efficacy to foster effective learning behaviors.

Research also highlights the role of motivational beliefs in promoting metacognitive awareness. Zimmerman (2000) argued that learners with strong intrinsic motivation and self-efficacy are more likely to engage in reflective practices, such as self-monitoring and goal adjustment. Shen et al. (2023) confirmed that these factors enhance learners' capacity for self-regulation, enabling them to adopt more

effective learning strategies and improve academic performance. These findings emphasize the value of fostering both intrinsic motivation and self-efficacy as a foundation for successful SRL.

2.2 The Relationship between Self-Regulated Learning and English Achievement

SRL refers to the proactive management of cognitive, motivational, and behavioral processes to achieve academic goals (Zimmerman, 2000). Effective SRL strategies, such as comprehension monitoring, metacognitive regulation, and effort persistence, are essential for language learners to develop their reading, writing, and speaking skills (Kitichaidateanan & Sukying, 2025; Teng & Zhang, 2020). Deng, Wang, and Xu (2022) emphasized that persistence and comprehension monitoring are key to achieving proficiency, particularly in high-stakes testing environments. A more recent study by Bai and Wang (2023) further showed that integrating motivational and cognitive strategies within SRL frameworks significantly enhances learners' academic outcomes. In short, learners can better manage their time, focus, and effort to consistently improve their English proficiency by integrating these strategies.

SRL is widely recognized as a critical determinant of academic success in English learning. SRL fosters enhanced reading, writing, and speaking proficiency by enabling learners to actively manage their cognitive, motivational, and behavioral processes (Deng et al., 2022; Zimmerman, 2000). Studies consistently demonstrate that SRL strategies such as goal setting, self-monitoring, and effort regulation are strongly associated with improved academic performance (Chen et al., 2023; Teng & Zhang, 2020). For instance, Shen et al. (2023) reported that effective SRL strategies significantly improve reading comprehension, while Teng and Zhang (2020) observed notable enhancements in writing proficiency when SRL-based instruction is implemented.

In Chinese EFL contexts, particularly at the secondary school level, SRL strategies are crucial for overcoming academic challenges, as learners are required to regulate their cognition, motivation, and effort in preparation for high-stakes examinations. Bai and Wang (2023) highlighted the importance of planning and effort regulation in fostering resilience and persistence during complex learning tasks. Deng et al. (2022) underscored the role of SRL in high-stakes testing environments, where learners employing advanced SRL strategies achieve superior outcomes. Moreover, Chen et al. (2023) found that SRL profiles characterized by high levels of motivational and metacognitive regulation correlate strongly with better performance on English language tasks.

Recent research underscores the multidimensional nature of SRL, highlighting its interplay with cognitive and emotional learning aspects. Teng (2022) identified components such as peer collaboration, time management, and motivational regulation as critical predictors of English learning success. Moreover, Shen et al. (2023) demonstrated that academic emotions, including enjoyment and anxiety, influence the effectiveness of SRL strategies.

The effectiveness of SRL in fostering independence and adaptability is also well-documented. Bai and Wang (2023) found that learners who engage in self-evaluation and effort regulation exhibit significant improvements in writing performance. Similarly, Teng and Zhang (2020) emphasized the importance of goal-oriented strategies in enhancing learners' autonomy and overall language proficiency. Educators can thus empower learners to achieve sustained academic success and develop lifelong learning habits by incorporating SRL training into language instruction. In high-stakes EFL contexts, such as exam-oriented secondary education in China, the effectiveness of SRL becomes particularly critical, as learners must sustain motivation and strategic engagement under continuous evaluative pressure.

These findings jointly highlight the pivotal role of SRL in promoting English learning achievements. The conceptual framework of this study (Fig. 1) illustrates the relationships among intrinsic motivation, self-efficacy, SRL strategies, and English learning achievement. Intrinsic motivation and self-efficacy predict three key SRL strategies: goal setting and planning, monitoring, and effort regulation. These strategies, in turn, contribute directly to English language learning achievements, providing a comprehensive model for understanding the relationship between these critical factors.

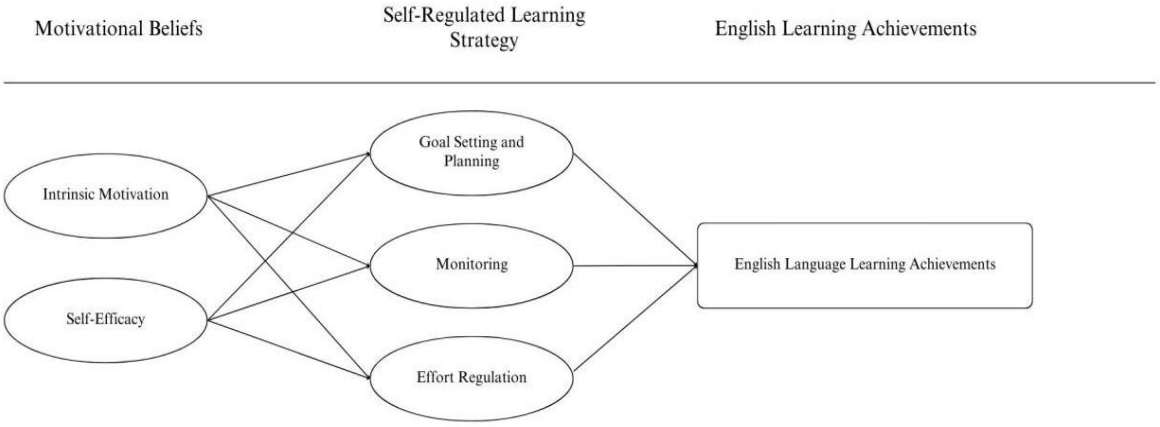

Figure 1. Conceptual Framework

2.3 The Current Study

Building on existing research on motivational beliefs and self-regulated learning (SRL) in language learning, the present study addresses a critical gap in understanding how these constructs are jointly associated during adolescence in high-stakes EFL contexts. Although prior research has extensively examined motivation, SRL, and academic achievement, much of this work has tended to investigate these constructs in isolation or through simple linear relationships. As a result, relatively limited attention has been given to examining motivational beliefs and SRL within an integrated framework, particularly among adolescent EFL learners.

Adolescence represents a key developmental period during which learners' motivational beliefs, self-efficacy judgments, and self-regulatory capacities are still forming. In high-stakes EFL settings, such as exam-oriented secondary education in China, learners are required to sustain effort, regulate emotions, and strategically manage learning over extended periods under persistent evaluative pressure. However, empirical research examining the interaction between motivational beliefs and SRL during adolescence in high-stakes EFL environments remains limited, particularly among Chinese high school students.

To address this gap, the present study examines the extent to which motivational beliefs, including intrinsic motivation and self-efficacy, predict the use of self-regulated learning (SRL) strategies among Chinese high school students, investigates how SRL strategies relate to English achievement, and explores the mediating role of SRL strategies in the relationship between motivational beliefs and English achievement. By focusing on adolescent learners in a high-stakes EFL context in China, particularly in the southwestern region, this study seeks to provide a more nuanced understanding of how motivational beliefs and SRL interact to shape English learning achievement. To achieve these goals, the present study addresses the following research questions:

1. To what extent do motivational beliefs facilitate the use of self-regulated learning strategies among Chinese high school students?
2. What is the relationship between self-regulated learning strategies and English achievement among Chinese high school students?
3. What is the role of self-regulated learning strategies between motivational beliefs and English achievement?

3. Materials and Methods

3.1 Participants and Setting

The study involved 237 Grade 10 students from a public high school in the northeastern region of Yunnan Province, China, who were between the ages of 15 and 17. The gender distribution of the sample was virtually balanced, with 52.74% female and 47.26% male students. Most participants (64.98%) were 16 years old, while 21.10% were 15, 13.08% were 17, and 0.84% were 14 years old. All participants were native Chinese speakers who began learning English as a foreign language (EFL) in Grade 3 of primary school. During the study, participants were in the early high school years, a period marked by increasing cognitive and emotional maturity. It made them well-suited to examining the relationships among motivational beliefs (intrinsic motivation and self-efficacy), self-regulated learning strategies, and English language learning achievement.

3.2 Research Instruments

The study used a structured questionnaire to measure motivational beliefs (intrinsic motivation and self-efficacy), SRL strategies, and standardized English test scores to assess participants' English achievement.

3.2.1 Motivational Beliefs

To measure motivational beliefs, this study adapted validated questionnaires comprising two sections: intrinsic motivation and self-efficacy. The intrinsic motivation questionnaire was adapted from the Language Learning Orientations Scale (Noels et al., 2000) and the EFL Learning Motivation Questionnaire (Ye, 2021). This section comprises 10 items to capture learners' intrinsic interest and enjoyment in learning English. Responses were recorded on a 5-point Likert scale ranging from (1) strongly disagree to (5) strongly agree, with a Cronbach's alpha reliability ranging between 0.67 and 0.88. These values confirmed acceptable internal consistency for the study.

The self-efficacy section was developed using items from the Motivated Strategies for Learning Questionnaire (MSLQ) developed by Pintrich and De Groot (1990), supplemented by additional items from Bai and Wang (2023). This self-efficacy questionnaire section also included 10 items, assessed on the same 5-point Likert scale. This section demonstrated a high-level reliability score with a Cronbach's alpha value of 0.86. These scales were selected and modified based on their established reliability in previous research and alignment with the study's objectives. Together, the two sections provided a measure of the participants' motivational beliefs, capturing both their intrinsic motivation and self-efficacy in their ability to succeed in English learning.

3.2.2 Self-Regulated Learning (SRL) Strategies

The SRL questionnaire comprised 12 items across three dimensions: goal setting and planning, monitoring, and effort regulation. Items were adapted from Zimmerman and Pons (1986), Pintrich et al. (1993), and Bai and Wang (2023). Goal setting and planning items (Cronbach's α = 0.85) assessed students' ability to set goals and organize learning tasks. Monitoring items (Cronbach's α = 0.79) evaluated students' ability to track progress and comprehension. Effort regulation items (Cronbach's α = 0.86) measured persistence and sustained effort in challenging tasks.

Responses were rated on a 5-point Likert scale ranging from (1) never to (5) always. The questionnaire was translated into Mandarin

Chinese and reviewed by two English teachers to ensure clarity and cultural relevance, guaranteeing reliability and validity.

3.2.3 English Achievement

English language achievement was assessed using students' scores from the two most recent monthly English tests, each designed to assess listening (30 points), reading (50 points), language use (30 points), and writing skills (40 points). These tests were standardized and modeled after the Chinese National College Entrance Examination (Gaokao), with a maximum score of 150 points. The average score from these tests was used to classify students into proficiency levels, ensuring consistent and reliable assessment of English achievement.

3.3 Data Collection Procedures

The data collection process included three phases: grouping participants by proficiency levels based on English test scores, administering structured questionnaires in classrooms with an emphasis on confidentiality, and compiling questionnaire responses with test scores for analysis. All procedures were ethically approved, with participants fully informed and free to withdraw. The questionnaires were translated into Mandarin using the back-translation method, involving English teachers as translators to ensure accuracy and cultural appropriateness.

3.4 Data Analysis

The data analysis aimed to examine relationships between motivational beliefs, SRL strategies, and English achievement, employing methods to ensure reliability and validity. Descriptive statistics summarized participant responses. Reliability and validity were assessed using Cronbach's Alpha, EFA, and CFA. Pearson correlation was used to explore associations among variables, while SEM tested hypothesized relationships, including model fit and mediation effects. The reliability and discrimination power of the English test papers were assessed by calculating item discrimination indices for objective questions and standardized difference indices for subjective questions, ensuring consistency and alignment with Gaokao standards.

4. Results

4.1 Reliability and Discriminant Validity of Questionnaires

An Exploratory Factor Analysis (EFA) was conducted to assess the structural validity of the scale, ensuring that the measurement variables for each latent variable exhibit stable consistency and structure. A Kaiser-Meyer-Olkin (KMO) value of 0.940 (above the recommended threshold of 0.70) and Bartlett's Test of Sphericity ($\chi^2 = 4989.129$, $p < 0.01$) confirmed the appropriateness of the data for factor analysis (Kline, 2023).

Table 1. Factor Rotation Matrix

Observation variable	Component				
	1	2	3	4	5
IM1	0.124	0.806	0.172	0.066	0.099
IM2	0.183	0.708	0.093	0.015	0.074
IM3	0.207	0.691	0.118	0.01	0.172
IM4	0.128	0.816	0.183	0.064	0.04
IM5	0.098	0.696	0.131	0.054	0.111
IM6	0.131	0.752	0.099	0.078	0.174
IM7	0.259	0.652	0.121	0.155	0.022
IM8	0.126	0.767	0.112	0.126	0.04
IM9	0.15	0.702	0.115	0.158	0.151
IM10	0.23	0.808	0.037	0.023	0.014
SE11	0.76	0.166	0.233	0.129	0.13
SE12	0.771	0.147	0.093	0.134	0.064
SE13	0.718	0.192	0.23	0.172	0
SE14	0.707	0.268	0.084	0.16	0.07
SE15	0.711	0.227	0.168	0.201	0.232
SE16	0.694	0.211	0.263	0.197	0.074
SE17	0.781	0.165	0.191	0.068	0.064
SE18	0.74	0.193	0.123	0.175	0.087
SE19	0.703	0.116	0.135	0.167	0.057
SE20	0.792	0.117	0.053	0.071	0.159
GSP21	0.329	0.111	0.238	0.73	0.137
GSP22	0.254	0.088	0.107	0.806	0.17
GSP23	0.173	0.149	0.169	0.76	0.111
GSP24	0.282	0.115	0.222	0.747	0.185
MON25	0.209	0.141	0.823	0.146	0.035
MON26	0.183	0.149	0.736	0.177	0.1
MON27	0.264	0.169	0.704	0.158	0.225
MON28	0.257	0.238	0.72	0.157	0.142
MON29	0.179	0.229	0.775	0.111	0.141
ER30	0.165	0.215	0.194	0.243	0.797
ER31	0.16	0.171	0.174	0.174	0.821

ER32	0.193	0.216	0.159	0.146	0.86
eigenvalue	12.458	3.538	2.373	1.707	1.364
% of Variance	19.885	19.401	11.003	8.951	7.764
Cumulative %	19.885	39.286	50.289	59.24	67.004

Note: IM=Intrinsic Motivation; SE=Self-Efficacy; GSP=Goal Setting and Planning; MON=Monitoring; ER=Effort Regulation

Table 1 shows the factor rotation matrix of the variables. Five factors with eigenvalues greater than one were extracted using principal component analysis, accounting for 67.004% of the cumulative variance and exceeding the 60% threshold (Brown, 2015). All factor loadings exceeded 0.5, indicating that the factors comprehensively represent the data without significant dual factor loadings, confirming the scale's structural validity (Hu and Bentler, 1999).

Table 2. Convergent Validity Results

Latent variables	Observation variable	Standard factor load coefficient	S.E.	C.R.	P	CR	AVE
Intrinsic Motivation (IM)	IM1	0.822				0.927	0.562
	IM2	0.704	0.062	12.042	***		
	IM3	0.712	0.059	12.227	***		
	IM4	0.828	0.066	15.129	***		
	IM5	0.683	0.066	11.576	***		
	IM6	0.764	0.061	13.454	***		
	IM7	0.681	0.062	11.527	***		
	IM8	0.758	0.061	13.321	***		
	IM9	0.721	0.062	12.431	***		
	IM10	0.804	0.062	14.481	***		
Self-Efficacy (SE)	SE11	0.816				0.936	0.592
	SE12	0.761	0.068	13.342	***		
	SE13	0.766	0.069	13.467	***		
	SE14	0.744	0.065	12.942	***		
	SE15	0.8	0.071	14.324	***		
	SE16	0.771	0.067	13.574	***		
	SE17	0.791	0.067	14.093	***		
	SE18	0.769	0.068	13.536	***		
	SE19	0.706	0.067	12.049	***		
	SE20	0.767	0.065	13.48	***		
Goal Setting and Planning (GSP)	GSP21	0.82				0.871	0.629
	GSP22	0.807	0.076	13.591	***		
	GSP23	0.717	0.072	11.706	***		
	GSP24	0.823	0.07	13.921	***		
Monitoring (MON)	MON25	0.815				0.888	0.613
	MON26	0.727	0.078	12.018	***		
	MON27	0.783	0.073	13.227	***		
	MON28	0.785	0.079	13.284	***		
	MON29	0.802	0.074	13.644	***		
Effort regulation (ER)	ER30	0.861				0.897	0.743
	ER31	0.815	0.061	15.244	***		
	ER32	0.908	0.059	17.395	***		

Convergent validity was assessed using Composite Reliability (CR) and Average Variance Extracted (AVE). The CR values for all dimensions were above the 0.70 threshold, with AVEs ranging from 0.562 to 0.743, indicating good convergent validity (Fornell & Larcker, 1981). The factor loadings for all items ranged between 0.60 and 0.90, supporting the measurement model's reliability. These numerical data are presented in Table 2.

As illustrated in Table 3, a discriminant validity analysis showed that the square roots of the AVEs for each dimension were greater than the correlations between dimensions, confirming that the constructs are sufficiently distinct (Fornell & Larcker, 1981).

Table 3. Discriminant validity analysis of AVE values for each dimension

	Intrinsic Motivation	Self-Efficacy	Goal Setting and Planning	Monitoring	Effort Regulation
Intrinsic motivation	0.75				
Self-efficacy	0.498	0.77			
Goal setting and planning	0.36	0.607	0.793		
Monitoring	0.48	0.577	0.561	0.783	
Effort regulation	0.434	0.45	0.529	0.493	0.862

The item discrimination analysis and *t*-test results showed the English test effectively distinguished between high- and low-performing students. The average discrimination value for objective questions was 0.30, while for subjective questions, the standardized difference indices had an average value of 0.32. A T-test comparing the upper 27% (M = 89.48, SD = 8.91) and lower 27% (M = 48.89, SD = 8.13) revealed significant differences across listening ($t = 25.606$, $p < .001$), reading ($t = 20.095$, $p < .001$), language use ($t = 14.028$, $p < .001$),

writing (t = 15.681, p < .001), and total scores (t = 63.468, p < .001) (DeVellis, 2017).

Cronbach's Alpha values of the scales ranged from 0.871 to 0.936, with intrinsic motivation (α = 0.927, 10 items), self-efficacy (α = 0.936, 10 items), goal setting and planning (α = 0.871, 4 items), monitoring (α = 0.887, 5 items), and effort regulation (α = 0.895, 3 items), all meeting the recommended reliability thresholds.

4.2 Descriptive Statistics and Correlation Analyses

Descriptive statistics for the main variables are illustrated in Table 4. Intrinsic motivation (M = 3.70, SD = 0.87), self-efficacy (M = 3.72, SD = 0.86), and SRL strategies, including goal setting and planning (M = 3.27, SD = 1.07), monitoring (M = 3.54, SD = 0.92), and effort regulation (M = 3.30, SD = 0.97), showed moderate levels. English test scores averaged 66.17 (SD = 15.44), ranging from 22.00 to 107.75, with 82.70% scoring between 50 and 99.99.

Table 4. Descriptive statistics for variables

Variable	Mean (%)	SD
Intrinsic Motivation	3.70 (74)	0.87
Self-Efficacy	3.72 (74.40)	0.86
Goal Setting and Planning	3.27 65.40)	1.07
Monitoring	3.54 (70.80)	0.92
Effort Regulation	3.30 (66)	0.97
English Achievement	66.17 (44.11)	15.44

n = 237

Table 5 illustrates the correlation analysis of key variables. The analysis revealed that significant positive relationships were identified through correlation analysis. Intrinsic motivation moderately correlated with SRL strategies (r = 0.33 to 0.44) and English achievements (r = 0.49). Self-efficacy was strongly correlated with SRL strategies (r = 0.41 to 0.54) and English achievements (r = 0.58) (Zimmerman and Schunk, 2011). Finally, SRL strategies had the strongest correlations with English achievements (r = 0.48 to r = 0.54) (Teng & Zhang, 2020).

Table 5. Correlation analysis of key variables

Variable	Intrinsic Motivation	Self-Efficacy	Goal Setting and Planning	Monitoring	Effort Regulation
Intrinsic Motivation	_				
Self-Efficacy	.47**	_			
Goal Setting and Planning	.33**	.54**	_		
Monitoring	.44**	.53**	.50**	_	
Effort Regulation	.40**	.41**	.48**	.45**	_
English Achievements	.49**	.58**	.54**	.54**	.48**

**p< .01

4.3 Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) was also conducted to evaluate the alignment between latent factors and their observed variables. As illustrated in Figure 2, intrinsic motivation (IM) was measured by ten observed variables (IM1 to IM10), self-efficacy (SE) by ten observed variables (SE11 to SE20), goal setting and planning (GSP) by four observed variables (GSP21 to GSP24), monitoring (MON) by five observed variables (MON25 to MON29), effort regulation (ER) by three observed variables (ER30 to ER32), and English learning achievement (ES) by one observed variable.

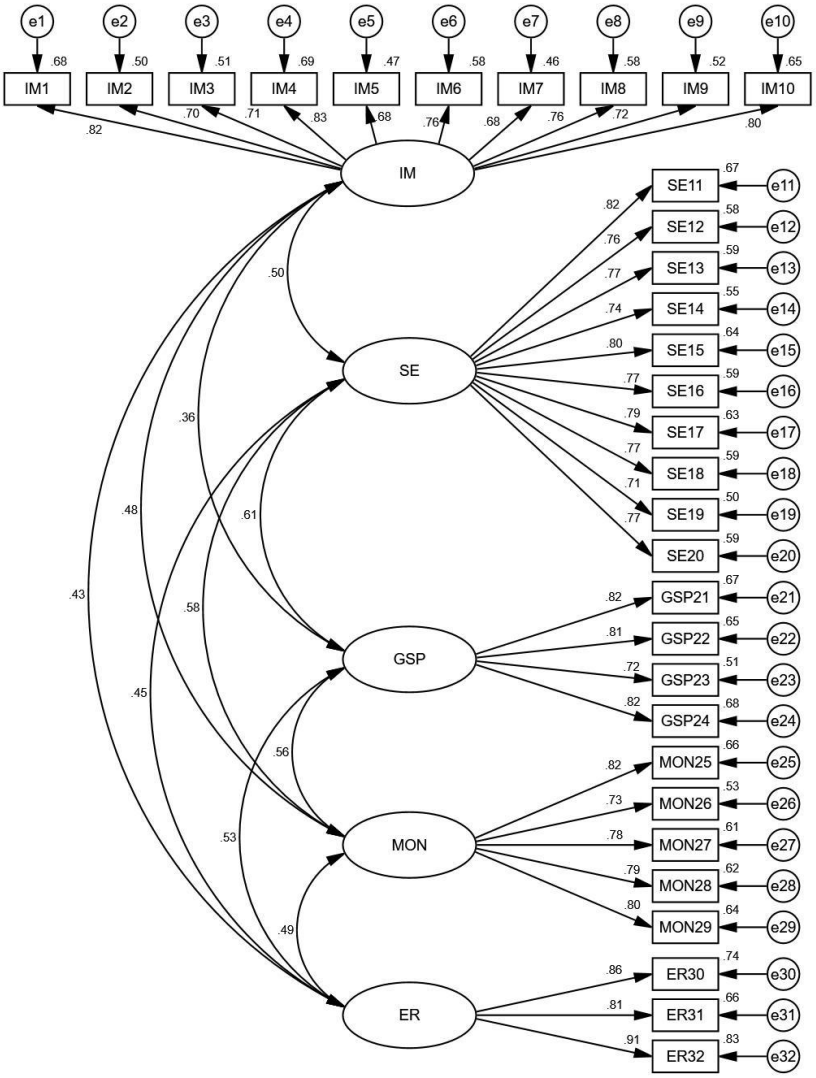

Figure 2. Confirmatory Factor Analysis Model

Table 6 presents the confirmatory factor model fit indices, indicating that the model achieved an acceptable fit. The analysis revealed an X ⁷df value of 1.240, with GFI (0.874) and AGFI (0.853) exceeding the 0.8 benchmark. Additionally, IFI (0.977), TLI (0.974), and CFI (0.977) surpass the recommended threshold of 0.9. The RMSEA value of 0.032 is well below the 0.08 threshold, confirming the model's adequacy (Hu & Bentler, 1999; Schreiber et al., 2006).

Table 6. Confirmatory factor model fit indices

	X ⁷df	GFI	AGFI	IFI	TLI	CFI	RMSEA
Statistical value	1.24	0.874	0.853	0.977	0.974	0.977	0.032
Recommended value	<3	>0.8	>0.8	>0.9	>0.9	>0.9	<0.08

4.4 Structural Equation Modeling (SEM)

The structural equation model (SEM) evaluated the relationships among intrinsic motivation, self-efficacy, self-regulated learning (SRL) strategies, and English learning achievements. The Structural equation model (SEM) is illustrated in Figure 3.

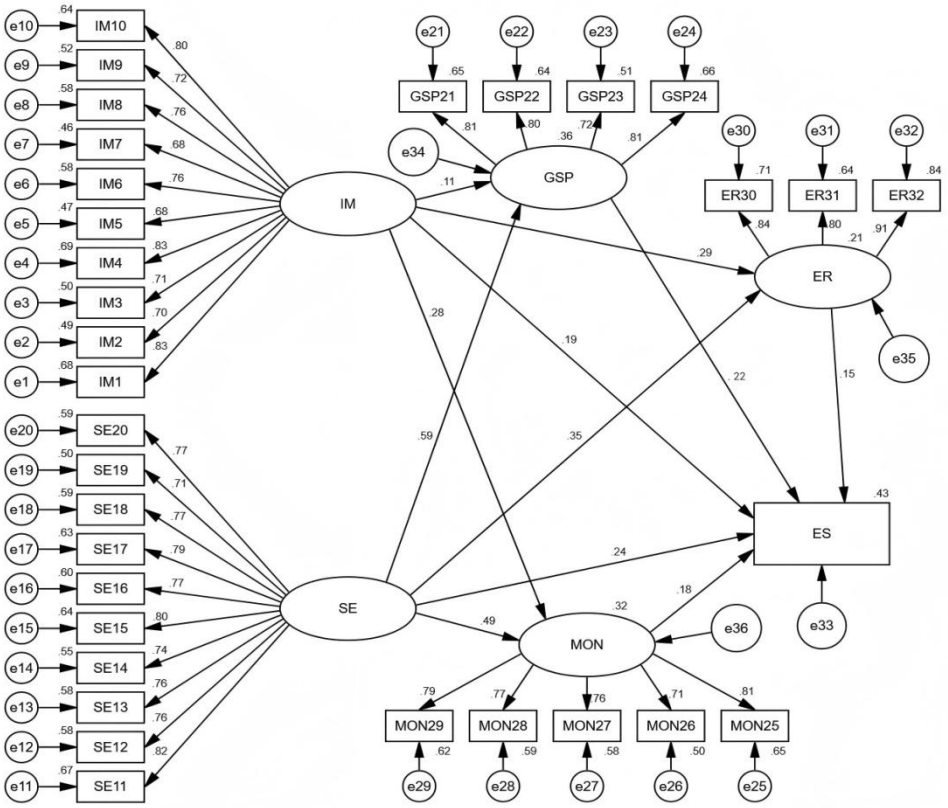

Figure 3. Structural equation model (SEM) illustrating the relationships among motivational beliefs, self-regulated learning (SRL) strategy use, and English language learning achievement

Model fit was evaluated using established indices, including the chi-square to degrees of freedom ratio (X ⁋df), root mean square error of approximation (RMSEA), goodness of fit index (GFI), comparative fit index (CFI), and Tucker-Lewis index (TLI). The fit indices, summarized in Table 7, all met the recommended thresholds (Kline, 2023). Specifically, the X ⁋df ratio was 1.471, below the threshold of 3, indicating an acceptable fit. The RMSEA value was 0.045, within the acceptable range of 0.08 or lower. Additionally, the CFI, TLI, and GFI values exceeded the recommended thresholds, confirming the model's overall adequacy.

Table 7. Structural Equation Model Fit Indices

	X ⁋df	GFI	AGFI	IFI	TLI	CFI	RMSEA
Statistical value	1.471	0.85	0.826	0.954	0.949	0.954	0.045
Recommended value	<3	>0.8	>0.8	>0.9	>0.9	>0.9	<0.08

Path analysis within structural equation modeling (SEM) examined the direct and indirect relationships between variables in the hypothesized model. As illustrated in Table 8, intrinsic motivation (IM) strongly predicted effort regulation (ER) ($\gamma = 0.29$) and monitoring (MON) ($\gamma = 0.28$) but had no significant effect on goal setting and planning (GSP) ($\gamma = 0.11$). Self-Efficacy (SE) strongly predicted all SRL strategies: goal setting and planning (GSP) ($\gamma = 0.59$), effort regulation (ER) ($\gamma = 0.35$), and monitoring (MON) ($\gamma = 0.49$). SRL strategies also significantly predicted English achievements (ES): Goal setting and planning (GSP) ($\gamma = 0.22$), Effort regulation (ER) ($\gamma = 0.15$), and Monitoring (MON) ($\gamma = 0.18$), indicating a small to moderate, but significant, effect (Kline, 2023).

Table 8. Standardized Path Coefficients and Variance Parameter of SEM

Path relationship			Standard path coefficient	S.E.	C.R.	P
GSP	<---	IM	0.11	0.06	1.744	0.081
ER	<---	IM	0.29	0.058	4.398	***
MON	<---	IM	0.28	0.052	4.441	***
GSP	<---	SE	0.59	0.079	8.228	***
ER	<---	SE	0.35	0.066	5.186	***
MON	<---	SE	0.49	0.063	7.132	***
ES	<---	GSP	0.22	1.019	3.011	0.003
ES	<---	ER	0.15	0.985	2.508	0.012
ES	<---	MON	0.18	1.178	2.627	0.009
ES	<---	IM	0.19	0.842	3.224	0.001
ES	<---	SE	0.24	1.279	2.944	0.003

Note:*** p <0.001

4.5 Bootstrap Mediation Analysis

The mediation effects of significant paths were analyzed using the Bootstrap method with 5000 repetitions and a 95% confidence interval. As shown in Table 9, a mediation effect is considered significant if the confidence interval does not include zero (Hayes, 2017).

Table 9. Mediation Effect Analysis Results

Parameter	Effect Value	Lower	Upper	P
IM-GSP-ES (Indirect Effect)	0.023	-0.005	0.065	0.115
IM-ER-ES (Indirect Effect)	0.239	0.069	0.384	0.004
IM-MON-ES (Indirect Effect)	0.508	0.396	0.602	0
SE-GSP-ES (Indirect Effect)	0.126	0.038	0.224	0.003
SE-ER-ES (Indirect Effect)	0.054	0.007	0.11	0.025
SE-MON-ES (Indirect Effect)	0.089	0.013	0.171	0.022
IM-ES (Direct Effect)	0.194	0.062	0.316	0.004
IM-ES (Total Effect)	0.314	0.191	0.428	0
SE-ES (Direct Effect)	0.239	0.069	0.384	0.004
SE-ES (Total Effect)	0.508	0.396	0.602	0

Effort regulation (ER) mediated the relationship between intrinsic motivation (IM) and English achievements (ES), with an effect size of 0.239 (95% CI [0.069, 0.384], $p = 0.004$). Monitoring (MON) significantly mediated the effect of intrinsic motivation (IM) on English achievements (ES), with an effect size of 0.508 (95% CI [0.396, 0.602], $p < 0.001$). Goal setting and planning (GSP) did not show a significant mediating effect on the relationship between intrinsic motivation (IM) and English achievement (ES) (effect = 0.023, 95% CI = [-0.005, 0.065], $p = 0.115$).

For self-efficacy (SE), goal setting and planning (GSP), effort regulation (ER), and monitoring (MON) mediated its relationship with English achievements (ES), with effect sizes of 0.126 (95% CI [0.038, 0.224], $p = 0.003$), 0.054 (95% CI [0.007, 0.110], $p = 0.025$), and 0.089 (95% CI [0.013, 0.171], $p = 0.022$)

5. Discussion

5.1 Motivational Beliefs and Their Contribution to Self-Regulated Learning Strategies

The findings demonstrate that intrinsic motivation significantly predicts monitoring and effort regulation, contributing to learners' ability to evaluate their progress and sustain persistence. These results align with recent research highlighting intrinsic motivation as a critical factor for engagement and sustained effort in learning (Bai & Wang, 2023; Shen et al., 2023). The contribution of intrinsic motivation to monitoring underscores its role in fostering metacognitive processes, while its prediction of effort regulation emphasizes the importance of consistent learning behaviors.

However, intrinsic motivation does not significantly predict goal setting and planning. This suggests that while intrinsic drive supports specific SRL strategies, additional scaffolding or external intervention is needed to translate motivation into structured planning behaviors. This is consistent with Schunk and DiBenedetto (2020), who highlight that goal setting often requires explicit training or external guidance to align intrinsic goals with actionable plans.

Self-efficacy emerged as a strong predictor of all three SRL strategies, with the highest prediction observed for goal setting and planning, followed by monitoring and effort regulation. These findings align with Bandura's (1997) social cognitive theory and recent studies that emphasize the role of self-efficacy in fostering proactive and adaptive learning behaviors (Chen et al., 2023; Teng, 2021). The strong predictive relationship between self-efficacy and goal setting reflects learners' confidence in setting realistic objectives and formulating effective strategies to achieve them.

These findings support previous research demonstrating that self-efficacy contributes to persistence and effective engagement with SRL strategies (Bai et al., 2019; Zimmerman, 2000). Learners with high self-efficacy are more likely to adopt a sense of agency, enabling them to plan, monitor, and regulate their behavior effectively. Enhancing self-efficacy through constructive feedback and mastery experiences could strengthen these predictions and improve academic outcomes.

5.2 Self-Regulated Strategies and Their Prediction of English Achievements

The results of this study used self-regulated learning (SRL) as a predictor of EFL achievement. Among SRL strategies, goal setting and planning showed the strongest predictive power for English learning achievement, followed by monitoring and effort regulation. Specifically, goal setting and planning are viewed as a foundational element of self-regulation. This element not only helps students manage their time and resources more efficiently but also motivates them to accomplish tasks that help them reach their learning goals. These findings corroborate prior studies (Deng et al., 2022; Teng & Zhang, 2020) and highlight that students who plan purposefully are better prepared to face the challenges of language acquisition. For EFL learners who may be solely exposed to English in the classroom, goal-directed behavior is crucial for maintaining long-term motivation and focus.

Additionally, monitoring and effort regulation significantly predicted English learning achievements. Learners who frequently engage in self-monitoring would better identify their strengths and areas for improvement, adapt their strategies, and ask for help when necessary. This

ongoing reflection and evaluation process fosters the metacognitive awareness needed to make informed decisions about language learning strategies. The ability to self-monitor is undoubtedly aligned with the broader aim of enhancing learner autonomy, a critical factor in second language acquisition. This process also helps explain the role of effort regulation, which represents a learner's commitment to persistent effort despite challenges, distractions, or waning motivation. In line with previous research (Shen et al., 2023; Teng, 2021), effort regulation helps learners stay focused on their goals and committed to their progress, even when progress becomes difficult. It also indicates learners' emotional and motivational control, which are the core elements of the self-regulation process.

5.3 The Impact of Self-regulated Learning on Motivational Beliefs and English Achievement

This study revealed that self-regulated learning (SRL) strategies mediate the relationships between motivational factors and English learning achievement. Self-efficacy exerted a stronger mediating effect through SRL strategies than intrinsic motivation, suggesting that a student's confidence in their abilities plays a critical role in their use of effective learning strategies. Among the SRL strategies, goal setting and planning emerged as a particularly effective mediator between self-efficacy and English learning achievement, indicating that students with high self-efficacy are more likely to set clear goals and create actionable plans that contribute to academic success.

Intrinsic motivation also influenced English learning achievement through specific SRL strategies. Monitoring and effort regulation were effective mediators of this relationship, highlighting how intrinsic motivation supports metacognitive awareness and the persistence needed to achieve learning goals. However, the mediation effect of goal setting and planning in the relationship between intrinsic motivation and English learning achievement was not significant, suggesting that while motivated students may naturally engage in monitoring and regulating their effort, they may require additional guidance or structure to effectively translate their motivation into strategic goal setting and planning.

These findings underscore the differentiated roles of self-efficacy and intrinsic motivation in promoting English learning achievement through distinct SRL strategies. While self-efficacy may enhance broader strategic planning and behavioral regulation, intrinsic motivation primarily supports ongoing engagement and self-monitoring during the learning process.

5.4 Contextual Influences on Motivation, Self-Regulated Learning, and English Achievement in Chinese High Schools

The relationships observed among motivational beliefs, self-regulated learning (SRL), and English achievement should be interpreted in relation to the specific realities of the Chinese high school EFL learning environment. At this educational stage, English learning is closely linked to high-stakes examinations, particularly the Gaokao, which places sustained and cumulative pressure on students to demonstrate measurable academic performance. Under such conditions, learners' success depends not only on motivation but also on their capacity to regulate learning over extended periods of exam preparation.

Within this context, self-regulated learning strategies function as a critical mechanism through which motivational beliefs are translated into academic outcomes. The strong predictive effects of goal setting and planning on English achievement suggest that structured, forward-looking regulation is especially important in an exam-oriented system that emphasizes long-term preparation and performance goals. Monitoring and effort regulation further support achievement by enabling learners to track progress, adjust strategies, and maintain persistence in the face of continuous evaluative demands.

In addition, English instruction in Chinese high schools is often characterized by teacher-centered classroom practices, where learning objectives, materials, and pacing are largely determined by teachers and examination requirements. As a result, opportunities for learner autonomy during classroom instruction may be limited, placing greater responsibility on students to regulate their learning beyond the classroom. This contextual constraint helps explain why self-efficacy emerged as a strong predictor of all three SRL strategies in the present study, as learners' confidence in their ability to manage learning tasks becomes a crucial resource for independent planning, monitoring, and sustained effort.

The differential effects of intrinsic motivation further reflect the influence of this learning environment. While intrinsic motivation significantly supported monitoring and effort regulation by fostering engagement and persistence, it did not directly predict goal setting and planning. This pattern suggests that, in a highly structured, exam-driven context, interest and enjoyment alone may be insufficient to initiate strategic planning behaviors, which appear to rely more on learners' self-efficacy. Together, these findings illustrate how motivation, SRL, and English achievement are shaped by the combined influence of high-stakes assessment pressure and teacher-centered instructional practices in the Chinese high school EFL context.

6. Conclusion and Implications

6.1 Conclusion of the Study

This study explored the relationships among intrinsic motivation, self-efficacy, self-regulated learning (SRL) strategies, and English achievement among Chinese EFL high school students. The findings revealed that intrinsic motivation contributes significantly to monitoring and effort regulation but does not directly predict goal setting and planning. These results indicate that while intrinsic motivation fosters active engagement and persistence, additional external support and structured guidance are necessary to enhance goal-setting behaviors.

Self-efficacy was a strong predictor of all three SRL strategies: goal setting and planning, monitoring, and effort regulation. This highlights the role of self-efficacy in enabling students to set clear goals, track their progress, and maintain effort. The results also demonstrated that

SRL strategies mediate the relationship between motivational beliefs and English learning achievement, with goal setting and planning emerging as the most influential factor, followed by monitoring and effort regulation.

The study highlights the interconnectedness of motivational constructs, self-regulatory processes, and academic achievement. These findings provide a basis for understanding the mechanisms that drive language learning in EFL contexts and suggest potential directions for improving teaching practices to support learners in developing essential skills for academic success.

6.2 Implications and Suggestions for Future Research

This research emphasizes the importance of integrating SRL strategies into educational practices to optimize English learning outcomes. Educators can support intrinsic motivation by designing engaging, autonomy-supportive learning activities that align with students' interests and promote self-reflection. Tasks that encourage exploration and creativity may help enhance engagement, while structured opportunities for self-assessment can improve metacognitive awareness. Additionally, fostering self-efficacy through positive reinforcement, constructive feedback, and opportunities for success can enable students to engage more effectively in self-regulatory practices. Providing scaffolding for planning and goal-setting behaviors, such as templates and planning frameworks, may address the observed gap between intrinsic motivation and learning strategies of planning and goal setting.

SRL strategies, such as monitoring and effort regulation, play a central role in linking motivation to academic performance. Monitoring ensures progress is tracked, and effort regulation supports persistence through challenges. These strategies can collectively enable students to achieve better academic outcomes and develop essential lifelong learning skills. Explicit instruction and regular practice in these strategies could enhance their application in educational settings.

This study contributes to existing literature on motivational and self-regulatory processes in language education. The findings suggest actionable strategies for educators and policymakers to support EFL learners in managing their learning processes effectively. Students can be better equipped to achieve academic success and develop the skills needed for lifelong learning by fostering intrinsic motivation and self-efficacy and incorporating SRL strategies into teaching practices.

One limitation of the present study concerns the characteristics of the sample. The participants were drawn from a single high school in a specific region of southwestern China. Although this context allows for an in-depth examination of motivational beliefs and self-regulated learning within a high-stakes EFL environment, it inevitably limits the generalizability of the findings to other educational contexts. Differences in school types, regional educational resources, and sociocultural backgrounds may influence the relationships observed in the present study.

Accordingly, the findings should be interpreted as providing an in-depth case study of adolescent EFL learners in a specific high-stakes context, or as a preliminary model illustrating the joint associations among motivational beliefs, self-regulated learning strategies, and English achievement. Further research employing larger, multi-school, and more diverse samples across regions and educational settings is needed to verify and extend the proposed relationships.

Acknowledgments

We would like to express our sincere appreciation to our colleagues and study participants for their support and contributions throughout the research process. This research project was financially supported by Mahasarakham University, Thailand. All support and contributions are truly treasured.

Authors' contributions

Zhiyao Chen and Dr. Apisak Sukying were responsible for the study design and revision. Zhiyao Chen was responsible for data collection. Zhiyao Chen and Nithipong Yothachai analyzed the data and drafted the manuscript, and Dr. Apisak Sukying revised it. All authors read and approved the final manuscript.

Funding

This research project was financially supported by Mahasarakham University.

Competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have influenced the work reported in this paper.

Informed consent

Obtained.

Ethics approval

The Publication Ethics Committee of the Sciedu Press.

The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

Provenance and peer review

Not commissioned; externally double-blind peer reviewed.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

References

Bai, B., & Guo, W. (2018). Influences of self-regulated learning strategy use on self-efficacy in primary school students' English writing in Hong Kong. *Reading & Writing Quarterly*, *34*(6), 523-536. https://doi.org/10.1080/10573569.2018.1499058

Bai, B., & Guo, W. (2021). Motivation and self-regulated strategy use: Relationships to primary school students' English writing in Hong Kong. *Language Teaching Research*, *25*(3), 378-399. https://doi.org/10.1177/1362168819859921

Bai, B., & Wang, J. (2023). The role of growth mindset, self-efficacy, and intrinsic value in self-regulated learning and English language learning achievements. *Language Teaching Research*, *27*(1), 207-228. https://doi.org/10.1177/13621688209331

Bai, B., Chao, G. C. N., & Wang, C. (2019). The relationship between social support, self-efficacy, and English language learning achievement in Hong Kong. *TESOL Quarterly*, *53*(1), 208-221. https://doi.org/10.1002/tesq.439

Bandura, A. (2006). Guide for constructing self-efficacy scales. *Self-efficacy beliefs of adolescents*, *5*(1), 307-337. https://doi.org/10.1108/978-1-60752-750-320251002

Bandura, A., & Wessels, S. (1997). *Self-efficacy* (pp. 4-6). Cambridge University Press.

Brown, T. A. (2015). *Confirmatory Factor Analysis for Applied Research* (2nd ed.). Guilford Publications.

Çelik, F., & Yeşilel, D. B. A. (2023). Is Strategy Instruction Still Needed? A Comprehensive Analysis of Learner Strategies in High School EFL Context. https://doi.org/10.21203/rs.3.rs-3372856/v1

Chen, J., Lin, C. H., Chen, G., & Fu, H. (2023). Individual differences in self-regulated learning profiles of Chinese EFL readers: A sequential explanatory mixed-methods study. *Studies in Second Language Acquisition*, *45*, 955-978. https://doi.org/10.1017/S0272263122000584

Chen, Y. (2020). Correlation between self-efficacy and English performance. *International Journal of Emerging Technologies in Learning (iJET)*, *15*(8), 223-234. https://doi.org/10.3991/ijet.v15i08.13697

Chen, Z., & Sukying, A. (2024). The relationship between intrinsic motivation, self-efficacy, self-regulated learning, and English learning achievement in Chinese high school students. *Journal of English Language and Linguistics*, *5*(3), 261-276. https://doi.org/10.62819/jel.2024.578

Deng, X., Wang, C., & Xu, J. (2022). Self-regulated learning strategies of Macau English as a foreign language learners: Validity of responses and academic achievements. *Frontiers in Psychology*, *13*, 976330. https://doi.org/10.3389/fpsyg.2022.976330

DeVellis, R. F. (2017). *Scale Development: Theory and Applications* (4th ed.). Sage Publications.

Dörnyei, Z. (2014). *The psychology of the language learner: Individual differences in second language acquisition*. Routledge. https://doi.org/10.4324/9781410613349

Dörnyei, Z., & Ushioda, E. (2021). Teaching and researching motivation. Routledge. https://doi.org/10.4324/9781351006743

Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, *18*(1), 39–50. https://doi.org/10.1177/002224378101800104

Guo, W., Bai, B., Zang, F., Wang, T., & Song, H. (2023). Influences of motivation and grit on students' self-regulated learning and English learning achievement: A comparison between male and female students. *System*, *114*, 103018 https://doi.org/10.1016/j.system.2023.103018

Hayes, A. F. (2018). *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach* (2nd ed.). Guilford Press.

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural equation modeling: a multidisciplinary journal*, *6*(1), 1-55. https://doi.org/10.1080/10705519909540118

Kitichaidateanan, P., & Sukying, A. (2025). Decoding success: Investigating the impact of trait and state strategies on reading test

performance among Thai high school learners. *World Journal of English Language*, *15*(1), 88-100. https://doi.org/10.5430/wjel.v15n1p88

Kline, R. B. (2023). *Principles and practice of structural equation modeling*. Guilford Publications.

Kormos, J., & Csizér, K. (2014). The interaction of motivation, self-regulatory strategies, and autonomous learning behavior in different learner groups. *TESOL Quarterly*, *48*(2), 275–299. https://doi.org/10.1002/tesq.129

Matsuzaki Carreira, J. (2012). Affective factors contributing to intrinsic motivation for learning English among elementary school students in Japan. In T. Muller, S. Herder, J. Adamson, & P. S. Brown (Eds.), *Innovating EFL teaching in Asia* (pp. 157-174). Palgrave Macmillan. https://doi.org/10.1057/9780230347823_15

Noels, K. A., Pelletier, L. G., Clément, R., & Vallerand, R. J. (2000). Why are you learning a second language? Motivational orientations and self-determination theory. *Language Learning*, *50*(1), 57-85. https://doi.org/10.1111/0023-8333.00111

Oxford, R. L. (2016). *Teaching and researching language learning strategies: Self-regulation in context*. Routledge. https://doi.org/10.4324/9781315719146

Pintrich, P. R. (2004). A conceptual framework for assessing motivation and self-regulated learning in college students. *Educational Psychology Review*, *16*, 385-407. https://doi.org/10.1007/s10648-004-0006-x

Pintrich, P. R., & De Groot, E. V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology*, *82*(1), 33-40. https://doi.org/10.1037/0022-0663.82.1.33

Pintrich, P. R., Smith, D. A., Garcia, T., & McKeachie, W. J. (1993). Reliability and predictive validity of the Motivated Strategies for Learning Questionnaire (MSLQ). *Educational and psychological measurement*, *53*(3), 801-813. https://doi.org/10.1177/0013164493053003024

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68. https://doi.org/10.1037/0003-066X.55.1.68

Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. *Contemporary Educational Psychology, 61*, 101860. https://doi.org/10.1016/j.cedpsych.2020.101860

Schreiber, J. B., Nora, A., Stage, F. K., Barlow, E. A., & King, J. (2006). Reporting structural equation modeling and confirmatory factor analysis results: A review. *The Journal of Educational Research*, 99(6), 323-338. https://doi.org/10.3200/JOER.99.6.323-338

Schunk, D. H., & DiBenedetto, M. K. (2020). Motivation and social cognitive theory. *Contemporary Educational Psychology*, *60*, 101832. https://doi.org/10.1016/j.cedpsych.2019.101832

Shen, B., & Bai, B. (2024). Chinese university students' self-regulated writing strategy use and EFL writing performance: Influences of self-efficacy, gender, and major. *Applied Linguistics Review*, *15*(1), 161-188. https://doi.org/10.1515/applirev-2020-0103

Shen, B., Wang, Y., Yang, Y., & Yu, X. (2023). Relationships between Chinese university EFL learners' academic emotions and self-regulated learning strategies: A structural equation model. *Language Teaching Research*, 13621688221144832. https://doi.org/10.1177/13621688221144832

Sukying, A. (2021). Choices of language learning strategies and English proficiency of EFL university learners. *LEARN Journal: Language Education and Acquisition Research Network, 14*(2), 59-87. https://so04.tci-thaijo.org/index.php/LEARN/article/view/253261

Teng, L. S. (2022). Self-regulated learning and language learning strategies. In Self-regulated Learning and Second Language Writing: Fostering strategic language learners (pp. 15-30). *Cham: Springer International Publishing.* https://doi.org/10.1007/978-3-030-99520-1_2

Teng, L. S., & Zhang, L. J. (2020). Empowering learners in the second/foreign language classroom: Can self-regulated learning strategies-based writing instruction make a difference?. *Journal of Second Language Writing*, *48*, 100701. https://doi.org/10.1016/j.system.2023.103018

Teng, L. S., Yuan, R. E., & Sun, P. P. (2020). A mixed-methods approach to investigating motivational regulation strategies and writing proficiency in English as a foreign language contexts. *System, 88*, 102182. https://doi.org/10.1016/j.system.2019.102182

Vallerand, R. J., & Ratelle, C. F. (2002). Intrinsic and extrinsic motivation: A hierarchical model. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 37–63). *University of Rochester Press.*

Ye, X. (2021). EFL Learning motivation differences of Chinese junior secondary school students: A mixed-methods study. *Education 3-13*, *49*(2), 203-216. https://doi.org/10.1080/03004279.2019.1711143

Zimmerman, B. J. (2000). Self-efficacy: An essential motive to learn. Contemporary educational psychology, 25(1), 82-91. https://doi.org/10.1006/ceps.1999.1016

Zimmerman, B. J. (2002). Becoming a self-regulated learner: An overview. *Theory into Practice*, *41*(2), 64-70. https://doi.org/10.1207/s15430421tip4102_2

Zimmerman, B. J., & Schunk, D. H. (2011). Self-regulated learning and performance: An introduction and an overview. In *Handbook of self-regulation of learning and performance*, 15-26.

Zimmerman, B. J., & Schunk, D. H. (2012). Motivation: An essential dimension of self-regulated learning. In *Motivation and self-regulated learning* (pp. 1-30). Routledge.