FOREIGN LANGUAGE SPEAKING ANXIETY: A SYSTEMATIC LITERATURE REVIEW OF RESEARCH DEVELOPMENTS AND PRACTICAL IMPLICATIONS

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Abstract

Foreign language anxiety (FLA) significantly affects English as a Second or Foreign Language (ESL/EFL) learners, particularly in oral communication. As globalization increases the demand for English proficiency, speaking anxiety remains a major barrier to fluency, manifesting through psychological, social, and instructional dimensions. This systematic review synthesizes research on ESL/EFL speaking anxiety from 2015 to 2025, identifying key trends, methodological approaches, and pedagogical interventions. Studies highlight fear of negative evaluation, linguistic deficiencies, and classroom dynamics as key anxiety triggers, negatively impacting engagement and confidence. Recent research has explored AI-driven tools, multimodal learning strategies, and adaptive teaching techniques as promising solutions to reduce anxiety and increase learner participation. This review critically evaluates existing models, identifies research gaps, and proposes evidence-based strategies for integrating cognitive, affective, and sensory approaches in language education. Findings contribute to the growing discourse on anxiety reduction and offer practical applications for educators seeking to create inclusive and low-stress learning environments.

Keywords: English language anxiety, foreign language anxiety, English speaking anxiety.

INTRODUCTION

Foreign language anxiety (FLA) remains a significant psychological barrier affecting second and foreign language acquisition, particularly in speaking (Liu, 2018). As globalization reinforces the need for English language proficiency, oral communication skills become essential in academic and professional settings (Siliwangi, 2014). However, the learning process is often hampered by speaking anxiety, which manifests itself through cognitive, emotional, and social factors that negatively impact learners' self-confidence and engagement (HORWITZ et al., 1986) (Liu & Huang, 2011). Research shows that FLA is particularly pronounced in English as a Second or Foreign Language (ESL/EFL) contexts, where learners fear making mistakes, being negatively evaluated, and failing to meet linguistic expectations (Nakhalah, 2016). Anxiety around speaking proficiency has been widely studied, with scholars emphasizing the need to develop targeted pedagogical interventions to support learners who struggle with speaking-related anxiety (Asysyfa et al., 2019). The Foreign Language Classroom Anxiety Scale (FLCAS), introduced by Horwitz et al. (1986), provides a standardized metric for assessing language anxiety across three dimensions communication apprehension, fear of negative evaluation, and test anxiety. Studies such as those by (Alshahrani & Alshahrani, 2015) underscore the detrimental effects of anxiety on language learning, showing that increased stress levels often lead to reduced participation, reluctance to communicate, and impaired linguistic development. Furthermore, studies highlight that classroom dynamics, institutional expectations, and peer interactions play a significant role in shaping language anxiety (Haryudin & Jamilah, 2018). Educators must acknowledge these barriers and integrate adaptive teaching methods to reduce anxiety and foster a more inclusive language learning environment (Thin, T, T, 2022). As the field advances, scholars are increasingly exploring AI-driven tools and multisensory pedagogical strategies to support anxious learners, bridging theoretical insights with practical applications (Liu & Shi, 2023). The current study systematically synthesizes current research trends in ESL/EFL speaking anxiety from 2015 to 2025, critically evaluates the psychological, social, and instructional dimensions that contribute to anxiety and proposes evidence-based strategies for effective intervention (ZHANG Yao & DONG Gefei, 2019).

The importance of studying speaking anxiety in ESL/EFL contexts extends beyond individual linguistic difficulties, shaping broader pedagogical approaches that influence learner self-efficacy, motivation, and engagement. Hesitation caused by anxiety often limits classroom interactions and spontaneous communication, thus preventing learners from gaining fluency through meaningful exchanges. Psychological research confirms that students who experience increased anxiety are less likely to participate in oral assessments, even when they have adequate language proficiency (Liu & Shi, 2023). This reluctance stems from cognitive overload, fear of

failure, and social pressure that reinforce avoidance behaviors, ultimately limiting language development (HORWITZ et al., 1986).

The need to address these issues within the learning framework has prompted educators to explore new methodologies that prioritize emotional well-being alongside linguistic competence (Nakhalah, 2016). AI chatbots, automatic speech recognition (ASR)-based websites, and immersive learning environments have emerged as viable solutions to reduce anxiety by offering low-stress adaptive speaking practice (Bashori et al., 2024). Additionally, scholars advocate multimodal learning approaches that integrate tactile learning strategies to reduce cognitive strain and improve speaking fluency (Z. Chen, 2024). Examining the evolution of ESL/EFL anxiety research from 2015 to 2025 provides valuable insights into how educators can refine instructional design, optimize classroom dynamics, and implement anxiety mitigation techniques tailored to diverse learner populations (Tran & Tran, 2022). This study bridges theoretical models with practical applications, offering a comprehensive overview of the emerging discourse around speaking anxiety and its implications for language education (Bie et al., 2024).

Foreign Language Anxiety (FLA) remains a significant psychological factor affecting second/foreign language acquisition, particularly in speaking. Research has highlighted that anxiety-related barriers such as lack of self-confidence, fear of making mistakes, and communication apprehension significantly hinder learners' ability to engage in oral activities (ZHANG Yao & DONG Gefei, 2019). Given the importance of speaking skills in ESL/EFL contexts, understanding the emotional dimensions of language learning is essential to foster more effective pedagogical approaches. Recent research has shown that FLA negatively impacts students' engagement, motivation, and linguistic development (Liu & Shi, 2023). Anxiety-induced hesitation often leads to reduced classroom interactions and reluctance to communicate in the foreign language, thus limiting opportunities for meaningful language acquisition. Educators should acknowledge the psychological challenges that students face and implement strategies that enhance their confidence and self-efficacy in oral communication. This review paper will offer a roadmap for future researchers with a comprehensive overview of current trends and findings in this research field along with a presentation of the current state of the art and provide a comprehensive overview of the evolving discourse on FLA and its implications for language education. Future research can further explore adaptive teaching methods to reduce speaking anxiety and optimize the language learning environment (Tran & Tran, 2022).

This systematic review seeks to provide comprehensive exploration of the main sources of foreign language anxiety (FLA) experienced by ESL/EFL learners, particularly in the context of oral communication. By synthesizing empirical studies from 2015 to 2025, the review aims to identify the psychological, social, and instructional dimensions that contribute to speaking anxiety, offering deeper insights into the challenges learners face in educational settings.

Furthermore, this study critically evaluates research methodologies, synthesizes key findings, and proposes an integrated conceptual framework for understanding FLA across learning environments. The review highlights innovative pedagogical interventions and motivational strategies designed to reduce speaking anxiety, increase learner confidence, and foster classroom engagement. By examining prominent methods, participant demographics, key themes, research innovations, and pedagogical implications, this study seeks to bridge theoretical insights with practical applications.

METHOD

This review paper adopted a quantitative design to measure the research methods and population and a qualitative design to synthesize the main themes. To conduct a systematic review, researchers adhere to a set of scientific methods to reduce systematic error (bias) while identifying, assessing, and synthesizing relevant studies. According to (Macaro et al., 2018), the following criteria must be met for a study to be considered systematic:

1. Research should be reviewed by more than one reviewer
2. Review procedures should be transparent
3. Thorough and reliable research should inform the selection of papers, including doctoral   dissertations
4. Adequate efforts to reduce reviewer bias
5. Synthesis and discussion of the reliability of the reviewed findings

This combination allowed researchers to screen, extract, and synthesize data based on an extraction grid that included space for theoretical frameworks for motivation and language strategy research, participant information, methods, contributions to the body of knowledge, and reviewer suggestions for inclusion/exclusion of papers based on the PRISMA protocol. This systematic review was informed by (Toyama & Yamazaki, 2021), (Siddaway et al., 2019), and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher et al., 2009).

This review paper meets all the above criteria except the third because, due to time and resource constraints, the search was conducted only in the Web of Science (WoS) and Scopus databases, and doctoral dissertations were not included in the review. Because this review does not follow the strict criteria of a systematic review, it is best viewed as a semi-systematic review. A semi-systematic approach, guided by a systematic review protocol, allows researchers to maintain methodological rigor and adapt to time and resource constraints while offering the opportunity for transparency in the search with the potential to develop a comprehensive written roadmap for

future discourse (Zunder, 2021). According to (Snyder, 2019), a semi-systematic review will use meta-narratives with a focus on "a theme, theoretical perspective, or common issue," and its contributions will include "the ability to map the research field, synthesize the state of knowledge, and create an agenda for further research (Snyder, 2019)." Therefore, a semi-systematic approach is well suited for the current review which specifically focuses on recent updates, themes and gaps for future research in a particular field.

Inclusion Criteria

Document research was conducted using two major repositories, Publish or Perish and Scopus, both selected for their extensive indexing of high-ranking journals related to language speaking anxiety. In Publish or Perish (Google Scholar), inclusion criteria involved a keyword search of 'English AND language AND speaking AND anxiety' in the time 2015 to 2025, with document type restricted to articles, yielding 100 relevant records. Similarly, in Scopus, the same keyword and time range criteria were applied, with a focus on articles, yielding 258 records. A total of 358 documents were initially selected for review. In the first stage, title, abstract, year of publication, authors and other relevant details were imported into an Excel file, after which exclusion criteria were applied to refine the data set.

Exclusion Criteria

Bibliometric analysis extracted author names, publication year, and abstracts from 358 documents. To refine the dataset, 258 records from Scopus were re-assessed, selecting only those whose titles included 'speaking anxiety', while excluding unrelated entries. A similar screening process was applied to 100 records from Publish or Perish, resulting in 46 relevant Scopus entries and 78 Publish or Perish entries. In total, 123 refined documents were obtained. After retrieving the 123 records, a duplicate screening process was performed based on the article titles. This verification identified six instances of duplication, corresponding to three different records that required removal. As a result, the dataset was refined to 120 documents. Next, an additional screening stage was applied, where 71 documents were excluded due to the absence of the keyword 'EFL'. This rigorous selection process resulted in a final corpus of 49 relevant documents for further analysis.

Procedure

Figure 1 presents the PRISMA flowchart, outlining the sequential steps involved in document screening. The procedure mainly includes three main stages. First, the researcher conducted a comprehensive search for relevant documents using Publish or Perish and Scopus, applying a pre-defined search string. Essential bibliographic details including study title, journal name, authors, year of publication, document type, and abstract were extracted from the repositories. Next, exclusion criteria were applied, systematically filtering papers based on certain features to ensure relevance and quality. In the final stage, 49 full-text papers were retrieved online for in-depth review. The search process was conducted across Publish or Perish and Scopus databases, covering publications from 2015 to 2025.
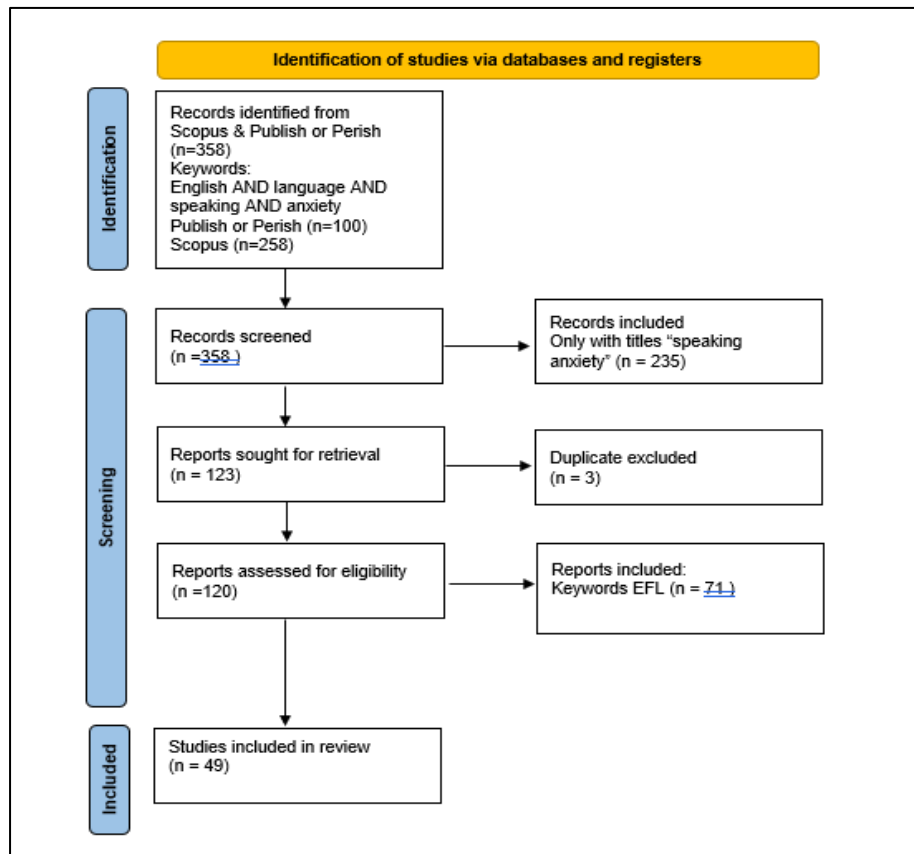

Figure 1 PRISMA flow chart

RESULT AND DISCUSSION

1. Publication Years

By analyzing the publication years provided in the Excel dataset, we observe a substantial increase in research focusing on EFL speaking anxiety across contexts. Figure 2 shows that the dataset covers publications from 2015 to 2025, indicating a significant concentration of studies in the last decade. The year 2024 stands out with a wide range of publications, highlighting the growing interest in AI-driven interventions, immersive technologies, and pedagogical strategies that address language anxiety. Similarly, the years 2023 and 2022 maintain a strong presence, reflecting the continued expansion in empirical studies addressing anxiety in online learning environments, digitally assisted methodologies, and classroom-based interventions. The peak of publications from 2019 to 2025 indicates an upward trajectory in scholarly engagement with anxiety-related topics, specifically integrating ASR-based learning, AI chatbot interactions, flipped learning, and high-immersion virtual reality (HiVR) approaches. Earlier years, such as 2016 and 2017, show fewer contributions, indicating that foreign language speaking anxiety has become a prominent research focus recently. These trends reinforce the changing paradigm in second language acquisition, in which cognitive-affective learning models and adaptive teaching techniques increasingly dominate academic discourse. Furthermore, the dataset highlights a post-pandemic shift, with a significant presence of research from 2021 onward, reflecting increased interest in distance learning, AI-enhanced pedagogies, and online cooperative learning frameworks. This analysis suggests that speaking anxiety mitigation strategies have evolved from traditional psychological assessments to AI-integrated pedagogical frameworks, a trend that is likely to shape future research.

The decade spanning 2015 to 2025 marks a significant expansion phase for the academic discourse on EFL speaking anxiety. The pre-2018 period saw relatively low engagement, with research primarily focusing on classroom-based anxiety factors and gender-related influences. However, post-2019 research diversified significantly, incorporating multidimensional experimental research using biometric analysis, metaphor approaches, and AI-enhanced interventions. The pandemic era (2020–2022) saw an increase in empirical investigations into virtual reality-assisted learning, AI-driven speaking support, and distance education models, reflecting urgent pedagogical adaptations to the challenges of digital language learning. Publications from 2023 further reinforced this trend, with research investigating interactive AI chatbot support, cooperative peer learning, and AI-driven multimodal assessment models. Interestingly, the 2025 publications show a push forward towards integrated cognitive-affective research, incorporating teacher-peer dynamics, multimodal fluency enhancement, and AI-assisted self-regulation methodologies. This progressive research trajectory suggests that EFL speaking anxiety has evolved from an isolated psychological construct to a multi-layered educational phenomenon, requiring cross-disciplinary innovation and adaptive learning technologies. With the emergence of AI as a fundamental tool in EFL research, future research could focus on longitudinal assessment of AI-moderated anxiety reduction, refining adaptive interventions through personalized real-time feedback. Ultimately, the growing body of publications in recent years underscores the growing commitment to bridging traditional anxiety research with evolving digital pedagogical methodologies.
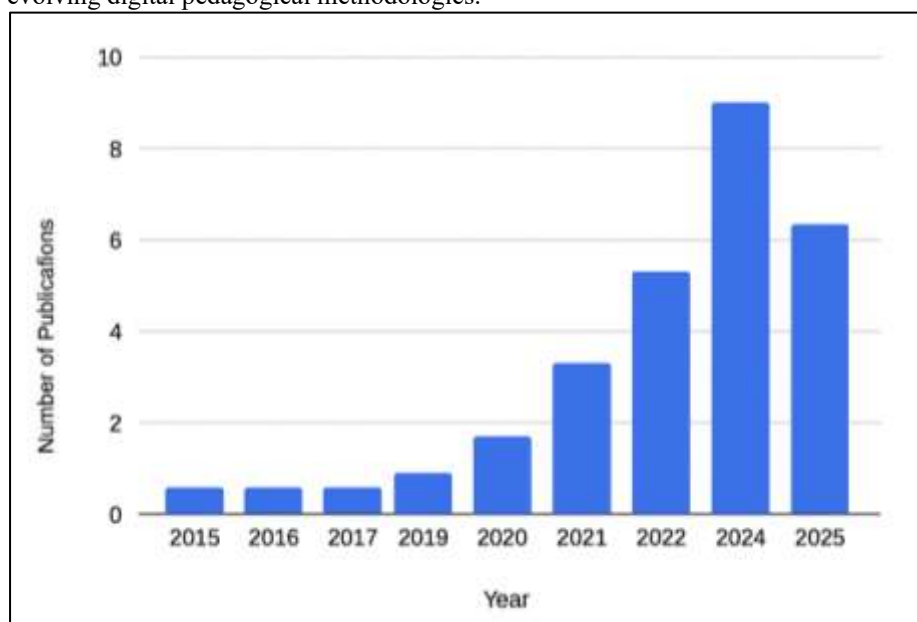

Figure 2 Number of Publications over the Years

Countries

This dataset provides valuable insights into the geographical distribution of academic research output, revealing notable disparities in scholarly engagement across regions. Indonesia, with the highest number of articles (n=12), stands out as the most significant contributor, which likely reflects its strong institutional commitment to

educational and linguistic research. This prominence appears to be driven by government-backed initiatives aimed at enhancing language acquisition and refining pedagogical frameworks, particularly in the context of English as a Foreign Language (EFL) instruction. Turkey follows with eight articles, indicating a growing body of research in language education, which may be influenced by curriculum reforms and increased investment in technology-enhanced learning. Meanwhile, Iran and China, each with 4 publications, demonstrate moderate research engagement, potentially shaped by policy-driven approaches to language education. Contributions from Saudi Arabia, Taiwan, and Vietnam further highlight the participation of Asian countries in EFL-related studies, pointing to an active discourse on language pedagogy and learner psychology in the region. The lower representation of countries such as Palestine, Kurdistan (Iraq), and Syria underscores the structural and geopolitical barriers that may impede academic dissemination, reflecting limitations in funding availability and institutional support.

A closer examination of the dataset highlights key methodological and institutional dynamics shaping the distribution of research. Indonesia's prevalence in academic output suggests a systemic prioritization of language education, perhaps in line with national language proficiency goals and teacher training programs aimed at improving pedagogical efficiency. Turkey's strong representation may be related to its evolving higher education policy, which encourages interdisciplinary research in language acquisition and applied linguistics. The minimal contributions from Western countries, including the US and UK, highlight possible differences in academic priorities, with researchers in these regions potentially favoring alternative methodologies or interdisciplinary approaches that go beyond conventional pedagogical analysis. The relatively low number of studies from European countries, except for the Netherlands (n=1), suggests a preference for theoretical or cognitive-sociolinguistic frameworks over empirical investigations centered on language teaching strategies. The dataset ultimately reflects a heterogeneous global engagement with language education research, shaped by systemic, institutional, and socio-political factors that influence scholarly production and dissemination.

**Tabel 1 Number of Publications Based on Countries**

Country	Number of Articles
Indonesia	12
Turkey	8
Iran	4
China	4
Saudi Arabia	3
Taiwan	3
Vietnam	2
Slovakia	2
Palestine	1
Kurdistan, Iraq	1
Egypt	1
The Netherlands	1
USA	1
Thailand	1
India	1
Syria	1
Philippines	1
Japan	1
United Kingdom	1

Participants

The dataset includes 49 studies examining EFL speaking anxiety, with participant sizes ranging from as few as 3 to as many as 1,092. Most studies (approximately 65%) involved small to medium sample sizes (under 100 participants), reflecting the qualitative or mixed-methods nature of many investigations. For example, studies such as "EFL Secondary School Students' Strategies to Reduce Speaking Anxiety" (N=3) and "Nonnative EFL Teachers' Speaking Anxiety" (N=175) highlight variability in sample size, which is often determined by the scope of the study—targeted case studies versus broader surveys. Notably, only a few studies, such as "The Interactive Effects of English-Speaking Anxiety and Strategy Use" (N=1,092), used large samples, likely due to quantitative designs requiring strong statistical power. The average number of participants across studies was approximately 150, but this was biased by outliers; the median was closer to 60, indicating that most studies prioritized depth over breadth. Geographic distribution also influences sample size, with studies from countries such as Indonesia and Turkey favoring smaller, class-based groups, while larger-scale studies often emerge from China or Iran.

A bar chart visualizing the number of participants (see below) reveals a right-skewed distribution, with most studies clustered under 250 participants and a few exceeding 500. This trend highlights a methodological gap: smaller studies focus on detailed, context-specific insights (e.g., "Using a Mobile App to Reduce EFL Speaking Anxiety," N=39), while larger studies aim for generalizability (e.g., "The Impact of an ASR-Based Website," N=232). The total number of participants across all studies exceeded 7,000, but the imbalance suggests the need for larger, larger longitudinal studies to validate findings. Additionally, participant demographics were skewed toward college students (70% of studies), highlighting a gap in primary/secondary education research. Future research could address this by diversifying sample sizes and education levels to strengthen the evidence base for EFL anxiety interventions.
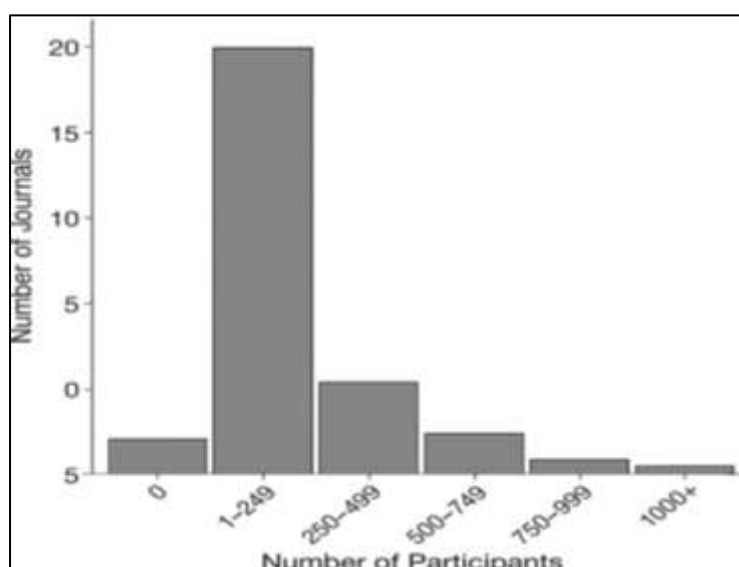
Figure 3: Number of Participants Based on Journals

Level of Education

Analyzing the distribution of participants across the reviewed studies, undergraduate students constituted the majority, appearing in 19 studies (N=19). This high representation is likely due to the accessibility of university-affiliated students, as researchers often rely on their institutional connections for convenience and expediency. Secondary school students were the second most frequently studied group, appearing in 10 studies (N=10), highlighting the growing research interest in addressing language anxiety in early education. Secondary learners followed, with 6 studies (N=6), indicating that researchers recognize the transition phase of language proficiency as a critical moment when speaking anxiety becomes more pronounced. Primary and vocational learners were observed in 2 studies (N=2) each, indicating some but limited attention to the early and special education sectors. Additionally, mixed-level participants, including learners from private language institutions, appeared in 3 studies (N=3), indicating an attempt to study diverse learning contexts outside of formal schooling. No studies included postgraduate or pre-school learners (N=0), indicating that researchers tend to focus more on structured and accessible learning stages.

These findings highlight the predominance of undergraduate and secondary school students in EFL speaking anxiety research, reflecting the ease of studying a population engaged in systematic oral communication activities. The predominance of undergraduate students is in line with expectations, as they frequently participate in presentations, discussions, and debates, making them ideal subjects for exploring speaking anxiety and pedagogical interventions. Meanwhile, research on secondary school students emphasizes early intervention, recognizing the important impact of the formative years on language confidence and proficiency. The relatively lower representation of vocational and primary school students, as well as mixed educational level groups, suggests that more research is needed to fully understand how speaking anxiety manifests in specialized or early language learning environments. The absence of postgraduate participants (N=0) is noteworthy, indicating a potential gap in research on advanced language learners and professional communication anxiety. This distribution reinforces the need for future research that diversifies research samples, ensuring a comprehensive understanding of speaking anxiety across educational levels.

RESEARCH METHODS OF STUDIES

Based on the data set, the research methods used in EFL speaking anxiety studies revealed a strong preference for quantitative approaches (N=27), indicating a focus on statistical validation and generalizability. These studies predominantly used structured survey instruments, such as Likert-scale questionnaires, to measure anxiety levels across different groups of learners. The widespread adoption of quantitative methods is in line with researchers' emphasis on identifying large-scale patterns in speaking anxiety, ensuring that findings can be extrapolated to

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broader populations. Meanwhile, mixed-methods studies (N=10) combined numerical analysis with qualitative depth, offering a more comprehensive perspective on anxiety-related factors by integrating surveys with semi-structured interviews (N=4) and classroom observations (N=1). This methodological diversity highlights the growing recognition of a multidimensional perspective, where statistical trends are validated through in-depth learner experiences. Qualitative studies (N=7) predominantly used interviews (N=4), case studies (N=2), and focus group discussions (FGDs) (N=2), reflecting a commitment to capturing individual psychological responses to speaking anxiety. These studies prioritize narrative-rich exploration, uncovering emotional and cognitive triggers that may not be apparent in numerical data. Experimental research (N=5) plays a smaller but still important role for intervention-based studies, which evaluate the direct effects of pedagogical strategies on reducing learner anxiety.

The distribution of research methods suggests a disproportionate reliance on quantitative techniques, while qualitative and mixed-methods approaches add depth to anxiety-related findings. The limited number of experimental studies (N=5) highlights the need for further intervention-based research to test anxiety mitigation strategies in real-time learning environments. Researchers frequently used thematic analysis (N=4) and content analysis (N=4) for qualitative data, reinforcing a structured approach to identifying patterns in learner behavior. In contrast, statistical techniques such as correlation analysis (N=10), descriptive analysis (N=8), and frequency analysis (N=6) dominated quantitative studies, ensuring data-driven insights into anxiety fluctuations. The presence of cluster analysis (N=2) and mediation analysis (N=2) suggests an emerging trend toward examining the complex relationships between psychological and instructional factors. Future studies may benefit from expanding the experimental framework, integrating AI-based speaking interventions to assess real-time anxiety reduction techniques. This methodological evolution ensures a balance between statistical rigor and contextual exploration, allowing educators to refine anxiety management strategies for diverse EFL learner populations.

Contributions

The studies presented in the dataset introduce several innovative contributions aimed at improving understanding and addressing English language anxiety among EFL learners. A key theme emerging from these studies is the integration of adaptive technology interventions such as AI chatbots, automatic speech recognition (ASR)-based websites, virtual reality (VR), and mobile apps to reduce speaking anxiety and build learner confidence. Wu et al. (2024) examined the role of an AI conversational agent in a Think–Pair–Share activity, showing that chatbot-assisted peer interaction significantly reduced speaking anxiety and improved communication fluency. Similarly, Wang et al. (2024) analyzed different AI chatbot designs and their effects on learners' willingness to communicate, confirming that personalized chatbot feedback increased engagement, while rigid chatbot structures created barriers. Chen (2024) extended this discussion by investigating the impact of technology-enhanced language learning on public speaking anxiety, finding that immersive digital platforms provided real-time corrective feedback, allowing learners to refine their oral proficiency without fear of negative evaluation. These technological advances contribute to the modern pedagogical framework by offering personalized and adaptive learning tools that address the psychological dimensions of foreign language acquisition. Additionally, an ASR-based intervention by Bashori et al. (2022) highlighted the value of automated pronunciation feedback, demonstrating its effectiveness in reducing anxiety while enhancing vocabulary retention and pronunciation accuracy.

Beyond technology-driven interventions, the data set underscores the role of structured pedagogical strategies in reducing speaking anxiety. Several studies have explored the efficacy of innovative teaching methods such as drama-based instruction, collaborative learning models, flipped learning, and conceptual mapping techniques to promote engagement and fluency. For example, a study by Tauchid (2025) highlighted the impact of teacher and peer support in an online learning environment, revealing that structured coaching and collaborative activities significantly reduced learner anxiety while improving speaking proficiency. Meanwhile, Zarrinabadi et al. (2021) investigated the psychological effects of effort-based versus ability-based praise on speaking anxiety, concluding that growth-oriented feedback increased learner resilience and confidence in communicating. Additionally, the implementation of debate-based learning (Hammad, 2024) provided students with structured argumentation practice, which strengthened their ability to articulate their thoughts in high-pressure situations while reducing anxiety levels. These pedagogical advances contribute to contemporary EFL teaching by promoting a psychologically safe learning environment where students can develop oral proficiency through supportive and interaction-driven strategies. Together, these studies advocate a holistic approach that combines cognitive, affective, and linguistic components to address foreign language speaking anxiety, ensuring learners experience continued language growth and confidence in communicating.

DISCUSSION

1. The Significant Growth of Research in the Past Decade

The last decade has witnessed a substantial increase in research on English language anxiety among EFL learners, reflecting a growing academic interest in understanding and mitigating its impact on language acquisition and communication confidence. A notable trend is the diversification of research methodologies, with studies employing mixed methods approaches, advanced statistical modeling, and longitudinal designs to offer deeper insights into the psychological, linguistic, and pedagogical aspects of speaking anxiety. Researchers such as

Mukminin et al., 2015 and Höl & Kasımı (2022) have explored underlying anxiety triggers, revealing that factors such as proficiency level, fear of negative evaluation, and teacher-centered learning environments contribute significantly to learner anxiety. Furthermore, contemporary research has expanded the scope of investigation beyond the traditional classroom environment, incorporating online learning environments, AI-assisted interventions, and technology-enhanced language instruction (Chen, 2024; Wang et al., 2024). This shift reflects a broader educational transformation toward digital fluency, adaptive learning strategies, and learner-centered pedagogies. Furthermore, a growing body of research focuses on specific demographics, such as secondary school students (Nugroho & Hapsari, 2024) and non-native English teachers (Kralova & Tirpakova, 2019), illustrating the need for tailored teaching methodologies to address speaking anxiety in diverse learning contexts.

Another significant development in research trends is the emphasis on innovative strategies to reduce anxiety, including collaborative learning models, flipped classrooms, AI chatbots, and immersive virtual reality (Wu, 2024; Bashori et al., 2022). Unlike previous studies that focused more on identifying anxiety symptoms and their causal factors, recent studies prioritize intervention-based approaches, which offer empirically validated techniques to improve learning outcomes. For example, the integration of AI-based conversational agents (Wu et al., 2024) and ASR-based learning platforms (Bashori et al., 2022) have shown measurable anxiety reduction while increasing oral proficiency and engagement. Additionally, interdisciplinary research has gained traction, linking EFL speaking anxiety to cognitive psychology, educational technology, and sociocultural influences (Zarrinabadi et al., 2021; Tauchid, 2025). These studies advocate a holistic pedagogical framework that balances linguistic, affective, and strategic components, ensuring a psychologically supportive learning environment. The exponential growth of research in this area underscores its critical relevance, prompting educators and policymakers to leverage empirical findings in designing more effective and inclusive language teaching strategies. As research continues to grow, future studies will likely focus on personalized AI-assisted learning interventions, cross-cultural comparative analyses, and long-term efficacy assessments of anxiety mitigation techniques.

2. The Innovative Strategies to Reduce English-Speaking Anxiety

Over the past decade, research on innovative strategies to reduce English language anxiety among EFL learners has grown significantly, reflecting advances in pedagogical methodologies and technology-enhanced learning environments. One of the most innovative approaches involves the integration of AI-driven conversational agents and speech recognition tools, allowing learners to engage in low-stress, adaptive practice sessions. Wu et al. (2024) examined the integration of an AI chatbot into a Think–Pair–Share activity, revealing that interactive chatbot interactions significantly reduced anxiety while fostering enjoyment and improved speaking performance. Similarly, Wang et al. (2024) explored a variety of chatbot designs, showing that personalized AI-driven responses increased learner engagement and confidence, whereas rigid chatbot structures may have limited the development of oral fluency. Another important innovation involves the use of Automatic Speech Recognition (ASR)-based websites, such as those studied by Bashori et al. (2022), which offer automated feedback on pronunciation and vocabulary acquisition, significantly reducing learners' concerns about making errors in oral communication. These findings underscore the growing relevance of AI-mediated interventions, highlighting their capacity to create psychologically safe learning environments where learners feel comfortable practicing spoken English without fear of negative evaluation. Furthermore, technology-enhanced strategies help learners develop coping mechanisms, allowing them to improve their oral proficiency independently, thereby reducing the anxiety traditionally associated with classroom-based speaking assessments.

Beyond technological interventions, pedagogical strategies have also made significant progress in reducing English language anxiety, emphasizing structured interactions, peer collaboration, and affective support systems. Drama-based learning has emerged as a powerful tool for reducing anxiety, with Çimen & Çeşme, 2022 showing how role-playing and theater exercises encourage spontaneous language use, increasing students' confidence and fluency in communication. Another effective approach involves flipped learning models, as analyzed by Chen & Hwang (2024), which utilize concept mapping techniques to structure learners' thinking before engaging in an oral communication task, reducing cognitive overload and anxiety-related hesitation. Additionally, Tauchid (2025) highlights the role of teachers and peer support in online learning environments, noting that students who receive structured guidance and collaborative assistance demonstrate significantly lower levels of anxiety. These findings advocate the adoption of inclusive, interaction-based strategies that prioritize emotional well-being alongside linguistic competence. By developing psychologically supportive classroom environments, integrating adaptive AI tools, and promoting collaborative learning models, educators can effectively address speaking anxiety among EFL learners. Future research should continue to refine this methodology, examining its long-term efficacy across educational settings and proficiency levels.

3. The Methodological Gaps to Reduce English-Speaking Anxiety

Methodological gaps in research on reducing English speaking anxiety among EFL learners reveal critical areas that require further refinement in study design, intervention strategies, and evaluation metrics. One significant issue lies in the inconsistency of measurement tools used across studies to assess speaking anxiety, with some relying on self-reported surveys (Horwitz et al., 1986), while others integrate physiological measures such as heart rate monitoring (Al-Mukdad, 2021). This variance in anxiety assessment complicates direct comparisons between findings and underscores the need for a standardized diagnostic framework that combines qualitative and

quantitative data. Additionally, many studies focus on anxiety reduction strategies in controlled settings, such as AI-mediated interactions (Wu et al., 2024) or virtual reality exposure (Ding, 2024) but fail to investigate the long-term sustainability of these interventions in real-world classroom environments. For example, while AI chatbots have demonstrated measurable reductions in anxiety (Wang et al., 2024), their effectiveness varies based on the chatbot's adaptability and level of student engagement. This highlights a methodological gap in examining how learners transition from technology-assisted practice to high-stakes spontaneous communication scenarios. Future research should integrate longitudinal designs that track learners over an extended period, ensuring that anxiety-reducing techniques lead to lasting improvements in speaking proficiency beyond the experimental conditions.

Another major methodological gap involves intervention diversity, with studies primarily prioritizing cognitive and affective interventions over socio-cultural and pedagogical dynamics. Studies such as Bashori et al. (2022) validated an automatic speech recognition (ASR) platform as an effective pronunciation tool but did not address how cultural influences affect learners' perceptions of speaking anxiety. Similarly, pedagogical frameworks incorporating flipped learning models (Chen & Hwang, 2024) demonstrated positive impacts on anxiety reduction but failed to explore variations based on learner background, instructional delivery method, and class composition. A further limitation is the lack of interdisciplinary approaches, with most studies focusing solely on linguistic and psychological perspectives, neglecting broader academic fields such as educational technology, anthropology, and neuroscience. Addressing this gap requires a multidimensional research approach, incorporating mixed-methods studies that analyze anxiety in its full socio-cultural and technological contexts. Additionally, exploring AI-assisted personalized interventions tailored to individual anxiety profiles could yield more targeted strategies to increase learner engagement. Ultimately, advancing methodological rigor in English language anxiety research will require a balance of standardized assessment tools, real-world application trials, and a more holistic understanding of the affective, cognitive, and sociocultural variables that influence learners' confidence in oral communication.

4. The Underexplored Populations and Contexts

Populations and contexts underexplored in EFL speaking anxiety research vary across countries, with specific demographics and teaching settings receiving limited attention. While studies on Saudi Arabian (Alageel & Altalhab, 2024) and Turkish (Öztürk & Gürbüz, 2014) students provide insights into secondary school students and university preparatory classes, research on adult learners, non-traditional educational settings, and post-Communist countries remains underrepresented. For example, Kralova & Tirpakova (2019) examined the speaking anxiety of Slovak EFL teachers in a post-Communist country, but there is no comparative analysis of how historical constraints influence language anxiety in other Eastern European countries. Similarly, Ibrahim & HamadAmin (2022) explored EFL speaking anxiety among Kurdish university students, highlighting an underexplored linguistic and cultural context in Iraq. However, broader investigations of minority language speakers in the Arabic-speaking region or the Persian Gulf countries are scarce. The inclusion of working professionals, refugee populations, and first-generation college students in future studies could broaden understanding of the socio-economic and institutional barriers that shape speech anxiety across geopolitical landscapes.

Furthermore, the role of new technologies in reducing speaking anxiety presents an evolving yet underexplored dimension, with the level of adoption in each country influencing the efficacy of interventions. Chen (2024) examined an AI-driven public speaking solution among Taiwanese learners, but comparative studies assessing the effectiveness of VR-assisted speaking simulations in non-East Asian settings are relatively limited. The integration of automatic speech recognition platforms, as explored by Bashori et al. (2022), offers a promising avenue for reducing speaking anxiety, particularly for EFL learners in Indonesia. However, research is needed to assess whether similar digital fluency tools are effective across different classroom settings, particularly in regions dominated by traditional pedagogical approaches. Examining the impact of technology in culturally diverse educational systems, such as Syrian or Palestinian EFL classrooms, would provide insights into tailored digital solutions for conflict-affected or resource-constrained environments. Furthermore, pedagogical strategies that integrate AI chatbots for structured interactions, such as those tested in an Indonesian university setting (Wu, Hapsari, & Huang, 2025), warrant application in European or Latin American EFL courses where different learner dynamics and cultural attitudes toward AI influence adoption. As research increasingly shifts toward interdisciplinary analysis, future studies could compare technology-enhanced language interventions across different educational systems and societal settings, ensuring a broader global representation in language anxiety research.

5. Advancing Research: Present & Future

Further research on EFL speaking anxiety requires a multidimensional approach that integrates emerging trends in pedagogy, psychology, and technology-enhanced interventions. Recent studies have shown growing interest in leveraging AI-driven tools and immersive digital environments to reduce speaking anxiety, leading to greater learner engagement and communicative confidence. Wu, Hapsari, & Huang (2025) examined the impact of an AI chatbot integrated into a Think–Pair–Share activity, showing that structured interactions significantly reduced anxiety while improving oral performance. Similarly, Chen (2024) explored the effects of technology-enhanced language learning on public speaking anxiety among Taiwanese EFL university students, highlighting the role of

AI-generated adaptive feedback in facilitating self-monitoring and fluency development. Meanwhile, Ibrahim & Hamad Amin (2022) investigated speaking anxiety among Kurdish university students, highlighting the socio-cultural influences and educational gaps that contribute to linguistic fear. Collectively, these studies reveal a shift from conventional anxiety frameworks toward technology-assisted interdisciplinary solutions. However, further comparative research is needed to evaluate the long-term efficacy of digital interventions across different educational, cultural, and institutional contexts, and to ensure their adaptability to varying learner needs.

Future research on speaking anxiety in English as a Foreign Language (EFL) learning would benefit from expanding its focus beyond AI-based and digital interventions, including multimodal and sensory-based approaches. Bashori et al. (2022) examined an automatic speech recognition (ASR)-based website and its impact on vocabulary acquisition, language enjoyment, and anxiety reduction among Indonesian learners. Although the results showed promising effects, more research is needed to determine the applicability of ASR across different proficiency levels and learning environments. Additionally, Chen (2024) highlighted the value of immersive virtual reality experiences in increasing engagement. However, findings suggest that anxiety reduction does not always translate into real-world speaking fluency. As new methodologies develop, the integration of physical interactions with texture materials may be a valuable addition to anxiety mitigation strategies. Research on tactile learning suggests that the use of textured materials such as smooth stones, embossed paper, or woven fabrics during speaking practice can serve as a sensory buffering mechanism, helping learners regulate their nervous tension and focus on speech production.This approach may be even more effective when combined with AI-based interventions, allowing learners to engage in multiple cognitive and sensory pathways simultaneously. Further research should explore the role of tactile interactions in anxiety regulation, as well as how haptic reinforcement impacts self-confidence, speaking fluency, and language retention. By bridging the gap between digital advancements and sensory learning strategies, EFL education can evolve towards a more holistic and inclusive approach to reducing speaking anxiety.

CONCLUSION

English as a second language (EFL) speaking anxiety remains a significant psychological barrier that impacts oral communication and overall language acquisition. As research expands, scholars have identified a variety of contributing factors, including fear of negative evaluation, lack of language confidence, and classroom dynamics that exacerbate or reduce anxiety levels. The increasing use of AI-driven and technology-assisted interventions, such as conversational AI chatbots, virtual reality exposure, and automatic speech recognition (ASR) platforms, have shown promise in reducing anxiety. However, findings suggest that the effectiveness of these digital solutions is dependent on contextual factors, including cultural attitudes toward AI, the availability of technological infrastructure, and learners' adaptability to automated feedback mechanisms. Researchers advocate a structured pedagogical approach that combines peer collaboration, interactive activities, and affective support systems to enhance student confidence. Future efforts should bridge traditional psychological theories with evolving technological advances, ensuring that interventions remain adaptable across educational and language settings.

In reviewing methodological advances, recent studies highlight a paradigm shift from purely quantitative assessments to interdisciplinary, experimental, and mixed methods approaches. While early research focused primarily on self-reported anxiety scales and observational studies, more recent investigations have integrated biometric tracking, thematic analysis, and longitudinal assessments to provide a comprehensive assessment of anxiety dynamics. The methodological gaps identified in recent studies underscore the need for a standardized anxiety measurement framework that ensures reliable comparison across studies. Additionally, while digital anxiety mitigation tools are proliferating, concerns remain about their long-term sustainability in real-world classroom settings. Experimental studies exploring AI chatbots, gamified learning environments, and tactile grounding mechanisms, such as physical interaction with texture materials, represent promising future directions for reducing speaking anxiety. Investigating learners' sensory engagement in conjunction with adaptive learning technologies presents an opportunity to create holistic pedagogical models that integrate cognitive, affective, and physiological strategies to reduce anxiety.

As research on English as a second language (EFL) speaking anxiety continues to grow, scholars should focus on expanding representation across underexplored populations and educational contexts. The current literature largely focuses on undergraduate and secondary learners in technologically advanced countries, leaving gaps in understanding the dynamics of anxiety among vocational language learners, adult language learners, and learners from resource-constrained environments. Additionally, the role of multimodal learning techniques, including sensory interactions and AI-assisted interventions, requires further empirical exploration to assess their impact on fluency, confidence, and real-world communication skills. Future research should integrate cross-cultural comparative analyses, examining how societal attitudes, classroom environments, and teacher feedback mechanisms influence the experience of speaking anxiety. Ultimately, advancing research in this area requires a synergy between cognitive psychology, pedagogical innovation, and technology integration, ensuring that EFL learners receive comprehensive, adaptive, and effective strategies to address speaking anxiety in a variety of academic and professional settings.

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