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Mapping Two Decades of Foreign Language Speaking Anxiety Research: Hot-spot Shifts, Technological Trends and Future Directions

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Abstract

Drawing on CiteSpace bibliometric visualisation software, this study conducts a knowledge-mapping analysis of international journal publications concerning foreign language speaking anxiety spanning 2008-2026. It aims to identify core research themes, map evolving research frontiers, and unpack prospective developmental trends in this field. Results reveal that scholarly interest in foreign language speaking anxiety has experienced an overall upward trajectory, establishing it as a prominent research agenda within international foreign-language education with substantial research potential and ongoing expansion space. Existing scholarship has forged a relatively clear developmental path, advancing progressively from mechanistic interpretations, through pedagogical interventions, to technology-empowered coping solutions. Nevertheless, notable limitations persist, including insufficient systematic integration of research themes, superficial investigations into emerging domains, and over-reliance on a narrow repertoire of research methodologies. Future international inquiries into foreign language speaking anxiety should prioritise broadening thematic coverage, refining methodological designs, and strengthening cross-strand theoretical synthesis.

Keywords: CiteSpace, foreign language speaking anxiety, hotspots and trends, visual analysis.

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1. Introduction

Foreign language speaking anxiety refers to a state of anxiety experienced by foreign language learners in specific situations—such as during oral expression, interactive communication, or the completion of speaking tasks—due to concerns about their linguistic performance, others' evaluations, or the outcomes of communication. Research in the field of foreign language speaking anxiety can further deepen the study of emotions in foreign language learning and reveal the relationship between emotional factors and language learning; it can explain the barriers learners face in oral communication from psychological and emotional perspectives, providing deeper insight into the factors influencing the transformation of linguistic knowledge into practical communicative competence; it can also provide a theoretical foundation for oral instruction, classroom interaction, and anxiety intervention, while exploring new intervention pathways through the integration of emerging technologies such as artificial intelligence, thereby promoting the further development of research on foreign language oral teaching and learning.

International research on anxiety related to speaking a foreign language began relatively early, and its scope has continued to expand alongside developments in second language acquisition and positive psychology. Early studies primarily focused on the relationship between "language proficiency, classroom contexts, and spoken performance", addressing questions such as "where does speaking anxiety come from" and "how does anxiety affect spoken performance", thereby laying the foundation for subsequent research. For example, He (2013) used questionnaires and interviews to compare Chinese college students' and teachers' perceptions of the causes of speaking anxiety, identified 14 main contributing factors, and found significant differences in their perceptions. A book review by Yu (2021) points out that anxiety about learning a foreign language in the Chinese context is closely related to "mute English" and a lack of confidence in communication. As research perspectives have broadened, scholars have begun to examine the influence of individual emotions, mental health, and online learning contexts on foreign language speaking anxiety. Bárkányi and Brash (2025a) incorporated mental health status into research on foreign language speaking anxiety and found that learners with mental health issues were more likely to avoid synchronous speaking activities. Bárkányi and Brash (2025b) further found that online environmental factors such as group discussion rooms and webcams can amplify anxiety. Koçali and Aşık (2026), however, found that the emotion-regulation approach used in mindfulness interventions can reduce anxiety about speaking a foreign language in the short term, but the effects diminish over time. This suggests that anxiety about speaking a foreign language is influenced by a combination of psychological state, the online environment, and emotional regulation. In recent years, research has shifted its focus from individual psychological states to technology-assisted real or quasi-real communication processes. Bashori et al. (2022) found that web-based learning environments utilizing automatic speech recognition were positively evaluated by students and were considered helpful in alleviating speaking anxiety; Ding (2024), however, found that while high-immersion virtual reality is viewed as useful by most students, it does not significantly reduce anxiety about speaking a foreign language in real-life situations and, in some cases, actually hinders communication. With the advancement of artificial intelligence and virtual reality technologies, "AI- and VR-assisted spoken language learning" has emerged as a hot topic in recent research on foreign language speaking anxiety. Wang et al. (2024) found that generative AI chatbots with human-like virtual avatars can significantly enhance participants' willingness to communicate and their perceived communication competence, while reducing foreign language speaking anxiety; Wu et al. (2026) integrated AI chatbots into "Think-Pair-Share" activities and found that they can reduce anxiety about speaking a foreign language, increase enjoyment of the language, and improve speaking performance. This suggests that technology-assisted learning and advancements in virtual reality have the potential to alleviate foreign language speaking anxiety; however, their effectiveness is jointly influenced by factors such as learner characteristics, task types, technological environments, and modes of interaction.

Overall, international research on foreign language speaking anxiety has followed a relatively clear evolutionary trajectory, gradually expanding from "language proficiency and speaking performance" to "individual emotions, mental health, and online learning contexts", and then shifting toward "technology-assisted communication" and "interactions involving VR and generative AI", which also illustrates that anxiety regarding speaking a foreign language has evolved from a relatively singular issue of language proficiency into a multidimensional field of study involving language, emotions, the individual, communicative contexts, and technological environments.

However, existing research still has certain shortcomings: on the one hand, the relationships among different variables are primarily examined through correlational studies, with insufficient attention paid to the dynamic interactive mechanisms among anxiety, self-efficacy, and enjoyment of the foreign language; on the other hand, although research on AI and VR is growing rapidly, existing studies remain insufficiently in-depth regarding emerging fields and new technological applications, and there is a lack of sufficient theoretical integration among different research directions, with their specific mechanisms of action still awaiting further verification. Furthermore, existing research employs overly narrow methodological approaches, relying heavily on questionnaires and pre- and post-test data, while paying relatively limited attention to the dynamic changes in learners' anxiety during authentic spoken interactions. There is also a lack of coordinated development between theoretical research and teaching practice. Therefore, future research could further integrate experimental designs, longitudinal tracking, and authentic classroom interaction data to explore the synergistic effects between relevant influencing factors and AI technology, thereby providing a deeper understanding of the formation, development, and intervention mechanisms of foreign language speaking anxiety.

To understand and track research hotspots and trends in international foreign language speaking anxiety and to fill research gaps in this field, this study employs the information visualization software CiteSpace to conduct a combined qualitative and quantitative analysis of the current status, hotspots, and trends in international foreign language speaking anxiety research from 2008 to 2026. The specific research questions are as follows: First, what developmental trends and phased characteristics does the volume of publications on international foreign language speaking anxiety research from 2008 to 2026 exhibit? Second, what major research hotspots and keyword clusters have emerged in this field? Third, through keyword emergence analysis, how has the research

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frontier in this field evolved, and what are its potential future directions?

This study holds significance on multiple levels. Theoretically, by systematically mapping the hotspots and trends in international research on foreign language speaking anxiety through knowledge graph analysis, it promotes a shift in the field from "identifying problems" to "explaining and solving problems". Practically, it provides guidance for speaking instruction, classroom interaction, and anxiety intervention, while exploring emerging intervention approaches through the integration of new technologies such as artificial intelligence; methodologically, the use of CiteSpace for bibliometric and visualization analysis offers a systematic literature reference for subsequent research and suggests that future studies should strengthen research methods such as longitudinal studies, experimental research, and classroom observations to promote the coordinated development of theoretical research and teaching practice.

2. Research Design

2.1 Research Subjects

This paper reviews relevant journal articles published internationally over the past 19 years, with data sourced from SCI, SSCI, CCR, and IC journals in the Web of Science. First, a search was conducted using the keywords "foreign language speaking anxiety" and "foreign language anxiety", along with related terms. The search time frame was set from January 2008 to October 2026. After manual screening, entries unrelated to research on foreign language speaking anxiety were manually excluded, resulting in a total of 483 valid articles. Subsequently, the Web of Science export function was used to obtain a RefWorks-formatted file.

2.2 Research Methods and Content

CiteSpace is a software tool for visualizing scientometric analysis, commonly used in academia to conduct research such as knowledge mapping and bibliometric analysis. In this paper, we used CiteSpace to process the exported data, generating a dataset suitable for visual analysis. The author set the following parameters: a time span from 2008 to 2026, with one-year time slices. Through data processing, a visual spatiotemporal distribution map was generated. Furthermore, "keywords" were selected as nodes to perform keyword clustering and keyword emergence analysis on the sample literature. This yielded corresponding knowledge maps—including research hotspots and frontiers—along with related data, which were then used to analyze trends in research on anxiety in foreign language speaking.

3. Research Findings and Analysis

3.1 Analysis of Annual Publication Volume in Core Journals

An analysis of annual publication volumes provides a clear illustration of the annual distribution of research literature on foreign language speaking anxiety in international core journals, revealing the development trajectory of this field over time and the trends in research activity across different phases. As indicated by the linear trend in the publication volume chart covering the past 19 years (Figure 1), the annual publication volume in core journals on foreign language speaking anxiety has generally shown an upward trend, though the rate of growth varies significantly across different phases. Based on the characteristics of changes in annual publication volume, the development of this field can be divided into three phases: the initial exploration phase, the steady development phase, and the rapid development phase.

The period from 2008 to 2017 constituted the initial exploration phase. During this phase, research on foreign language speaking anxiety was generally in its early exploratory stages, with a relatively low annual publication volume and significant fluctuations. It is evident that during this period, scholars' attention to foreign language speaking anxiety had not yet developed into a sustained research trend; related studies were primarily focused on conceptual exploration, problem identification, and the development of research methods. For example, Liu and Jackson (2008) investigated the relationship between communicative unwillingness and foreign language anxiety among Chinese English learners, Dewaele et al. (2008) examined the effects of trait emotional intelligence (trait EI) and sociobiographical factors on communicative anxiety (CA) and foreign language anxiety (FLA) among multilingual speakers. Although the annual number of publications fluctuated somewhat, it gradually increased between 2015 and 2017, indicating that anxiety about speaking a foreign language—as a key emotional factor in the foreign language learning process—has begun to attract increasing attention from scholars, laying the foundation for the continued development of subsequent research.

The period from 2018 to 2023 represented a phase of steady development. Compared to the first phase, the annual number of publications on foreign language speaking anxiety increased significantly during this period and exhibited a relatively stable trend. In 2018, the number of publications saw a substantial increase compared to the previous phase; although there was a slight decline in 2019 and 2020, the overall level remained high. The number of publications increased further in 2021, reached a peak for this phase in 2022, and declined slightly in 2023. This indicates that, since 2018, anxiety in foreign language speaking has gradually become a relatively stable research topic in the fields of foreign language education and second language acquisition. Scholarly attention to speaking anxiety has gradually expanded from early descriptive studies of the phenomenon to include influencing factors, psychological mechanisms, individual differences among learners, and spoken communication. For example, Dewaele et al. (2018) examined the relationship between Foreign Language Enjoyment (FLE) and Foreign Language Classroom Anxiety (FLCA) and individual learner factors, as well as teacher and classroom factors, Piniel and Albert (2018) examined the emotional experiences of English majors across different language skills and language use contexts, with a focus on enjoyment of the foreign language and language anxiety. Research perspectives in the field of anxiety related to speaking foreign languages continue to expand, and interest in this area has further increased.

The period from 2024 to 2026 represents a phase of rapid development. The number of publications during this phase showed a very pronounced trend of rapid growth, making it the period with the highest research activity throughout the entire timeframe. The number of publications in 2024 saw a significant increase compared to 2023; it rose further in 2025; and by 2026, the annual number of publications had reached its peak across the entire time series. This indicates that research on foreign language speaking anxiety has entered a phase of rapid development in recent years, with research interest continuing to rise. Compared to the previous two phases, scholars' research on foreign language

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speaking anxiety is no longer limited to the phenomenon of anxiety itself but has gradually delved into areas such as influencing mechanisms, emotional factors, communicative motivation, learner self-efficacy, support from teachers and peers, and instructional interventions. At the same time, as digital technologies such as artificial intelligence and virtual reality are increasingly applied to foreign language teaching, the relationship between technological interventions and speaking anxiety has emerged as a new research direction worthy of attention. For example, Zhang et al. (2024) explored the impact of AI speaking assistants on Chinese EFL university students' foreign language enjoyment (FLE), foreign language anxiety (FLA), and willingness to communicate in English (WTC). Tai et al. (2023) examined the effects of generative artificial intelligence (GAI) chatbots on elementary school students' EFL speaking proficiency and speaking anxiety, and compared two modes of use: individual interaction and pair interaction. Overall, the significant increase in the number of publications since the beginning of 2024 indicates that anxiety about speaking a foreign language has gradually become a major topic in international foreign language education research, with considerable scope for study and ongoing potential for expansion.

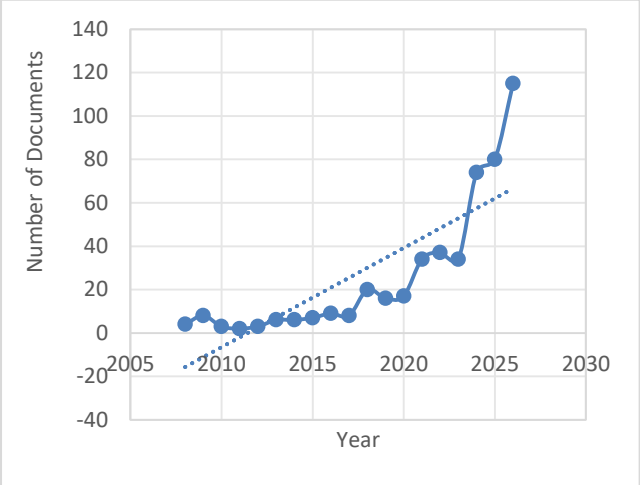


Fig.1 Annual distribution of publications, 2008–2026

3.2 Analysis of Research Trends

This paper uses the clustering function in CiteSpace software to conduct a keyword clustering analysis of relevant international literature, resulting in a relatively clear keyword clustering structure (Figure 2). Based on the clustering results and the core keywords contained in each cluster, it can be observed that current international research primarily revolves around three aspects: foreign language speaking anxiety and its related linguistic performance; the influencing factors and theoretical explanations of foreign language speaking anxiety; and the impact of new technologies and instructional interventions on foreign language speaking learning and anxiety. The specific research topics are as follows.

The first category of studies primarily focuses on foreign language speaking anxiety and its related linguistic performance, including clusters such as 0# "performance", 2# "oral proficiency", 3# "foreign language speaking anxiety", 4# "language anxiety", and 9# "English public speaking". This field mainly examines learners' anxiety manifestations during foreign language speaking activities and their relationship with language proficiency and spoken performance. Existing research generally agrees that foreign language speaking anxiety is linked to learners' fluency, accuracy, and overall speaking performance. Hewitt and Stephenson (2012) examined the relationship between foreign language anxiety and speaking performance in the context of speaking exams, demonstrating that learners' anxiety levels are associated with their speaking exam scores and specific speaking performance indicators. In addition, public speaking in English, as a typical oral communication scenario, has gradually become an important research context for examining foreign language speaking anxiety. Chen (2022) points out that technology-enhanced learning—particularly VR and AI feedback—can effectively alleviate public speaking anxiety among EFL learners and, to some extent, compensate for individual differences. It is evident that foreign language speaking anxiety and its impact on learners' spoken performance and speaking proficiency remain a relatively consistent research focus in this field.

The second category of research primarily focuses on the factors influencing foreign language speaking anxiety and their theoretical explanations, mainly involving 6# "foreign language enjoyment", 8# "control-value theory", and certain clusters related to "language anxiety" and "emotion". As second language acquisition research has gradually shifted from a sole focus on negative emotions to an equal emphasis on both positive and negative emotions, researchers have begun to examine the positive emotional experiences of foreign language learners during speaking activities. Wang (2023) examined the correlations among three emotions—foreign language enjoyment (FLE), foreign language classroom anxiety (FLCA), and foreign language boredom (FLB)—among non-English-major college freshmen in online English courses, as well as their predictive roles in learning performance. The study concluded that the impact of emotions on language learning performance may vary across skill domains. It is evident that in recent years, relevant research has gradually shifted from simply exploring "whether anxiety affects spoken performance" to further examining the intrinsic relationships and underlying mechanisms among anxiety, enjoyment, learning cognition, and spoken performance.

The third category of research primarily focuses on the impact of new technologies and instructional interventions on foreign language speaking and anxiety, as reflected mainly in 1# "artificial intelligence", 5# "Facebook", and clusters related to teaching practice. With the widespread application of digital and artificial intelligence technologies in foreign language teaching, researchers have begun to utilize these technologies to create more authentic and diverse spoken communication environments, providing learners with more opportunities for language output and interaction. Artificial intelligence technology can reduce communication barriers in traditional spoken language classrooms through methods such as real-time feedback and intelligent dialogue, enabling learners to practice repeatedly in a relatively low-pressure environment, which may alleviate their speaking anxiety and improve their spoken performance. For example, Zhang et al. (2024) and colleagues conducted a 6-week experiment involving 131 Chinese college students. The experimental group used the AI speaking assistant Lora, and the results showed significant increases in Foreign Language Enjoyment (FLE) and Willingness to Communicate (WTC), as well as a significant decrease in Foreign Language Anxiety (FLA); in contrast, the control group did not exhibit any significant changes. It is evident that foreign language speaking instruction in the context of technology-enabled learning has gradually emerged as a new area of research growth, and related research has begun to expand from

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traditional anxiety measurement and correlation analysis toward instructional interventions, emotional regulation, and intelligent language learning.

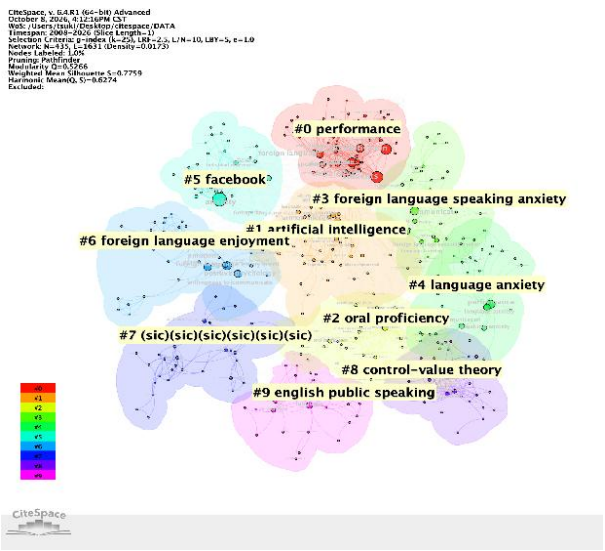


Fig.2 Keyword clustering network.

3.3 Analysis of Research Frontiers

"Burst keywords" refer to the phenomenon of a sudden increase in the citation frequency of keywords over a certain period of time, which reflects research hotspots and development trends in a particular field during that specific period. This study selected the top 25 keywords by emergence intensity (Figure 3). From 2008 to 2013, researchers primarily focused on keywords such as "proficiency", "listening comprehension", and "foreign language classroom", with research emphasizing foreign language learning ability, listening comprehension, and classroom instruction; From 2014 to 2019, keywords such as "attitudes", "education", "classroom anxiety", "positive psychology", and "academic emotions" successively emerged, and research focus gradually shifted toward emotional factors such as learner attitudes, classroom anxiety, and positive psychology; From 2020 to 2023, keywords such as "perceptions", "personality", "foreign language classroom anxiety", "communication", and "context" became prominent, as researchers began to pay closer attention to individual differences among learners, classroom anxiety, and communicative contexts; from 2023 to 2026, "feedback" continued to emerge prominently, from 2025 to 2026, "willingness to communicate" emerged as the latest prominent term, indicating that current research is gradually shifting from learner emotions and anxiety toward feedback and communicative willingness. Overall, research in this field shows a trend of gradually expanding from a focus on language proficiency to emotional psychology, communicative factors, and feedback mechanisms. Consequently, feedback, communicative willingness, and their relationship with emotions in foreign language learning are likely to become important directions for future research.

Top 25 Keywords with the Strongest Citation Bursts

Keywords	Year	Strength	Begin	End	2008 - 2026
proficiency	2008	2.66	2008	2013	
japanese	2008	2.4	2008	2013	
listening comprehension	2009	2.52	2009	2019	
foreign language classroom	2009	2.38	2009	2018	
2nd language	2008	2.17	2009	2009	
comprehension	2010	2.57	2010	2013	
attitudes	2008	2.97	2014	2020	
foreign	2016	4.31	2016	2018	
education	2017	3.26	2017	2021	
classroom anxiety	2009	4.8	2018	2023	
positive psychology	2018	3.69	2018	2022	
academic emotions	2018	3	2018	2021	
self efficacy	2019	3.29	2019	2020	
beliefs	2009	3.14	2019	2023	
perceptions	2011	2.78	2020	2021	
foreign language	2010	2.61	2020	2021	
personality	2008	2.24	2020	2021	
foreign language classroom anxiety	2019	2.67	2021	2023	
communication	2009	2.28	2021	2022	
context	2018	2.2	2021	2021	
foreign language anxiety	2009	2.63	2022	2022	
broaden	2022	2.34	2022	2024	
feedback	2023	2.69	2023	2026	
anxiety	2009	2.47	2023	2023	
willingness to communicate	2023	3.3	2025	2026	

Fig.3 Burst keywords

4. Research Conclusions and Outlook

4.1 Research Conclusions

Overall, the number of publications on foreign language speaking anxiety in international core journals has shown a general upward trend, but the development of this research has been distinctly phased. Research focus has gradually shifted from early studies on language proficiency and classroom anxiety to a comprehensive field that integrates language proficiency, learning emotions, individual differences, communicative contexts, and emerging technological support, covering a broad range of topics. Cluster analysis of research themes and keywords reveals that current research on foreign language speaking anxiety primarily focuses on three areas: foreign language speaking anxiety and language performance, learners' emotions and psychological factors, and technological support and teaching practices. However, the continuity and systematic integration among different research themes still need to be strengthened. Furthermore, existing research methods remain dominated by questionnaires and cross-sectional studies, while long-term tracking and experimental studies in authentic classroom settings are relatively scarce. Therefore, future research should further integrate various influencing factors, focus on the dynamic changes in speaking anxiety within specific tasks and communicative contexts, and conduct intervention studies incorporating new technologies such as artificial intelligence to advance research on foreign language speaking anxiety from "identifying problems" to "explaining and solving problems".

4.2 Research Outlook

First, we should increase our focus on the emerging field of research on foreign language speaking anxiety and further deepen our understanding of this area. Based on an analysis of emerging terms, "feedback" and "willingness to communicate" have become prominent research focuses in recent years, and artificial intelligence has gradually entered this field. Therefore, future research could further examine the relationships between factors such as feedback, willingness to communicate, self-efficacy, and enjoyment of foreign languages and foreign language speaking anxiety, with a particular emphasis on investigating the interactions

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among different emotional variables. At the same time, research on new technologies such as artificial intelligence and virtual reality should be intensified to explore whether technological support can effectively reduce learners' speaking anxiety and enhance their willingness to communicate, thereby further uncovering new growth areas in the study of foreign language speaking anxiety.

Second, it is essential to strengthen the integration of multidimensional research perspectives and methodologies to construct a more systematic theoretical framework. Current research on foreign language speaking anxiety encompasses various aspects, including language proficiency, learning emotions, classroom environments, and communicative factors; however, there has not yet been sufficient theoretical integration among these different research directions. Future research should strengthen the connections between different variables, gradually shifting from studies of simple relationships to systematic research. At the same time, research methods such as longitudinal studies, experimental research, classroom observations, and interviews should be appropriately increased to avoid overreliance on single questionnaire surveys, thereby revealing the development and changes in learners' speaking anxiety and its underlying mechanisms from a dynamic perspective.

Finally, the synergistic development of theoretical research and teaching practice must be promoted to ensure the sustained development of research on foreign language speaking anxiety. The connection between research findings and foreign language teaching practice should be strengthened, applying research insights to task design, feedback methods, emotional regulation, and communicative activities in speaking classrooms, thereby providing theoretical foundations and practical guidance for teachers to reduce students' speaking anxiety and enhance learners' willingness to communicate. Through the synergistic advancement of academic research, theoretical construction, and teaching practice, research on foreign language speaking anxiety can be further promoted toward greater systematization, depth, and practical application.

5. Concluding Remarks

This study comprehensively applied the CiteSpace scientific knowledge graph analysis method to examine and analyze the evolution and key research topics in the field of international research on foreign language speaking anxiety. The study found that, after years of development, academic research in the field of international foreign language speaking anxiety has formed a relatively rich and systematic theoretical framework and empirical research pathways. However, it is also essential to clearly recognize the current shortcomings in this field. For instance, existing research remains insufficient in emerging areas and the application of new technologies; there is a lack of sufficient theoretical integration among different research directions; research methods have certain limitations; and there is a lack of coordinated development between theoretical research and teaching practice. In the future, research on international foreign language speaking anxiety should further deepen research themes, refine research methods, and strengthen theoretical integration, thereby continuously laying a solid theoretical foundation and practical support for the field.

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