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Effect of Self-regulated Strategy Learning on Foreign Language Speaking Anxiety and English Speaking Performance of Chinese Undergraduate Students

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Abstract

This study examined the effects of self-regulated learning (SRL) strategies on foreign language speaking anxiety (FLSA) and English speaking performance among Chinese undergraduate English majors. Employing a single-group pretest-posttest design, fifty second-year English majors from a university in Jilin Province participated in an 8-week SRL intervention integrated into regular speaking courses. The intervention targeted goal-setting, self-monitoring, positive self-talk, and independent practice. Data were collected via a modified Foreign Language Speaking Anxiety Scale (FLSAS), picture-description speaking tests, and a Likert-scale questionnaire. Paired-sample t-tests demonstrated significant reductions in FLSA and notable improvements in speaking performance post-intervention. Participants also reported enhanced confidence, fluency, and learning motivation. These findings indicate that integrating SRL strategies into language instruction can effectively mitigate speaking anxiety and improve oral proficiency. The study contributes to the understanding of learner autonomy in second language acquisition and emphasizes the value of context-sensitive approaches in addressing language learning barriers in non-Western contexts.

Keywords: Self-regulated learning, foreign language speaking anxiety, English speaking performance, Chinese undergraduate students, self-regulated learning strategy

Introduction

Self-regulated learning (SRL)-defined as the proactive process where learners set goals, monitor progress, adapt strategies, and manage motivation to optimize academic outcomes-is a critical determinant of academic success across disciplines (Zimmerman & Schunk, 2011; Panadero, 2017). In language education, SRL strategies show great potential for addressing long-standing challenges like foreign language speaking anxiety (FLSA) (Oxford, 2017; Rose et al., 2018).

Chinese undergraduates frequently experience heightened FLSA during oral English activities (Liu & Jackson, 2008; Chen, 2012). This is largely rooted in an educational tradition emphasizing rote memorization and high-stakes exams-prioritizing accuracy over communicative fluency and offering limited authentic interaction opportunities (Hu, 2002; Jin & Cortazzi, 2006). Such contexts foster fear of negative evaluation from peers and instructors, inhibiting spontaneous speech (Liu, 2006; Woodrow, 2006) and creating a vicious cycle: anxiety undermines confidence and fluency, hindering effective language acquisition (Horwitz et al., 1986; MacIntyre, 2017).

Despite SRL’s proven efficacy in boosting general academic performance and managing cognitive load (Zimmerman, 2002; Dent & Koenka, 2016), its application to reducing affective barriers like FLSA remains underexplored in non-Western settings (Bai et al., 2023). While metacognitive SRL strategies theoretically build resilience by reframing mistakes as learning opportunities (Nilson, 2013; Zimmerman & Moylan, 2009), empirical evidence linking structured SRL interventions to FLSA reduction in Chinese universities is scarce (Zhang, 2021). Additionally, the connection between SRL’s emotional regulation components and oral proficiency improvements needs clearer empirical support-especially in contexts where cultural norms and institutional pressures amplify performance anxiety (Teng & Zhang, 2016; Wang et al., 2021).

To address these gaps, this study investigates the impact of a structured SRLstrategies on Chinese undergraduates’ FLSA and English speaking performance. By integrating Zimmerman’s (2000) SRL framework into communicative language teaching, this research aims to provide evidence-based strategies for mitigating affective barriers, fostering resilient communicators in global contexts (Dörnyei, 2005; Boekaerts, 2017).

The 8-week intervention was embedded in the compulsory "Comprehensive English Speaking" course (2 sessions/week, 90 minutes/session) for second-year English majors at a Jilin public university. Participants (CEFR B1-B2 level) have basic oral vocabulary and grammar skills but face FLSA due to exam-oriented education-worrying about expression errors and struggling with spontaneous communication-with limited real-world practice opportunities. This context ensures the study’s relevance for cross-scenario application.

The specific content of this study is as follows:

1. Exploring the specific impact of self-regulated learning strategies on the oral English performance of Chinese college students

2. Analyzing the Mechanism of Self-regulated learning on Chinese College Students' Foreign Language Oral Anxiety

3. Reveal the dynamic relationship between self-regulated learning, foreign language oral anxiety, and English oral performance

Literature Review

1. The concept of foreign language learning anxiety

Horwitz, Horwitz, and Cope (1986) first conceptualized Foreign Language Learning Anxiety (FLLA) by building on general anxiety constructs. They defined it as a distinct, situation-specific anxiety uniquely tied to second or foreign language acquisition.They identified three core components: communication apprehension, test anxiety , and fear of negative evaluation .Scholars widely recognize FLLA as distinct from general trait anxiety, as it stems from specific triggers in language learning environments (MacIntyre, 2017). Extensive empirical research consistently shows a significant negative correlation between FLLA and language achievement-including proficiency test scores, course grades, and oral performance (Gardner & MacIntyre, 1993; MacIntyre & Gardner, 1991; Horwitz, 2001). Moreover, FLLA strongly inhibits learners' Willingness to Communicate (WTC) in the target language, reducing the spontaneous interactions critical for language acquisition (MacIntyre et al., 1998; Dewaele, 2013, 2017). This pervasive influence highlights FLLA's role as a key individual difference variable in second language acquisition (SLA).

2. The concept of self-regulation strategy

Zimmerman (2000, 2002) defines Self-Regulated Learning (SRL) strategies as deliberate cognitive, metacognitive, motivational, and behavioral processes. Learners actively use these processes to control their own learning activities and achieve desired outcomes. Key components of SRL emerge from leading models, such as Zimmerman's cyclical model and Pintrich's framework. These include proactive phases, ongoing processes and reactive phases (Zimmerman & Campillo, 2003; Pintrich, 2004). Notably, SRL also involves managing motivational and affective states. For example, learners use self-talk for encouragement or apply techniques to reduce anxiety (Wolters, 2003; Boekaerts, 2011). In language learning, research shows that learners who use SRL strategies effectively develop greater autonomy, persist more through challenges, perform better academically, and-importantly-manage learning anxiety more successfully (Oxford, 2011, 2017; Teng & Zhang, 2016; Rose et al., 2018). These strategies equip learners to proactively handle the cognitive and affective demands of language acquisition. This makes SRL a vital framework for understanding and promoting successful language learning-especially in anxiety-inducing contexts like speaking.

3. Studies on Foreign Language Speaking Anxiety (FLSA)

Studies on Foreign Language Speaking Anxiety (FLSA) confirm it as a widespread, impactful affective factor that hinders the development of oral proficiency. Horwitz, Horwitz, and Cope (1986) laid the foundation for conceptualizing and measuring language anxiety with their Foreign Language Classroom Anxiety Scale (FLCAS). This scale positions FLSA within a multidimensional framework, including communication apprehension, test anxiety, and fear of negative evaluation.Subsequent empirical studies consistently confirm a strong negative correlation between higher FLSA levels and poorer oral performance (MacIntyre & Gardner, 1991; Dewaele, 2017). This relationship highlights how anxiety impairs learners' ability to access linguistic resources and engage fluently in spontaneous communication (Woodrow, 2006). In the Chinese EFL context, Liu and Jackson (2008) found that even English majors-who

typically have advanced linguistic knowledge-still report notably high speaking anxiety. Despite receiving extensive formal English teaching, these students often adopt communication avoidance strategies. This highlights a critical gap between linguistic knowledge and oral communicative competence. Zhang (2013) further noted that FLSA has an especially strong negative impact on learners' willingness to communicate (WTC) in the target language-given China's prevalent exam-oriented education system. These combined findings underscore the urgent need for effective pedagogical interventions. Such interventions should specifically aim to reduce FLSA and build learners' confidence and competence in oral expression (Young, 1991).

4. Self-Regulated Learning (SRL) and Its Role in Mitigating Foreign Language Speaking Anxiety (FLSA)

Self-Regulated Learning (SRL) is a pivotal theoretical and empirical framework that elucidates how learners proactively orchestrate cognitive, metacognitive, and motivational processes to achieve academic goals (Zimmerman, 2000; Pintrich, 2004). Across disciplines, including second language acquisition (SLA), extensive research demonstrates that learners proficient in SRL strategies exhibit superior academic performance and greater resilience in navigating learning challenges.At the core of SRL are metacognitive strategies-such as planning, monitoring, and evaluating learning processes-that empower learners to become autonomous and effective language users (Zimmerman, 2002). In applied linguistics, scholars like Oxford (2017) have emphasized the adaptability of SRL strategies for language learners, highlighting their utility in managing multifaceted learning demands, including sustaining motivation, regulating affective states (e.g., anxiety), and optimizing cognitive resource allocation.

Empirical studies in Chinese EFL contexts have validated these propositions. For instance, Teng and Zhang (2016) found that Chinese university students who employed metacognitive SRL strategies (e.g., setting explicit speaking goals, self-monitoring oral performance) achieved significant gains in oral fluency and reductions in speaking anxiety. Similarly, Rose et al. (2018) showed that structured SRL strategy training enhanced language achievement, attributing these outcomes to learners' increased reflective awareness and adaptive strategy use. Building on these insights, a growing body of research has begun to explore SRL as a mechanism for mitigating foreign language speaking anxiety (FLSA). These studies position SRL not merely as a cognitive tool but as a robust approach to affective management, as pedagogical interventions rooted in SRL principles have been shown to concurrently reduce anxiety and improve oral performance (Bai et al., 2023). For example, Bai, Chiu, and Lau (2023) conducted a quasi-experimental study and found that SRL-focused instruction significantly boosted Chinese secondary school students' speaking confidence, oral performance, and reduced self-reported speaking anxiety. Their analysis highlighted strategies like positive self-talk and systematic self-monitoring as particularly effective in helping learners manage emotional barriers (e.g., worry, fear of failure) during speaking tasks.

These findings align with theoretical assertions that SRL equips learners with tools to anticipate and navigate anxiety-provoking situations through proactive planning and adaptive responses (Zimmerman & Moylan, 2009). However, critical gaps remain in the literature. While SRL's efficacy in cognitive and academic domains is well-documented, its potential to mitigate FLSA in non-Western, exam-oriented contexts (e.g., Chinese universities) is underexplored (Bai et al., 2023). Moreover, the interplay between SRL's emotional regulation components and oral proficiency development-especially in environments where cultural norms amplify performance anxiety-lacks systematic empirical investigation. This study addresses these gaps by examining how a structured SRL intervention targeting goal-setting, self-monitoring, and confidence-building can simultaneously reduce FLSA and improve speaking performance among Chinese undergraduates.

Method

1. Research Methodology

The purpose of this study has been to investigate whether instruction in self-regulation strategies for learning to reduce foreign language anxiety can have improved the English speaking ability of Chinese college students. A systematic research plan has been described in this article, to ensure the accuracy and completeness of the research approach. The researcher has discussed the research topic, research design, research instruments, validity and reliability, data collection procedures, analysis of research data, and ethical considerations.

2. Research Design

This study employed a single-group pretest-posttest design (Creswell, 2014) to explore the effects of a structured self-regulated learning (SRL) intervention on reducing foreign language speaking anxiety (FLSA) and improving English speaking proficiency. The design included pretesting (baseline FLSA and speaking performance), an 8-week SRL intervention (integrated into regular speaking classes), and posttesting with identical measures. To mitigate internal validity risks, standardized, piloted tools and consistent intervention delivery were used. A control group was not included due to resource constraints and the focus on examining the intervention's inherent efficacy in a real classroom context-with the study acknowledging this as a limitation to be addressed in future research.

3. Research object and sample

This study employed a homogeneous purposive sampling strategy (Fraenkel, Wallen & Hyun, 2019) to recruit 50 second-year English-major undergraduates from a public university in Jilin Province, China. This methodological choice ensured participants possessed comparable levels of English proficiency, as demarcated by the Common European Framework of Reference for Languages (CEFR) at B1-B2 levels, and shared similar pedagogical experiences within their specialized program (Mackey & Gass, 2015). Establishing this homogeneity within the participant pool was essential to minimize extraneous variability and enhance the internal validity of the subsequent analysis, thereby increasing the reliability of findings pertaining to the specific variables under investigation (Creswell & Creswell, 2018). Rigorous ethical protocols were implemented in accordance with standard research governance. Informed written

consent was obtained from all participants prior to their involvement, explicitly outlining the study's nature, procedures, and affirming their unequivocal right to voluntary participation and withdrawal at any stage without penalty (American Psychological Association, 2017). To safeguard participant confidentiality, all collected data underwent a strict anonymization process; personally identifiable information was systematically removed or pseudonymized prior to analysis (Saunders, Lewis & Thornhill, 2019). This deliberate focus on a specific, homogeneous demographic cohort-second-year English majors-facilitates a controlled and in-depth examination of the interplay between established English language proficiency parameters and targeted pedagogical interventions on learning outcomes within this defined educational context, allowing for more nuanced and interpretable conclusions (Dörnyei, 2007).

Research Instruments

This study comprehensively used quantitative research tools to collect data from two core dimensions: foreign language oral anxiety level and English oral performance. At the same time, self-regulated strategy learning (SRL) training was implemented through structured intervention materials. All tools were tested for validity and reliability to ensure the quality of the data and the rigor of the research.

The Foreign Language Oral Anxiety Scale (FLSAS) is a core tool for measuring students' anxiety levels. Based on Horwitz et al.'s (1986) Foreign Language Classroom Anxiety Scale (FLCAS), and supplemented with cultural adaptation questions in Chinese undergraduate oral learning scenarios, a 5-point Likert scale with 20 items (1=strongly disagree to 5=strongly agree) was formed, covering four dimensions: cognitive anxiety, emotional response, avoidance behavior, and self-efficacy. Among them, the cognitive anxiety dimension focuses on learners' negative cognition of oral tasks, the emotional response dimension focuses on the physiological and emotional symptoms caused by anxiety, the avoidance behavior dimension captures the actions taken by learners to avoid anxiety, and the self-efficacy dimension is scored in reverse to measure learners' confidence in their oral abilities.

The picture description oral test is used to evaluate students' English speaking performance. Referring to the Cambridge PET and TOEIC oral test samples and the textbook "Fluent English Speaking Tutoring Course", picture materials that meet the B1-B2 level of the Common European Framework of Reference for Languages (CEFR) are selected, covering topics such as family scenes, public spaces, and daily activities. The test adopts a parallel question design, and the pre-test and post- test images are matched in complexity and topic similarity to avoid exercise effects; During the test, students randomly select one image, prepare for one minute, and then give a 5-minute continuous oral description and record the entire process. The scoring is based on five dimensions: fluency (25%), vocabulary (25%), grammar (20%), pronunciation (15%), and coherence (15%), using an analytical scoring scale.

The Self Regulated Strategy Learning (SRL) intervention material is the core carrier for implementing 8-week training. Based on Zimmerman's (2000) SRL cycle model design, it is deeply integrated with conventional oral courses and promoted in four stages: in the first and second weeks, focus on goal setting, explain SMART principles and case sharing through PPT, guide students to fill out worksheets and develop personal oral improvement plans; The focus of weeks 3-4 is on self-monitoring, providing oral log templates to guide students in recording exercise content, time,

emotional fluctuations, and coping strategies, and filling out logs through simulated oral practice sessions; Conduct cognitive regulation training in weeks 5-6, analyze the harm of negative thinking through PPT, demonstrate positive self-dialogue skills, organize group role-playing simulations of anxiety scenarios, and practice strategies; Focus on reflection and adjustment in weeks 7-8, emphasize the importance of reflection through PPT, guide students to write reflection reports, summarize the effectiveness of strategy application, and revise follow-up plans.

1. Content validity check

The validity of the content of this paper is ensured through multidimensional measures: in terms of core tools, the Foreign Language Oral Anxiety Scale (FLSAS) is modified based on a mature scale, and semantic equivalence is ensured through Chinese to English back translation. Three domain experts pass the Item Objective Consistency (IOC) review (IOC ≥ 0.67), optimize the expression after pre-test, and ultimately the internal consistency of the scale is good (Cronbach's alpha=0.803); The picture description oral test adopts a parallel question design (matching the difficulty of the pictures in the pre-test and post-test with cognitive needs)

2. Content reliability test

Cronbach's Coefficient Alpha is commonly used to measure the reliability of questionnaire items. The researcher calculated research instruments' reliability in a manner adopted by internal consistency reliability Cronbach's alpha formula.The Cronbach's Alpha for the entire student questionnaire was 0.803, which indicated a good reliability of the student questionnaire.

Table 1
Cronbach's Alpha for the Student Questionnaire

Item	Corrected Item–Total Correlation (CITC)	α if Item Deleted	Cronbach alpha coefficient
Cognitive Anxiety	0.582	0.785	0.803
Emotional Response	0.567	0.791	
Avoidance Behavior	0.591	0.779	
Self-efficacy	0.554	0.801	

Note. Cronbach's α = 0.803; standardized Cronbach's α = 0.806.

3. Reliability of the picture-description speaking tests

The test-retest method is one method to estimate the reliability of test items interval (Davidshofer & Murphy, 2005, p.123). In this study, the researcher calculated the reliability of the picture-description speaking test in a manner adopted by intraclass correlation consistency reliability, and it was conducted to the pilot group within a week twice. Accordingly, the results were collected and recorded and based on the statistical result.

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Table 2
Intraclass Correlation Consistency for the Picture-description Speaking Tests

Instrument	No. of CasesNumbers	No. of Test Items	Value of Pearson
Picture-description speaking tests	50	5	0.87

Data Collection

The 8-week data collection was carried out around the "pre-test intervention post-test" process system: in the first week (pre-test stage), baseline anxiety data of 50 participants was collected through the Foreign Language Oral Anxiety Scale (FLSAS), and initial oral ability data was obtained by describing the oral test with pictures, clarifying the anxiety level and oral performance baseline before intervention; During weeks 2-9 (intervention phase), the 8-week Self-Regulated Strategy Learning (SRL) course was integrated into regular oral classes. During this period, the "oral log" was used to record students' weekly practice time, emotional fluctuations, and strategy application, supplemented by classroom observation to record students' participation and strategy use performance; In the 10th week (post-test stage), the Foreign Language Oral Anxiety Scale (FLSAS) and a parallel version of the picture description oral test were tested again to collect anxiety and oral performance data after intervention. At the same time, students' accumulated oral logs and reflection reports from 8 weeks were collected to form a complete longitudinal data chain. All data collection followed the principle of anonymity.

Method of Data Analysis

Firstly, descriptive statistics (calculating mean, standard deviation, frequency, and percentage) were used to sort out the distribution of participants' foreign language oral anxiety levels and baseline characteristics of English oral performance. Anxiety level groups were then divided based on the mean (M) and standard deviation (SD) of the total score of the anxiety scale; Secondly, using paired sample t-test, compare the differences in participants' scores on the Foreign Language Speaking Anxiety Scale (FLSAS) and English speaking test (image description task) before and after intervention; Further the potential differences in English oral performance among different anxiety levels groups through one-way analysis of variance (ANOVA) were applied. Conduct Pearson correlation analysis to explore the correlation between foreign language oral anxiety levels and English oral performance; All statistical analyses were conducted using SPSS software, and validity and reliability tests were conducted before the analysis to ensure that the selected statistical methods are applicable to the data attributes.

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Results

1. Data analysis of grades

After all participants completed the pre-test and post-test, the researchers grouped the pre-test oral scores and compared them with the pre-test scores through t-test. Based on Table 3, the average score of the post-test oral was 6.46 points higher than the pre-test, with a negative mean difference (-6.46), indicating that the post-test scores were significantly better than the pre-test scores. The t-value and p-value: The absolute value of the t-value is as high as 44.164, with a p-value of 0.000 ($p<0.01$), far below the significance level of 0.01. This indicates that the improvement of oral performance after self-regulation strategy intervention has extremely significant statistical significance, directly proving the effectiveness of self-regulation strategies in the study. The difference in scores and statistical significance jointly indicate that the intervention's improvement in students' oral output ability is not accidental, but has a stable and reproducible positive effect. The standard deviation of the pre-test and post-test was relatively close, indicating that the intervention measures did not amplify individual differences. While improving the overall situation, it maintained the balance of group development and provided data support for the universality of teaching strategies.

Table 3

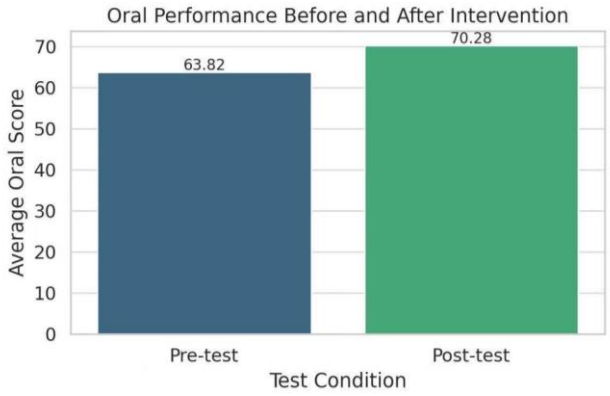
Results of Paired t-test Analysis of English Oral Performance

Pairing number	Item	Mean	Standard Deviation	Mean Difference	*t*	*p*
Pairing 1	Pre-test oral score	63.82	11.12	-6.46	-44.164	0.000**
	Post-test oral score	70.28	11.61			

Note. $p<0.05$ ** $p<0.01$*

Figure 1

Oral Performance before and after Intervention



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In Table 4, from the perspective of effect measures, the mean difference between pre-test and post test oral scores is -6.46, with a 95% confidence interval of -8.54 ~ -4.38. Cohen's d value is 0.88. According to Cohen's (1988) standard, a Cohen's d value greater than 0.8 is considered a large effect, while here it is much greater than 0.8, indicating that interventions (such as the implementation of relevant teaching strategies) have had a significant impact on improving English oral performance, with a very significant difference.

Table 4
English Oral Performance Paired t-test Effect Measure Index

Item	Mean value difference	Difference 95% CI	df	Difference standard deviation	Cohen's d value
Match pre-test oral scores with post test oral scores	-6.46	-8.54 ~ -4.38	49	1.034	0.88

In Table 5, the Mean values of the five dimensions of oral fluency, vocabulary, grammar, pronunciation, and coherence after the intervention were significantly higher than those before the test; and the p-values in the comparison between the pre-test and post-test and the reference value were all 0.000∗∗, indicating that there were extremely significant statistical differences between the performance of each dimension before and after the intervention and the reference value. At the same time, the intervention had a positive and significant effect on improving oral ability in each dimension.

Table 5
Single-sample t-test for Each Item

Number	Item	Sample Size	Minimum	Maximum	Mean	SD	*t*	*p*
1	Pretest Fluency	50	50.000	90.000	64.840	11.162	41.076	0.000**
	Posttest Fluency	50	55.000	95.000	71.280	11.613	43.402	0.000**
2	Pretest Vocabulary	50	48.000	86.000	62.800	11.073	40.103	0.000**
	Posttest Vocabulary	50	53.000	93.000	69.280	11.613	42.185	0.000**
3	Pretest Grammar	50	49.000	88.000	63.820	11.117	40.595	0.000**
	Posttest Grammar	50	54.000	94.000	70.280	11.613	42.793	0.000**

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Table 5 *(Continued)*

Number	Item	Sample Size	Minimum	Maximum	Mean	SD	*t*	*p*
4	Pretest Pronunciation	50	50.000	89.000	64.820	11.117	41.231	0.000**
	Posttest Pronunciation	50	55.000	95.000	71.280	11.613	43.402	0.000**
5	Pretest Coherence	50	48.000	87.000	62.820	11.117	39.959	0.000**
	Posttest Coherence	50	53.000	93.000	69.280	11.613	42.185	0.000**

Note. p<0.05 ** p<0.01*

2. Data analysis of questionnaire

The average values (3.476-3.520) and median values (all 3.400) of the four dimensions are highly consistent, and the evaluations are all moderate, reflecting that students' foreign language oral anxiety is generally at a moderate level from "cognitive concerns" to "emotional physiological reactions" to "behavioral avoidance", and there is no widespread extreme tendency towards "high anxiety" or "low anxiety"; The self-efficacy negatively correlated with anxiety is also at a moderate level, and the two show a matching moderate level; The standard deviations of each dimension (0.987-1.102) indicate individual differences among students, but the overall trend remains stable in the moderate range.

Table6

Distribution of Foreign Language Speaking Anxiety

Item	Content	Mean	SD	Median	Evaluation
Cognitive anxiety	Refers to learners' negative cognitive preconceptions about language learning tasks, their own performance, and external evaluations.	3.520	1.095	3.400	Moderate
Emotional reactions	It is the emotional experience and physiological symptoms triggered by foreign language anxiety, and it is the manifestation of anxiety from the "cognitive" to the "emotional-physiological" dimension.	3.480	1.102	3.400	Moderate

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Table6 *(Continued)*

Item	Content	Mean	SD	Median	Evaluation
Avoidance strategies	It is the behavioral manifestation of anxiety, referring to the actions learners take to "avoid the source of anxiety (language learning situations/tasks)."	3.512	1.055	3.400	Moderate
Self-efficacy	Self-efficacy is not a direct dimension of anxiety, but rather a subjective belief in one's own language learning ability, and it has a significant negative correlation with foreign language anxiety.	3.476	0.987	3.400	Moderate

Descriptive analysis describes the overall situation of data through mean or median. As shown in the table below, there are no outliers in the current data. Therefore, SPSSAU recommends conducting descriptive analysis directly on the mean. The average total score was 64.34, with a median of 62, indicating that over half of the students were in a state of moderate anxiety, with common concerns, emotional fluctuations, and behavioral avoidance towards oral tasks. The total score range was between 38-82, with a standard deviation of 11.67, indicating the presence of a high anxiety subgroup. The mean of cognitive anxiety was 17.64, which was close to the upper middle level, indicating that students generally have a cognitive pattern of excessive concern about oral performance. The average emotional response was 17.54, which was close to 70.2% of cognitive anxiety, indicating. The average avoidance behavior was 17.54, which was consistent with emotional anxiety and cognitive anxiety; The mean value of self-efficacy after reverse scoring is 11.62. After reverse scoring, the higher the score, the lower the self-efficacy; The average value is 46.5%, and the overall self-efficacy of the students is low. 50 students showed moderate anxiety and low self-confidence as a whole.

Figure 2
Descriptive Analysis

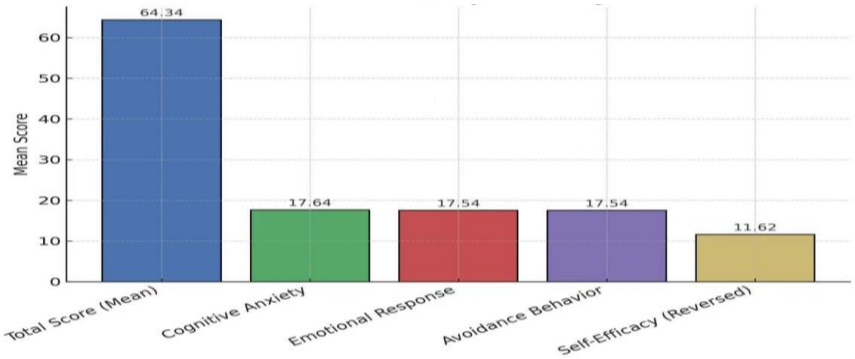

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Table 7
Descriptive Analysis

Item	Sample size	Minimum	Maximum	Mean	Standard Deviation (SD)	Median
Cog_Anx1	50	1.000	5.000	3.500	1.165	3.000
Cog_Anx2	50	1.000	5.000	3.500	1.165	3.000
Cog_Anx3	50	1.000	5.000	3.500	1.129	3.000
Cog_Anx4	50	1.000	5.000	3.540	1.164	3.500
Cog_Anx5	50	1.000	5.000	3.560	1.163	4.000
Emo_React1	50	1.000	5.000	3.460	1.164	3.000
Emo_React2	50	1.000	5.000	3.480	1.165	3.000
Emo_React3	50	1.000	5.000	3.460	1.129	3.000
Emo_React4	50	1.000	5.000	3.460	1.164	3.000
Emo_React5	50	1.000	5.000	3.540	1.164	3.500
Avoid_Behav1	50	1.000	5.000	3.440	1.146	3.000
Avoid_Behav2	50	1.000	5.000	3.480	1.147	3.000
Avoid_Behav3	50	1.000	5.000	3.480	1.111	3.000
Avoid_Behav4	50	1.000	5.000	3.560	1.128	3.500
Avoid_Behav5	50	1.000	5.000	3.600	1.107	4.000
Self_Eff1	50	1.000	5.000	3.440	1.146	3.000
Self_Eff2	50	1.000	5.000	3.440	1.128	3.000
Self_Eff3	50	1.000	5.000	3.440	1.072	3.000
Self_Eff4	50	1.000	5.000	3.480	1.074	3.000
Self_Eff5	50	1.000	5.000	3.580	1.032	4.000
Cog_Anx	50	5.000	25.000	17.640	5.458	17.000
Emo_React	50	5.000	25.000	17.540	5.511	17.000

Among the 50 students, the moderate anxiety group had the highest proportion, indicating that most students had a certain degree of anxiety in oral scenarios, but it has not yet reached the level of serious impact. There were 12 people in the high anxiety group, accounting for nearly a quarter, and attention should be paid to the problems of oral expression disorders and low classroom participation caused by anxiety among this group of students. There were only 5 people for the low anxiety group,

reflecting that it may be relatively rare for students to be able to easily cope with oral tasks and have high confidence.

Table 8
Statistical Results of Foreign Language Speaking Anxiety Level Grouping

Anxiety Level	Sample size (people)	Proportion (%)
Low anxiety	5	10.00
Moderate anxiety	33	66.00
High anxiety	12	24.00
Total	50	100.00

3. Differences in foreign language learning anxiety among different foreign language learners

The 50 students were categorized into three groups based on their scores: a high-scoring group (n = 5), a middle-scoring group (n = 22), and a low-scoring group (n = 23). The high-scoring group achieved a mean score of 84.8, with a range of 82–88. The middle-scoring group obtained a mean score of 69.4, ranging from 60–79, while the low-scoring group recorded a mean score of 53.9, ranging from 49–59.

The kurtosis and skewness values for all three groups were close to 0, indicating that the score distributions were approximately normal and free from extreme outliers. Overall, students with lower levels of anxiety demonstrated higher and more stable oral performance, whereas students with higher levels of anxiety showed lower scores with slightly greater individual variability. The majority of students fell within the middle range of performance.

Table 9
Pre-test Score Grouping

Title	Item	Score Group			Total
		Middle Group	Low group	High Group	
Pre-test oral score	n	22	23	5	50
	Mean	69.409	53.913	84.800	63.820
	Standard Deviation	5.637	3.161	2.387	11.117

Table 9 *(Continued)*

Title	Item	Score Group			Total
		Middle Group	Low group	High Group	
	Minimum	60.000	49.000	82.000	49.000
	Maximum	79.000	59.000	88.000	88.000
	Mean 95% CI (LL)	67.054	52.621	82.707	60.739
	Mean 95% CI (UL)	71.765	55.205	86.893	66.901
	Very bad	19.000	10.000	6.000	39.000
	variance	31.777	9.992	5.700	123.579
	Kurtosis	-0.988	-1.273	-1.117	-0.820
	Skewness	0.052	0.144	0.206	0.526

The differences in oral scores of students with different anxiety levels in the pre-test were extremely significant ($F=30.607$, $p<0.01$). Anxiety level was significantly negatively correlated with oral scores. The less anxious they were, the higher their oral scores were; the more anxious they were, the lower their scores were.

Table 10
Results of Variance Analysis

Analysis items	Item	Sample size	Mean	Standard Deviation	*F*	*p*
Pre-test oral score	Moderate anxiety	33	64.30	8.82		
	Low anxiety	5	84.80	2.39	30.607	0.000**
	High anxiety	12	53.75	3.28		
	total	50	63.82	11.12		

Note. $p<0.05$ ** $p<0.01$*

Correlation analysis was used to study the correlation between the anxiety level (pre-test) and the pre-test oral scores, and the Pearson correlation coefficient was used to indicate the strength of the correlation. The specific analysis showed that the correlation coefficient between the anxiety level (pre-test) and the pre-test oral scores was -0.292, and it was significant at the 0.05 level, indicating that there was a significant negative correlation between the anxiety level (pre-test) and the pre-test oral scores. The data showed that reducing anxiety can promote oral ability.

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Table 11
Pearson Correlation

		Anxiety level (pre-test)
Pre-test oral score	Correlation coefficient	-0.292*
	p-value	0.039
	Sample size	50

Note. p<0.05 ** p<0.01*

Before the intervention, the mean total anxiety score was 64.3, indicating a relatively high initial level of anxiety with considerable individual variability. After the intervention, the mean total anxiety score decreased substantially to 44.02, reflecting not only a marked reduction in overall anxiety but also a narrowing of inter-individual differences. The paired-samples t-test yielded a t value of 40.365 and a p value of 0.000 ($p < 0.01$), confirming that the observed difference was highly statistically significant rather than incidental. In summary, prior to the intervention, students generally experienced high levels of anxiety alongside pronounced individual differences. Following the intervention, their anxiety was significantly alleviated, with greater consistency observed across individuals. These results provide robust evidence that self-regulation strategies are effective in reducing foreign language oral learning anxiety.

Table 12
Results of Paired t-test Analysis of Foreign Language Oral Learning Anxiety

Pairing number	Item	Mean	Standard Deviation	Mean Difference	*t*	*p*
Pairing 1	Anxiety before intervention	64.34	11.67	20.32	40.365	0.000**
	Anxiety after intervention	44.02	8.76			

Note. p<0.05 ** p<0.01*

Discussion

1. Characteristics and Intervention Potential of College Students' Foreign Language Oral Anxiety

Chinese college students' English speaking anxiety has universality and multidimensional complexity. From the perspective of psycholinguistics, it runs through the entire process of oral production, manifested as excessive concern for language accuracy, sensitivity to others' evaluations, and task performance pressure (Horwitz et al., 1986; Woodrow, 2006). This anxiety is closely related to the Chinese educational context: the crucial role of English proficiency in academic advancement and employment has given rise to the psychological expectation of "must succeed", which in turn exacerbates anxiety (Gregersen & Horwitz, 2002); The traditional mode of

emphasizing writing over listening and speaking in foreign language teaching leads to insufficient oral practice among students, forming a vicious cycle of "anxiety → avoidance → lack of ability → more anxiety" (MacIntyre & Gardner, 1994). In addition, the "face culture" causes students to choose silence and avoidance due to fear of losing face by making mistakes, further solidifying anxiety (Gao, 1998; Ting Toomey & Kurogi, 1998). Effective intervention methods in research have shown that breaking down fluency improvement into quantifiable sub goals (such as "10 minutes of spontaneous expression per day"), recording and analyzing oral performance (marking pauses, categorizing recordings), and developing coping strategies (preset transitional language, deep breathing) can significantly reduce cognitive anxiety and emotional reactions, achieving a synergistic optimization of anxiety levels and oral abilities.

2. Self regulating strategies for students to cope with anxiety

Self regulatory strategies effectively break the vicious cycle of anxiety by actively regulating cognition, emotions, and behavior (Zimmerman, 2000). At the cognitive level, students reconstruct their cognitive patterns and replace perfectionism with a growth mindset of "making mistakes is a part of learning", reinterpreting others' attention as opportunities for collaborative learning and reducing cognitive burden (Beck, 1976; Dweck, 2006). At the emotional level, abdominal breathing and positive self suggestion are used to alleviate physiological tension before speaking, and attention is immediately diverted to calm panic during expression (MacIntyre & Gardner, 1991; Oxford, 1990). At the behavioral level, by practicing target vocabulary in advance, simulating dialogue scenarios to enhance control, choosing familiar language structures to avoid complex expressions, and breaking down tasks into sub goals to reduce stress, a "scaffold" support is provided for oral output (Cohen & Macaro, 2007; Vygotsky, 1978).

3. The effect of self-regulation strategies on academic performance improvement

Self regulatory strategies enhance the oral English proficiency of college students from multiple dimensions, including language ability, learning behavior, and psychological state (Zimmerman, 2000). In terms of language ability, cognitive regulation such as metacognitive monitoring and error management reduces excessive attention to errors and improves fluency of expression, while behavioral regulation such as advance preparation and targeted practice optimizes vocabulary and grammar use and reduces expression barriers (D ö rnyei, 2005; Oxford, 2011）; In terms of learning behavior, strategies shift from passive coping to active planning, alleviate anxiety to reduce avoidance, promote interactive participation such as classroom discussions and group collaboration, and drive practice from scattered to systematic (Horwitz et al., 1986; Pintrich, 2004); At the psychological level, the anxiety reduction and oral improvement brought by strategies enhance students' self-efficacy, stimulate intrinsic motivation, and encourage them to challenge more complex tasks, forming a feedback loop of "strategy application → positive results → stronger motivation → ability improvement", providing long-term support for language development from the emotional and motivational levels (Bandura, 1997; Deci & Ryan, 2000; Oxford, 2017).

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Recommendation

To fully leverage the role of self-regulated learning (SRL) strategies in alleviating English speaking anxiety and improving academic performance among Chinese undergraduate students, it is necessary for students, teachers, researchers, and educational management entities to collaborate and establish an evaluation mechanism to ensure effectiveness.

Students: They should identify the sources of their oral anxiety through daily logs, focus on 1-2 core SRL strategies (such as deep breathing for emotionally anxious individuals and task decomposition for unprepared individuals), continue practicing, record the effectiveness of strategy application after class, and dynamically optimize it. At the same time, they should pay attention to problems in strategy implementation and make timely adjustments. The evaluation method can use learning diaries and goal tracking tools to record progress, combined with teacher feedback to calibrate strategy direction.

Teacher: It is necessary to integrate SRL strategies with oral teaching, guide students to predict anxiety sources and demonstrate coping strategies before class, prompt students to use pre training strategies in a timely manner during class, and create a classroom atmosphere that emphasizes communication rather than perfection. Design oral tasks that are suitable for students' "zone of proximal development", take into account language accuracy and strategy effectiveness when providing feedback, and provide personalized strategy suggestions. The evaluation methods include observing the frequency of students' classroom strategy application, analyzing changes in students' oral performance, and collecting students' feedback on strategy teaching.

Researchers: In the future, we should further explore the differentiated effects of SRL strategies on different anxiety dimensions (such as cognitive anxiety and behavioral avoidance), conduct research on different student groups with high trait anxiety and low baseline level, adopt longitudinal design to track the long-term effects of the strategy, combine mixed research methods (such as case studies) to enrich the conclusions, and develop cultural adaptive SRL intervention plans that are suitable for the environment of Chinese universities. We should collaborate with teachers to verify the effectiveness of the strategy in real classrooms. The evaluation methods include comparing the effectiveness data of different group strategies, analyzing long-term tracking of anxiety and performance changes, and verifying the practicality of strategies through classroom observation and interviews.

Educational management entity (school/policy level): Schools can incorporate SRL strategies into teacher training content and equip language laboratories, recording equipment, and other resources required for oral practice; Policy makers can support the development and promotion of SRL related teaching resources, and encourage universities to carry out pilot reforms in oral teaching. The evaluation methods include checking the implementation of SRL teaching in schools, investigating the overall data on the improvement of students' oral anxiety and academic performance, and reviewing the results reports of pilot projects.

Through multi-party collaboration and normalized evaluation, the widespread application of SRL strategy in oral teaching can be promoted, effectively helping Chinese undergraduate students overcome oral anxiety barriers and enhance their English communication skills.

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