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Real-Time Interactive AI and Speaking Anxiety among English Majors in an Exploratory Mixed-Methods Study

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Abstract

This exploratory mixed-methods study examines speaking anxiety and experiences of real-time interactive AI practice among English majors at a college in China. An online survey yielded 98 valid responses from 121 returned questionnaires. Twelve volunteers subsequently participated in a short-term, single-group intervention using a customized Doubao agent for IELTS Speaking Part 3 practice, and four participants completed semi-structured interviews. The survey indicated concern about public speaking and others' evaluations, alongside frequent use of AI for expression-related assistance. The reported pre–post means declined on five negatively worded anxiety items. Interviewees described accessible practice, reduced perceived evaluation pressure, and a patient interaction pace, while also identifying limitations in feedback and conversational authenticity. These findings suggest potential benefits of AI as a supplementary speaking partner. However, the small convenience sample, lack of a comparison group, short duration, and reliance on self-report limit causal interpretation and generalization. Further work should establish the measurement properties of the adapted questionnaire and examine transfer to human interaction.

Keywords

Speaking anxiety; real-time interactive AI; English majors; Doubao; exploratory mixed-methods study.

1. Introduction

1.1. Research Background

According to the National Standards for Undergraduate Teaching Quality of Regular Higher Education Institutions issued by China's Ministry of Education, the training objectives for English majors have placed growing emphasis on cultivating students' cross-cultural communication competence and practical language application skills (MOE, 2018). This educational reform is designed to cultivate internationalized talents who can adapt to global communication scenarios and meet the demands of cross-border exchanges. Against the backdrop of deepening global integration and frequent international interactions, college English graduates are required to possess not only solid theoretical language knowledge but also the ability to accurately understand information and appropriately express ideas in real communicative contexts.

Nevertheless, oral English anxiety remains a prevalent and intractable problem for Chinese English majors, severely restricting the improvement of their oral proficiency and communicative confidence. Li (2023) discusses causes and possible responses to oral English anxiety among Chinese college students. This phenomenon indicates that alleviating oral English anxiety is no longer merely a psychological adjustment issue, but a key prerequisite for improving the overall efficiency of oral English teaching and learning.

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With the rapid development and popularization of artificial intelligence (AI) technology in the education industry in recent years, AI has demonstrated unique advantages in personalized and real-time language training. Different from traditional classroom teaching modes, AI-based learning tools can construct a low-pressure learning environment for students, allowing them to conduct oral practice without worrying about external judgment and evaluation, which is crucial for building learners' communicative confidence. Therefore, making full use of emerging AI technologies can not only help students improve their oral English skills efficiently but also enhance their adaptive capacity to complex global communication environments, which has become an inevitable trend in modern foreign language teaching reform.

1.2. Purpose of the Study

Against the above research background, this study adopts an empirical research method to explore the mitigating effect of real-time interactive AI tools on the oral English anxiety of college English majors. The core research objectives are divided into three interrelated and complementary parts.

First, this study investigates the current situation of oral English anxiety among English majors at South China Business College, Guangdong University of Foreign Studies, as well as their daily application status of instant interactive AI tools. It aims to comprehensively sort out students' practical difficulties, learning habits and existing deficiencies in oral English practice, so as to lay a realistic foundation for subsequent intervention research.

Second, through a targeted AI-assisted oral practice intervention experiment, this study explores whether instant interactive AI can build a low-stress and engaging learning environment, and examines reported changes in students' oral English anxiety, especially in high-pressure oral communication scenarios.

Third, the research explores students' subjective perceptions of AI-assisted oral learning, including their attitudes towards AI practice tools, perceived learning gains, recognized functional limitations and optimization suggestions. Based on the above findings, this study intends to provide practical optimization directions for the design of AI language learning tools, enrich the practical path of intelligent foreign language teaching, and offer effective teaching references for frontline teachers to integrate AI technology into oral English teaching, so as to bridge the gap between technological innovation and practical teaching application.

1.3. Significance of the Study

Centering on the affective psychological characteristics of language learning in the AI era, this research explores the intervention effect of instant interactive AI on oral English anxiety, which has important theoretical and practical significance.

Theoretically, this study constructs a complete analytical framework based on Krashen's Affective Filter Hypothesis and Bandura's Self-efficacy Theory to interpret the internal mechanism of AI tools affecting learners' language learning psychology. The integration of the two classic theories provides a new research perspective for exploring the emotional regulatory effect of educational technology in second language acquisition. In addition, this study uses a speaking-anxiety questionnaire adapted from the Foreign Language Classroom Anxiety Scale (FLCAS). Its scores provide descriptive information about the participants; the psychometric properties of the adapted items require evidence from the present sample.

Practically, this research helps English majors master autonomous learning strategies based on intelligent tools. By conducting repeated low-pressure real-time interactive practice with AI, students can gradually eliminate speaking tension, identify their own oral shortcomings, and formulate targeted improvement plans, so as to enhance their autonomous learning ability and psychological resilience in language learning. Meanwhile, the research conclusions provide empirical support for college teachers and curriculum designers to integrate AI technology into

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in-class and extracurricular oral teaching. The AI-assisted human-computer collaborative teaching model can effectively make up for the deficiencies of traditional classrooms, such as insufficient speaking opportunities and high evaluative pressure, build a friendly emotional learning environment, and promote the inclusive and efficient development of oral English teaching.

2. Literature Review

2.1. Foreign Language Anxiety

The concept of Foreign Language Anxiety (FLA) has evolved from being viewed as a general psychological trait to a specific situation construct. It was once treated as a general psychological trait, but scholars now regard it as a situation-specific psychological state. Studies carried out in the 1970s tended to mix language anxiety with people's general anxious tendencies, which led to inconsistent research outcomes. Scovel (1978) pointed out that such early work ignored the psychological requirements brought by language learning. In the 1980s, Horwitz et al. (1986) redefined FLA. It was described as a unique set of self-perceptions, beliefs, feelings and behaviors that appear in foreign language learning contexts especially. Based on this framework, Horwitz et al. discussed three related performance anxieties: communication apprehension, test anxiety and fear of negative evaluation.

Communication apprehension describes learners' discomfort or fear during real-time speaking communication. This usually happens when students feel their language skills are not good enough. Test anxiety refers to stress and worry connected with language assessments. It mainly comes from worries about performance and possible failure. Fear of negative evaluation means learners worry about judgments from other people, such as teachers' feedback or peer responses. This worry can stop students from joining in speaking activities. These three related concepts form a framework for understanding how complex foreign language learning anxiety can be.

We can therefore separate two viewpoints on anxiety: the trait-based view and the situation-specific view discussed by Horwitz et al. (1986). From the trait perspective, anxiety is a stable personal characteristic. Research under this viewpoint focuses on personality differences and how individuals deal with anxious feelings. On the contrary, the situation-specific approach stresses the impact of surrounding conditions. It pays attention to classroom atmosphere, task features and interaction conditions as sources of learner anxiety. This standpoint received empirical support from MacIntyre and Gardner's research (1991). According to their study, communicative demands, rather than stable personal traits, become the dominant factor triggering learner anxiety as learning experience building up.

Many studies accept FLA as a common problem in foreign language learning. Krashen's (1985) Affective Filter Hypothesis provides theoretical support. According to this theory, high anxiety acts as a mental barrier. It stops learners from fully absorbing understandable language input, which may lead some highly motivated learners to achieve poor learning results.

Researchers have suggested different teaching methods to reduce FLA. Young (1991) highlighted the value of supportive classrooms and gentle ways to correct student mistakes. More recent studies turn their focus to technological solutions, but their findings are not uniformly positive. Çakmak (2022) reported difficulties in being understood by a chatbot and cautioned that chatbot interaction might not reliably reduce L2 speaking anxiety. These results suggest that the emotional effects of AI-supported practice depend on learners' experiences and interaction conditions.

ISSN: 2710-0170

2.2. Oral English Anxiety

Within China's foreign language education context, oral anxiety is widely recognized as a major barrier of students' language development. Researchers agree that high anxiety levels often result in "mute English". That means students master grammar rules well, yet they cannot carry out real-life oral communication.

This situation partly comes from China's exam-centered education tradition. Both teachers and students place greater importance on grammatical accuracy than genuine communication. Even in some classrooms, small errors get corrected right away, making students feel that perfection is the only standard for success. Constant pressure to avoid mistakes makes learners afraid of negative comments from teachers or classmates during speaking activities. Even students with solid English knowledge choose to stay silent to avoid embarrassment. This negative impact is recorded in recent academic theses.

Lan (2022) carried out questionnaire research with junior high school students. Her results showed a clear negative connection between speaking anxiety and oral pragmatic competence. Anxiety creates mental barrier that keep students from using English in real social situations. Y. X. Zhang (2025) studied oral self-concept and anxiety, revealing a harmful cycle: students with low oral self-concept in spoken English suffer higher anxiety. Their anxiety further lowers their willingness to speak and prevents oral improvement.

In response to these pervasive challenges, research has moved beyond simple status surveys. Scholars now test concrete teaching strategies to ease speaking anxiety. Guo (2020) proved the effectiveness of Task-Based Language Teaching in junior high schools, demonstrating that Purpose-driven communication tasks shift students' focus away from fear of errors toward expressing meaning, and lower anxiety in this way. Furthermore, Chen (2024) explored the application of "Genre Circle" activities in senior high schools, finding that this cooperative learning mode reduces the affective filter and builds a safer psychological space for oral practice. Earlier research by Zheng (2003) emphasized the importance of teacher questioning strategies, suggesting that appropriate questioning techniques are crucial for controlling classroom anxiety and encouraging student participation. Though these studies use different teaching approaches, they share one core aim: redirect learners' attention from self-monitoring toward meaning negotiation. Then lower the affective filter and lay a foundation for research on AI-mediated learning environments.

2.3. AI-Assisted Language Learning and Anxiety Reduction

Artificial intelligence tools for language teaching have developed gradually. Early tools offered repetitive practice drills, while modern interactive systems provide opportunities for conversational practice. Ruan et al. (2021) developed EnglishBot, an AI-powered conversational system for second language learning. Evidence concerning anxiety remains mixed: Çakmak (2022) found that difficulties during chatbot interaction could contribute to anxiety. In a systematic review, Labadze et al. (2023) identified opportunities for personalized support alongside challenges concerning reliability and accuracy. These studies provide a rationale for examining learners' experiences with a specific AI tool rather than assuming that all chatbot interactions reduce anxiety.

Domestic research on technology-supported foreign language learning has a long history. Liu (2002) and Wang et al. (2004) introduced the idea of "human-machine dialogue" for university English courses, laying the groundwork for accepting AI as a conversational partner. As technology develops, recent studies design specific instructional models. For instance, Zhong (2025) created an AI agent model based on textbook characters, which integrates AI conversations into familiar learning contexts and may ease anxiety during oral practice.

ISSN: 2710-0170

2.4. Research Gap

Educational research about AI is growing fast, yet most existing papers concentrate on cognitive learning outcomes brought by technology. Hu (2020) explored the application of AI in blended teaching modes for college oral English. W. Zhang (2025) investigated AI tools in writing teaching. Their work shows how AI can improve language ability and learning efficiency, but they rarely consider learners' inner emotional experiences.

Existing research has examined the emotional effects of conversational AI, but findings vary across tools and learning contexts. Further context-specific evidence is needed concerning English majors' experiences with short-term, supportive Doubao speaking practice.

The present study therefore combines a survey, a small single-group pre–post intervention, and interviews to explore speaking anxiety and perceived benefits and limitations of real-time interactive AI in one college context.

3. Theoretical Framework

3.1. Krashen's Affective Filter Hypothesis

Krashen's (1985) Affective Filter Hypothesis underscores the role of emotional factors in second language acquisition. According to this view, learners' anxiety, motivation, and self-confidence determine how effectively language input is internalised. When anxiety is high, the affective filter strengthens, blocking the conversion of input into acquisition. In English oral learning, anxiety often manifests as reluctance to speak and avoidance of interaction.

Instant interactive AI tools offer a relatively non-judgmental, low-pressure practice setting. In such an environment, learners can communicate without worrying about immediate negative feedback from teachers or peers. This atmosphere helps ease anxiety and lower the affective filter. Thus, the hypothesis provides a theoretical rationale for how AI can foster a supportive emotional climate that encourages learners to process input and produce output more actively.

In this study, the hypothesis serves not only as a lens for understanding the issue but also as a core guide for the research design. First, it defines the AI practice environment as an experimental condition aimed at "lowering the affective filter." The non-judgmental and repeatable features of AI are considered release valves that directly target anxiety-driven filters. Based on this, we can investigate reported changes in speaking anxiety before and after AI practice using the adapted questionnaire, without treating a single-group comparison as proof of causation.

Second, the hypothesis also directs the qualitative analysis. When examining interview data, we pay special attention to expressions such as "feeling more at ease," "not afraid of making mistakes," or "willing to try more complex sentences." These subjective reports are concrete signs of a lowered affective filter and provide learner-centred evidence that complements the quantitative findings.

In short, the Affective Filter Hypothesis acts as a theoretical bridge connecting AI technology with the internal psychological processes of language learning. It lays the logical groundwork for the entire study and offers a foundation for subsequent pedagogical implications.

3.2. Bandura's Self-efficacy Theory

Bandura (1977) defines self-efficacy as an individual's belief in their capability to execute a specific task successfully. In language learning, self-efficacy is closely tied to confidence, persistence, and emotional responses in communicative situations. Learners with higher self-efficacy are more willing to engage in oral activities and tend to experience less anxiety. Bandura emphasises that direct experience is a crucial source of efficacy beliefs.

ISSN: 2710-0170

Through frequent, low-risk interactions with AI, learners can repeatedly practise oral communication and accumulate positive speaking experiences. These successes may gradually strengthen their belief in their own communicative abilities. As self-efficacy increases, anxiety about oral tasks is likely to decrease. Hence, Self-efficacy Theory helps explain the internal psychological mechanism through which AI-assisted practice reduces speaking anxiety.

In this study, the theory not only serves as an explanatory framework but also guides intervention design and data interpretation. The short-term AI conversation intervention is essentially a structured attempt to provide learners with mastery experiences. Daily dialogues with instant interactive AI allow students to complete communication tasks in a low-risk context and receive immediate, non-judgmental feedback. The hypothesis is that these cumulative small successes will gradually boost learners' self-efficacy beliefs regarding their oral English proficiency.

Furthermore, the theory provides a basis for investigating students' subjective perceptions of AI-assisted learning. In semi-structured interviews, we specifically look for indications that participants feel "more confident," "better able to express themselves," or "more willing to speak English" after practising with AI. Remarks such as "I didn't expect I could say so much" or "I think my spoken English has improved" are treated as qualitative evidence of enhanced self-efficacy, offering deeper insights that complement the quantitative scale data.

It is worth clarifying the theoretical relationship between the Affective Filter Hypothesis (Section 3.1) and Self-efficacy Theory (this section). They are complementary and address different stages of the learning process. The low-anxiety environment provided by AI reduces the affective filter, making students more willing to engage in oral practice. This willingness, in turn, increases their opportunities to converse with AI and complete those conversations successfully. Such successful experiences constitute Bandura's mastery experiences. As these accumulate, self-efficacy is expected to rise. In other words, the Affective Filter Hypothesis explains how AI creates favourable psychological conditions, while Self-efficacy Theory explains the expected psychological outcomes from those conditions. Together, they offer a comprehensive account: AI first creates a safe space that encourages participation, and then gradually rebuilds learners' confidence through repeated successful participation.

3.3. Horwitz's Foreign Language Anxiety Theory

In this study, a speaking-anxiety questionnaire adapted from the Foreign Language Classroom Anxiety Scale (FLCAS; Horwitz et al., 1986) is employed to examine whether instant interactive AI intervention can alleviate English majors' speaking anxiety, with a particular focus on communication apprehension and fear of negative evaluation—dimensions most relevant to oral practice and interaction. Horwitz's theory thus provides the conceptual basis and measurement criteria for the research.

The framework informs the interpretation of individual questionnaire items related to communication apprehension and fear of negative evaluation. The present study does not report validated subscale scores for the three related performance anxieties. Item-level comparisons are therefore interpreted descriptively and do not establish distinct mechanisms of change.

In the qualitative analysis, Horwitz's framework provides a lens for interpreting interview data. The semi-structured interviews aim to uncover student experiences corresponding to the three anxiety components. For example, when students describe interacting with AI, we pay close attention to expressions reflecting fear of negative evaluation, such as "I'm not worried about being wrong when AI doesn't laugh at me" or "I don't care what others think of my accent." Likewise, statements related to communication apprehension are noted, e.g., "I'm less nervous talking to AI because I can pause and think without pressure."

ISSN: 2710-0170

In summary, Horwitz's theory not only offers conceptual tools for defining and measuring anxiety but also establishes a systematic framework for data analysis. By combining quantitative examination of specific dimensions with qualitative exploration grounded in the theory, the study supports an exploratory interpretation of participants' anxiety-related experiences.

3.4. Summary

Together, the three theoretical perspectives construct an integrated explanatory framework for this study. The Affective Filter Hypothesis explains how AI-assisted interaction can create a low-pressure, non-judgmental learning environment that lowers the affective filter and encourages participation. Building on this condition, Self-efficacy Theory clarifies the psychological mechanism through which repeated successful interactions provide mastery experiences that gradually strengthen learners' confidence in oral communication. Meanwhile, Foreign Language Anxiety Theory offers concepts that informed the adapted questionnaire for examining changes in anxiety levels. Through the interplay of these three views, the study can analyse how AI-assisted speaking practice may reduce oral anxiety from environmental, psychological, and measurement dimensions.

4. Research Methodology

4.1. Research Questions

This empirical study focuses on English majors in domestic universities, aiming to explore the practical effect and internal mechanism of instant interactive AI in alleviating their oral English anxiety. Oral expression has always been the most anxiety-inducing link in English learning for Chinese students. On this basis, this study takes students from South China Business College, Guangdong University of Foreign Studies as the research object to explore participants' experiences of instant interactive AI as a potentially low-pressure auxiliary tool for oral learning. The whole research is carried out around three core interrelated questions:

(1) What is the overall status of oral English anxiety among English majors at South China Business College, Guangdong University of Foreign Studies? What are their usage habits, frequency and application scenarios of instant interactive AI tools in English learning? This question is the baseline of the whole research, which is used to quantify the prevalence of oral anxiety among the research subjects, sort out their current situation of AI-assisted learning, and clarify the practical necessity and applicability of AI intervention.

(2) What changes in self-reported speaking anxiety are observed after short-term real-time interactive AI practice? The study uses IELTS Speaking Part 3 topics as practice material and compares participants' pre-test and post-test responses to an adapted speaking-anxiety questionnaire.

(3) What are English majors' subjective attitudes and perceptual experiences towards AI-assisted oral practice? What are their recognized advantages, existing limitations and optimization suggestions of AI tools? On the basis of descriptive quantitative findings, this question further explores the internal reasons for AI's anxiety-mitigating effect from students' subjective perspective, and provides practical improvement directions for the popularization and optimization of AI language learning tools.

4.2. Research Instruments

To ensure the authenticity and accuracy of research data and the effectiveness of experimental intervention, this study adopts a mixed research method combining quantitative and qualitative analysis, and configures three matching data collection tools: revised FLCAS questionnaire, Doubao AI interactive training system and semi-structured interview. The three

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tools cooperate with each other to capture both measurable changes in students' anxiety levels and their subjective learning experiences.

4.2.1. Questionnaire

The survey involved 98 English majors from South China Business College, Guangdong University of Foreign Studies, covering freshmen to seniors. Participants were recruited through grade-level course groups and student associations using convenience sampling. The shared institutional and disciplinary context supports a focused contextual investigation, but does not establish population representativeness or control all confounding variables.

The questionnaire was adapted from the Foreign Language Classroom Anxiety Scale (FLCAS) developed by Horwitz et al. (1986), with a focus on speaking-related situations. It is an adapted questionnaire rather than the full original FLCAS. Changes to item wording or selection require evaluation of reliability and validity in the present sample; evidence about other versions does not establish those properties for this instrument.

The questionnaire covered demographic information, speaking anxiety, AI-use patterns, and subjective experiences of AI-assisted practice. The second part initially included eight questions using a five-point Likert scale. For analytical purposes, Items 7 and 8, which both addressed pressure and nervousness associated with English speaking, were grouped into a single dimension of speaking-related pressure and nervousness. Thus, the eight questionnaire items were summarized into seven analytical dimensions for detailed examination.

Table 1. Illustrative questionnaire wording presented in the source manuscript

Classroom-oriented wording in the source	Adapted speaking-related wording
In English class, I start to panic when I know I will be graded in oral activities.	I worry that my English expressions will be evaluated by others.
Because of being corrected by my teacher, I am afraid of going to the speaking class.	I feel embarrassed when others correct my oral English mistakes.
I like to volunteer answers in English class.	I take the initiative to have English conversations with others.

4.2.2. Doubao AI Agent

To explore speaking anxiety during instant interactive AI practice, this study selected 12 students with initial anxiety scores above the questionnaire midpoint from the questionnaire participants for a short-term, single-group AI-assisted oral practice intervention, adopting ByteDance's Doubao AI assistant as the exclusive experimental tool.

The practice material selected for the experiment is IELTS Speaking Part 3 topics, rather than daily simple conversations, mainly for three reasons. First, IELTS Speaking Part 3 focuses on abstract topics such as society, technology and environment, which is highly consistent with the difficulty of professional oral examinations and college English comprehensive expression requirements. Second, such abstract topics are easy to cause lexical gaps and logical confusion among Chinese students, which can effectively trigger their oral anxiety and better test the intervention effect of AI tools. Third, it can be regarded as a high-pressure simulation test: if AI's supportive and non-judgmental interaction can effectively relieve students' anxiety in difficult oral tasks, this would offer preliminary support for further investigation, rather than establish effectiveness in real high-pressure assessment settings.

Doubao AI is selected as the experimental tool due to its good applicability. On the one hand, the tool has high popularity and easy operation in China, with fast response speed, and students will not encounter technical barriers in the practice process. On the other hand, its customized Agent function allows non-professional users to build exclusive oral practice assistants

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according to experimental needs, which can meet the personalized setting requirements of this research.

"You are an experienced and highly patient IELTS Speaking examiner tasked with engaging students in a natural Part 3 discussion focused on the topic: Describe a success you would like to achieve in the future. Your overarching goal is to foster a low-anxiety, highly supportive practice environment that encourages fluency and depth of thought through a consistently gentle and encouraging tone. To ensure an organic conversational flow, you should ask only one question at a time, adapting your follow-up inquiries based on the student's specific responses. Rather than directly criticizing grammatical or pronunciation errors, you will employ recasting to subtly model correct usage within your own speech, thereby maintaining the student's confidence. If a student becomes stuck or struggles to articulate an idea, provide scaffolding by simplifying the question or offering helpful prompts, such as suggesting they reflect on a personal experience. Throughout the session, bolster the student's morale with positive reinforcement like 'That's an interesting point', and while the primary language of interaction is English, you should allow for the occasional use of Chinese to help the student bridge gaps in their expression."

4.2.3. Interview

On the basis of quantitative questionnaire and experimental data, this study adopts semi-structured interviews as a supplementary qualitative research tool to deeply explore the internal reasons for changes in students' oral anxiety and their real learning experience in AI-assisted practice. After completing the short-term AI intervention, 4 participants with different anxiety levels and grades were selected for one-on-one online interviews.

The interview is designed with a standardized outline (summarized here), covering three core dimensions: students' intuitive experience in AI oral practice, subjective perception of anxiety changes, and objective evaluation of AI's role in improving oral communicative confidence. During the interview, the researcher takes guiding questions as the main line and encourages participants to expand their personal feelings and practical cases freely to obtain authentic and detailed qualitative data.

Each interview lasts 10 to 15 minutes in a relaxed and free communication atmosphere to eliminate participants' tension and ensure the authenticity of interview content. After the interview, the researcher sorts out and codes the interview text, summarizes the common characteristics and individual differences of students' perceptions, and forms qualitative analysis results to supplement and verify the quantitative data conclusions.

4.3. Research Procedures

The study combined a cross-sectional survey, a single-group pre–post AI practice intervention, and follow-up interviews. No comparison group or random assignment was reported. The research procedures comprised the following four stages.

The first stage is baseline investigation and participant screening (December 15, 2025 – January 2, 2026). The researcher distributed the pre-test questionnaire to English majors of the college through online links, aiming to collect the baseline data of 98 students' oral anxiety level and daily AI tool usage status. According to the adapted questionnaire scores, students with average scores above the response midpoint (> 3.0) were screened out, and 12 volunteer students were finally confirmed as the experimental intervention subjects.

The second stage was the AI practice intervention. Participants used the customized Doubao AI Agent for approximately 15 minutes of IELTS Speaking Part 3 practice per session.

The third stage was post-test data collection, reported as January 9, 2026. The same adapted speaking-anxiety questionnaire was administered to the 12 intervention participants. The present results are reported descriptively.

ISSN: 2710-0170

The fourth stage is in-depth qualitative interview (January 9, 2026 – January 10, 2026). Four representative participants were selected from the experimental group for semi-structured online interviews. The interview focused on students' emotional changes in AI interactive practice, the core advantages of AI tools in relieving anxiety, and personalized optimization suggestions. The qualitative interview data was used to explain and supplement the quantitative experimental results, forming a comprehensive research conclusion combining qualitative and quantitative analysis.

4.4. Research Ethics

Participation in the survey, AI practice, and interviews was voluntary. Participants gave informed consent after reading a written explanation of the study. All collected data were handled confidentially and used only for research purposes. Identifying information was excluded from reporting, and interview quotations were anonymized. No institutional ethics approval was obtained, as the study was conducted independently without institutional involvement.

5. Results and Discussion

5.1. Quantitative Analysis

This study utilized the SoJump online platform to create and distribute questionnaires. Survey links were shared in grade-level course groups and student association groups. In total, 121 questionnaires were collected and three screening standards were applied to screen the returned questionnaires.

First, the questionnaire used reported TEM-4/TEM-8 eligibility as a screening item intended to identify the target English-major population. Second, validity-check questions were used to identify inattentive responses. Third, questionnaires with incomplete core items or extensive blank spaces were excluded. In total, 121 questionnaires were collected. The 23 excluded responses were identified based on the following screening criteria: (1) TEM-4/TEM-8 qualification, used to identify the target population of English majors; (2) validity-verification questions, used to identify inattentive or non-serious responses; and (3) incomplete core items or extensive blank spaces, referring to questionnaires with missing key responses or substantial unanswered content. As a result, 98 valid responses were retained, representing 81.0% of the returned questionnaires.

5.1.1. Basic Information of the Survey Respondents

All valid participants were English majors. Basic background information covered four dimensions: gender, TEM-4/TEM-8 exams, grade level and self-evaluated oral English proficiency. Details are presented in Table 2.

Table 2. Participant information

Dimensions	Specific Details	Number	Percentage
Gender	Male	15	15.3
	Female	83	84.7
Eligibility for TEM-4/TEM-8	Yes	98	100
	No	0	0
Grade	Freshmen	7	7.1
	Sophomores	12	12.2

ISSN: 2710-0170

Dimensions	Specific Details	Number	Percentage
	Juniors	14	14.3
	Seniors	65	66.3
Self-rated Spoken English Proficiency	Very poor	3	3.1
	Poor	18	18.4
	Fair	45	45.9
	Good	27	27.6
	Very good	5	5.1

Female students comprised 84.7% of the sample, and seniors comprised 66.3%. All retained respondents reported TEM-4/TEM-8 eligibility. Most rated their spoken English as fair. These figures describe the sample composition; the convenience sampling and predominance of seniors limit representativeness.

5.1.2. Analysis of College Students' English Speaking Anxiety

The adapted questionnaire used five-point responses (1 = strongly disagree, 5 = strongly agree). Table 3 reports seven speaking-anxiety items for the 98 respondents. Items 2 and 6 are positively worded and require reverse coding when constructing an anxiety score. Among the negatively worded items, concern about others' evaluations and public speaking had the highest reported means (3.97 and 3.87), followed by reluctance to speak due to nervousness (3.84), fear of misunderstanding (3.68), and anxiety despite preparation (3.63).

Table 3. Reported speaking-anxiety item means

Speaking-anxiety item	Average Score
Feeling nervous and uneasy when speaking English in public	3.87
No obvious tension when speaking English in front of acquaintances (reverse)	3.12
Worrying about being evaluated on English expression by others	3.97
Being afraid of being misunderstood by the other party during English communication	3.68
Feeling anxious about English expression even with sufficient preparation	3.63
Liking to practice speaking with others in conversations (reverse)	2.95
Being unwilling to take the initiative to speak English due to nervousness	3.84
Mean score	3.58

Interpretation of the positively worded conversational-practice item also requires confirmation of the scoring direction. Its mean alone does not establish that peer conversation reduces anxiety.

ISSN: 2710-0170

5.1.3. Analysis of Students' Use of Instant Interactive AI

Ninety-eight valid responses were available for the reported familiarity, tool preference, and usage-frequency questions. A total of 98 valid responses were collected for dimensions including familiarity, tool preference, frequency, and core behaviors, while 79 valid responses were obtained for the dimension of usage periods. This discrepancy was mainly attributable to unanswered items and the questionnaire's skip logic, which prevented some respondents from being directed to this question.

Table 4. Participants' reported AI use

Dimension	Category / Behavior	Frequency(n)	Percentage(%)
Familiarity	Not familiar at all	7	7.1
	Heard of but rarely used	27	27.6
	Occasionally used	41	41.8
	Very familiar & frequently used	23	23.5
Tool Preference (Multiple choices)	Doubao / ByteDance	64	65.3
	ChatGPT / OpenAI series	58	59.2
	Ernie Bot / Baidu series	39	39.8
	iFLYTEK Spark	30	30.6
	HelloTalk / Duolingo, etc.	31	31.6
Usage Frequency	Used daily	7	7.1
	3-5 times a week	18	18.4
	1-2 times a week	25	25.5
	Occasionally per month	29	29.6
	Rarely used	19	19.4
Usage Time Period (Valid responses n=79)	Before-class preparation / presentation preparation	18	22.8
	After-class review / homework	18	22.8
	Cramming before exams	19	24.1
	Fragmented time practice	24	30.4

English majors generally know about instant interactive AI, but they do not use these tools very deeply. Only 7.1% reported total unfamiliarity; 92.9% have some exposure. Still, regular, high-frequency usage has not become common practice.

Students prefer general large-language-model products. Doubao (65.3%) and ChatGPT series (59.2%) rank highest, beating specialized language-learning software. Most users fall into low-to-medium-frequency groups: 55.1% use AI once or twice weekly or only every month, while heavy users account for merely 25.5%. The usage-timing distribution requires verification

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before interpreting when students primarily use AI. In short, instant interactive AI acts as a handy supplementary learning aid rather than a habitual practice resource.

Table 5. Mean scores of AI-use behavior items

Behavior	Mean Score
Generate authentic English expressions from Chinese viewpoints	3.88
Ask AI instantly for help with expression difficulties	3.76
Generate oral presentation scripts / outlines	3.63
Prioritize AI as a speaking practice partner	3.57
Ask AI for advanced vocabulary replacement suggestions	3.52
Use AI to analyze the logic and coherence of expressions	3.46
Use AI to simulate real-scenario role-play	3.24
Have free conversations using AI voice function	3.18

The statistics suggest students rely on AI mainly to solve immediate expression problems instead of carrying out systematic oral training. Generating natural English sentences (M = 3.88) and getting quick help for expression barriers (M = 3.76) receive the highest scores. Interactive training activities, including role-play (M = 3.24) and open-ended voice chats (M = 3.18), are less popular. AI serves more as a troubleshooting helper than a long-term speaking practice partner.

5.2. Pre-test and Post-test Analysis

Twelve volunteers from the survey sample participated in short-term AI-supported oral practice and completed pre-test and post-test questionnaires. The comparison is exploratory and descriptive. Without a comparison group, observed changes cannot be attributed specifically to AI practice.

5.2.1. Overall Change in Speaking Anxiety

The mean overall speaking anxiety score of the 12 intervention participants decreased from 3.73 in the pre-test to 3.06 in the post-test, representing an overall decrease of 0.67 points (or a 17.96% decline). Table 6 presents the summary of these descriptive pre- and post-intervention scores.

Table 6. Reported overall pre-test and post-test scores requiring verification

Stage	Sample Size (n)	Overall Anxiety Average Score	Anxiety Level	Score Change	Decrease Rate (%)
Pre-test	12	3.73	Not classified	-0.67	17.96
Post-test	12	3.06	Not classified	-	-

5.2.2. Item-Level Changes in Speaking Anxiety

Table 7 compares pre-test and post-test mean scores for each reported anxiety item, showing which indicators changed most and least after the intervention.

ISSN: 2710-0170

Table 7. Reported pre-test and post-test item scores

Speaking-anxiety item	Pre-test Mean (n=12)	Post-test Mean (n=12)	Mean Change	Change Rate (%)
1. Feeling nervous and uneasy when speaking English in public	3.67	2.83	-0.84	-22.9
2. No obvious tension when speaking English in front of acquaintances (reverse)	3.33	3.58	+0.25	+7.5
3. Worrying about being evaluated on English expression by others	3.67	2.50	-1.17	-31.9
4. Being afraid of being misunderstood by the other party during English communication	3.75	2.92	-0.83	-22.1
5. Feeling anxious about English expression even with sufficient preparation	3.83	2.75	-1.08	-28.2
6. Liking to practice speaking with others in conversations (reverse)	3.92	3.58	-0.34	-8.7
7. Being unwilling to take the initiative to speak English due to nervousness	3.92	3.25	-0.67	-17.1
Overall Mean Score	3.73	3.06	-0.67	-17.96

The five negatively worded items have lower reported post-test means. The two positively worded items require a separate check of coding direction. The displayed results therefore do not support the statement that all seven indicators improved.

The item about concern over others' evaluations showed the largest reported decline among the negatively worded items, from 3.67 to 2.50 (a difference of −1.17). This descriptive pattern is consistent with the interview reports of lower perceived evaluation pressure, but does not establish a causal mechanism or statistical significance.

Reported means also declined for public-speaking nervousness (3.67 to 2.83), fear of misunderstanding (3.75 to 2.92), and anxiety despite preparation (3.83 to 2.75). These changes describe the participants' responses; they do not establish transfer to objectively assessed real-world speaking situations.

Reluctance to initiate English conversation due to nervousness declined from 3.92 to 3.25, the smallest absolute decrease among the five negatively worded items. The post-test mean remained above the response midpoint. Longer follow-up would be needed to examine whether communication willingness changes further.

For the two reverse-scored items, Item 2 increased from 3.33 to 3.58, while Item 6 decreased from 3.92 to 3.58. These changes should be interpreted according to their reverse-scoring direction. In particular, the decrease in Item 6 may indicate that students' preference for speaking practice with human partners did not increase after the short-term AI intervention.

Items 2 and 6 changed in opposite directions in the displayed scores. If these are raw responses, increased agreement with Item 2 would suggest less tension, whereas decreased agreement with Item 6 would suggest less enjoyment of conversational practice. If they are already

ISSN: 2710-0170

reverse-coded, these interpretations change. The coding must therefore be verified before drawing conclusions, and the data do not establish technology dependence.

The item-level patterns and interview accounts warrant further investigation of AI-supported practice. A defensible interpretation of the overall anxiety change requires reconciliation of the questionnaire item set, reverse coding, and aggregate scores.

5.3. Analysis of Interview Results

Building on the quantitative data, this study selected four representative English majors for semi-structured online interviews, coded as 001–004. The interviewees covered different year groups (sophomore, junior, and senior) and all had moderate to high levels of oral anxiety. They had all participated in the short-term AI-assisted practice intervention. Purposive sampling was adopted, with three high-anxiety students as the core sample and one moderate-anxiety student for comparison.

5.3.1. Core Dimensions of AI-Assisted Anxiety Alleviation

To explore how AI technology helps relieve language anxiety, in-depth interviews were conducted. The qualitative data reveal that AI speaking companions were perceived by interviewees to offer three kinds of support.

First, AI solves the problem of finding a practice partner. For many students, the main obstacle is not speaking itself but coordinating schedules with others. As Respondent 001 noted, arranging time with classmates is troublesome, whereas AI is always available, allowing immediate practice and removing worries about partner availability.

More importantly, interviewees described a reduced sense of being evaluated during AI practice. This aligns with earlier findings that evaluation anxiety is a primary reason students avoid speaking. Respondent 002 expressed a common sentiment: when talking to a machine, the fear of being laughed at by teachers or classmates for mistakes disappears. Since AI does not judge or criticise hesitations, students feel they can finally speak freely without worrying about appraisal.

For less confident speakers, the low-pressure pace is transformative. Unlike rapid back-and-forth real conversations that may leave them blank, AI has infinite patience. Respondent 003 pointed out that even during long pauses, AI does not urge or question them. This gives them space to collect their thoughts and gradually move from not knowing what to say to sustaining a conversation.

5.3.2. Attitudes Toward AI Speaking Partners

After the short-term AI intervention, participants generally expressed positive attitudes. Student 001 said, “This is not just a gimmick; AI is indeed a great tool that any learner who wants to practise speaking cannot do without.”

AI use can indeed foster a sense of confidence. This is not only about practice duration but also about mindset shifts. Both Respondents 002 and 003 noted that after the intervention, they felt significantly more willing to speak English. They even began applying improvements to real-world settings, attempting simple English conversations with classmates. In their view, AI had helped them break through initial barriers.

Nevertheless, students are well aware of the technology’s limitations. None believe AI can replace a real teacher or fully simulate authentic communication. They hold a fairly objective view: while AI performs well in training expression and overcoming initial hesitation, it cannot replicate the emotional nuances and complexity of real human interaction. As Respondent 004 put it, the ultimate goal remains human-to-human communication; AI is indeed a useful practice tool because it reduces the pressure of actual speaking.

ISSN: 2710-0170

5.3.3. Student Proposals for AI Optimisation

Based on their personal experiences, the four interviewees offered targeted suggestions. Their expectation is to transform AI from a passive tool into an active, personalised coach.

Students expressed a desire for more structured and tailored knowledge delivery. For instance, AI could recommend topics suited to individual proficiency levels and goals—such as presenting all necessary topics for improving from an IELTS band 6 to 7. They also suggested setting daily learning goals, conducting regular progress checks, and sending automatic reminders to sustain engagement.

Learners also stressed the importance of authentic dialogue and deeper interaction. They hoped AI would play an active role in discussions, expanding topics based on responses and incorporating colloquial expressions or cultural background, rather than relying on overly formal or "textbook" English.

Accurate feedback is deemed essential. Participants pointed to the need for high-quality error correction, including improved speech recognition that accommodates various accents, targeted feedback on persistent errors (e.g., tense misuse), and guidance on pronunciation features like stress and linking for more native-like speech.

Finally, usability and quality are seen as top priorities. Learners called for fewer formulaic responses and improvements to the free AI version, ensuring that high-quality oral practice is widely accessible and offers fair learning opportunities for different user groups.

6. Conclusion

6.1. Research Findings

The descriptive item-level patterns and interview accounts suggest possible benefits of AI-assisted speaking practice for some participants. The aggregate anxiety result requires verification, and the present single-group design does not establish intervention effectiveness.

First, interviewees described accessible practice opportunities and a greater sense of freedom to speak. Most participants reported that in traditional classrooms, their greatest fear was making mistakes and being judged by teachers or classmates. AI removes the immediate presence of an evaluative audience. Students expressed that they could make mistakes, pause, and restructure sentences without fear of ridicule or belittlement. This non-judgmental environment appears to play a crucial role in lowering anxiety levels.

Second, the research found that conversing with AI often gives students positive feedback in a relaxed and enjoyable atmosphere, making them more willing to speak. Some interviewees who practiced with Doubao described beginning to view English not merely as an exam-oriented subject but as a practical communication tool. The immediate feedback helps correct minor errors on the spot, providing small but steady boosts in confidence. Whether these perceived gains transfer to public speaking requires further investigation.

6.2. Implications

Based on these findings, there are distinct benefits for students, teachers, and AI developers.

For students: AI may offer a supplementary practice partner before classroom discussion or presentations. Rehearsing a topic could help learners prepare vocabulary and sentence structures. This is a pedagogical possibility suggested by the interview accounts, rather than a transfer effect demonstrated by the present study.

For teachers: It is recommended that teachers explore more ways to integrate AI into teaching to help students solve mechanical or individual problems. If AI conversations are assigned as oral homework, valuable classroom time can be freed up for more meaningful, higher-level

ISSN: 2710-0170

discussions. Teachers can then devote more time to guiding students' thinking and logical expression, rather than mechanically correcting pronunciation or grammatical errors.

For AI developers: AI tools for spoken English practice should not focus solely on basic functions like correcting grammar or pronunciation. Future improvements could aim to enhance conversational fluency and foster a sense of support. For instance, it would be desirable if AI could promptly recognise when students get stuck in lexical gaps and offer gentle prompts, making the tools more effective for anxious learners. Moreover, AI responses should strive to be more natural to stimulate students' desire to chat.

6.3. Limitations

While the results are encouraging, several limitations must be acknowledged.

First, due to time and resource constraints, the sample size was relatively small and limited to one group of students at a single college. Results might differ with students of varying proficiency levels or from different regions.

Second, the study duration was relatively short. Although several reported item means declined, the long-term sustainability of this effect and the potential novelty wear-off remain unknown.

Finally, this research relied primarily on self-reported data from surveys and interviews, which capture students' perceptions. Objective data, such as actual exam scores or standardised test results, were not collected to corroborate these self-perceptions and provide measurable evidence of language improvement. Future research should investigate whether this anxiety reduction ultimately translates into improved academic performance over an extended period.

The absence of a control group also prevents separation of AI-specific effects from repeated measurement, concurrent learning, regression to the mean, or novelty. Selection of volunteers with higher initial scores further limits causal interpretation. The adapted questionnaire requires transparent scoring and psychometric evidence, and its positively worded items do not constitute independent validated subscales.

Overall, this study suggests the potential of interactive AI as a supportive tool for reducing speaking anxiety among English majors. By providing a low-pressure, non-judgmental practice environment, AI-assisted interaction may help learners build confidence and engage more actively in oral communication. These findings highlight the growing role of AI in language learning contexts.

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