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AI chatbot-assisted English learning and willingness to communicate: A narrative meta-synthesis of evidence from Asian English as a foreign language contexts

Budi Waluyo

Walailak University, Thailand

budi.business.waluyo@gmail.com

Damar Isti Pratiwi

Politeknik Perkeretaapian Indonesia Madiun, Indonesia

damar@ppi.ac.i

The growing integration of artificial intelligence (AI) chatbots in English language learning has sparked increasing interest in their potential to enhance learners' willingness to communicate (WTC) in English. Nonetheless, comprehensive syntheses of their impact remain limited. This study presents a narrative meta-synthesis of empirical evidence on AI chatbot-assisted English learning in the Asian English as a Foreign Language (EFL) context, including Iran, South Korea, Taiwan, China, Saudi Arabia, Egypt, Thailand, and Vietnam. A systematic search of prominent databases (Scopus, Web of Science, EBSCO, and Google Scholar) yielded pertinent studies, which were thematically analyzed to synthesize quantitative and qualitative results. The synthesis reveals that regular chatbot interaction enhances WTC, communicative confidence, and motivation by reducing speaking anxiety and providing adaptive, nonjudgmental feedback. Learners reported increased fluency and engagement when using AI chatbots such as Google Assistant, Alexa, and ChatGPT, although technological limitations and limited conversational depth occasionally hindered sustained interaction. Although most studies show moderate to strong short-term effects, evidence on long-term transfer to real-world communication remains scarce. Overall, the findings emphasize AI chatbots as valuable mediators of communicative readiness and confidence among Asian EFL learners, while emphasizing the necessity of longitudinal and context-sensitive research to refine their pedagogical application.

Keywords: AI chatbots; language learning; willingness to communicate; English

Background

Willingness to communicate (WTC), defined as learners' readiness to initiate and sustain interaction in a second or foreign language, is a central construct in communicative language teaching and second language acquisition (MacIntyre et al., 1998, 2025; Yashima, 2002). In many Asian English as a foreign language (EFL) context, nevertheless, WTC is frequently limited by scarce opportunities for authentic communication, heightened anxiety, and low self-confidence. The growing integration of artificial intelligence (AI) in education has begun to transform this situation, particularly through AI-powered chatbots that serve as interactive digital interlocutors. These tools provide structured yet flexible environments for conversational practice, enabling learners to enhance their fluency, accuracy, and confidence while reducing speaking anxiety and increasing engagement (Fathi et al., 2024; Ramana et al., 2024). Research also indicates that chatbot-assisted learning can improve pronunciation, coherence, and lexical precision through adaptive feedback (Yuan, 2024), whereas their perceived social presence helps sustain motivation and interaction (Ebadi & Amini, 2024). Nonetheless, limitations in their adaptability, contextual understanding, and speech recognition continue to challenge their pedagogical effectiveness (Belda-Medina & Kokošková, 2023). Although current evidence supports their role in lowering anxiety and enhancing task performance (Du & Daniel, 2024; Yang et al., 2022), the extent to which chatbots cultivate genuine and sustained WTC remains insufficiently explored.

Recent research at the intersection of text mediation, task-based language learning (TBLL), and AI-mediated communication has created new opportunities to understand how digital tools foster communicative engagement. Voice assistants such as ChatGPT, Google Assistant, and Amazon Alexa can facilitate task-based language learning, such as roleplay and decision-making, whereas supporting mediation processes including paraphrasing, summarizing, and negotiating meaning (Chien et al., 2022; Han, 2020a, 2020b; Ruan et al., 2021; Tai & Chen, 2023). Empirical studies suggest that AI chatbots can simulate authentic conversational contexts that reduce anxiety and lower affective barriers to speaking (Fathi et al., 2024; Zhang et al., 2024). Their nonjudgmental interaction style and ability to provide immediate, personalized feedback promote sustained oral participation, thereby improving fluency, pronunciation, and lexical competence (Kim et al., 2019; Yuan, 2024). In addition, interactive and gamified features have been found to enhance motivation, persistence, and positive attitudes toward language learning (Du & Daniel, 2024; Hapsari & Wu, 2022). Nonetheless, existing research remains fragmented and lacks cohesive synthesis, limiting theoretical insight into how the integration of text mediation, task-based language learning, and AI-driven interaction collectively shapes learners' WTC and communicative confidence (Belda-Medina & Calvo-Ferrer, 2022; Hwang & Chang, 2023).

Even though AI chatbots are increasingly integrated into language classrooms, their effectiveness in fostering authentic and sustained communicative

competence beyond structured tasks remains uncertain. These AI tools may provide patient, judgment-free interlocutors that can reduce anxiety and encourage spontaneous speech, but current evidence offers limited insight into whether such interactions promote genuine communicative ability or simply produce rehearsed, context-dependent responses. Studies have reported improvements in pronunciation, vocabulary, and WTC (Fathi et al., 2024; Kim & Su, 2024; Yuan, 2024); however, persistent gaps in comprehensive corrective feedback, cultural sensitivity, and dynamic turn-taking raise doubts about their capacity to develop pragmatic and sociolinguistic competence. Furthermore, cultural and contextual factors that shape learners' acceptance, motivation, and sustained engagement with chatbots remain underexplored, restricting the generalizability of findings across varied EFL contexts (Hwang & Chang, 2023). Although the pedagogical potential of AI chatbots is widely recognized, unresolved challenges in their design and implementation underline the need for a systematic synthesis of existing evidence to guide the development of more effective and contextually responsive instructional frameworks (Belda-Medina & Calvo-Ferrer, 2022).

Research gap and purpose

Recent studies have increasingly explored the relationship between AI chatbots and learners' WTC, indicating that such systems can enhance oral proficiency, confidence, and motivation by providing low-pressure environments for practicing language (Fathi et al., 2024; Kim & Su, 2024; Tai & Chen, 2023; Yuan, 2024). Their integration into classrooms has facilitated adaptive learning pathways and immersive, learner-centered experiences that encourage active communication (Waluyo & Kusumastuti, 2024; Yuan, 2024). Nonetheless, the findings across empirical studies remain inconsistent. Though many report that chatbots help reduce speaking anxiety, others note that limited responsiveness or overly mechanical interactions can instead increase frustration and anxiety (El Shazly, 2021). Furthermore, despite the rapid progress of generative AI models such as ChatGPT, comparative and ethical examinations of their pedagogical implications are still scarce (Zadorozhnyy & Lai, 2023). Chatbots are generally viewed as neutral and supportive interlocutors, but questions persist about the sustainability of their influence on learners' WTC and the extent to which these benefits transfer to authentic, real-world communication contexts (Jeon, 2024).

To address these limitations, the present study conducted a narrative meta-synthesis of empirical research to provide an integrative account of how AI chatbots influence WTC, communicative confidence, and motivation among Asian EFL learners. Through the consolidation of fragmented findings and an evaluation of the pedagogical, technological, and affective dimensions of chatbot-mediated learning, this study aims to clarify the conditions under which AI-mediated environments can effectively foster sustainable WTC and authentic communicative engagement. The synthesis contributes both theoretically and pedagogically by identifying patterns across prior studies and outlining directions for future research and practice in AI-supported language learning.

The following research questions guided the study:

1. How does regular interaction with AI chatbots influence students' WTC in EFL?
2. What is the relationship between students' perceptions of interactions with AI chatbots and their confidence in using EFL for real-world communication?
3. In what ways do AI chatbots contribute to improving students' EFL communication skills and increasing their motivation to engage in conversations?

Literature review

AI chatbots: Historical evolution, concept, and recent developments

The integration of AI into language education has accelerated the rise of AI chatbots as transformative tools in second language acquisition, grounded in decades of computational and pedagogical development. Early conversational systems such as ELIZA (Weizenbaum, 1966), PARRY (Adamopoulou & Moussiades, 2020), and ALICE (Wallace, 2009) pioneered human-machine dialogue through rule-based programming and pattern matching. Although these systems demonstrated the feasibility of automated conversation, their limited contextual awareness and rigid response patterns constrained their pedagogical potential for authentic language interactions (Kane, 2016). Subsequent breakthroughs in natural language processing, machine learning, and deep learning transformed chatbot designs from static retrieval-based programs into adaptive, knowledge-driven dialogue systems (Hussain et al., 2019; Ramesh et al., 2017). This shift gave rise to conversational artificial intelligence, a broader paradigm encompassing dialogue agents capable of interpreting, generating, and sustaining human-like interaction across text, voice, and multimodal interfaces. Conversational artificial intelligence underpins the development of modern AI chatbots, enabling semantic understanding, affective responsiveness, and context-sensitive turn-taking that approximate natural communication. The move from symbolic to neural language models has further advanced these capabilities, producing agents powered by transformer architectures such as OpenAI's GPT series, Google's BERT, and Meta's LLaMA, which now support generative, adaptive, and multimodal exchanges across education, customer service, and academic tutoring (Al-Amin et al., 2024).

Within language learning, AI chatbots have become integral to technology-enhanced instruction, offering interactive, adaptive, and learner-centered communication experiences. Embedded in platforms such as WhatsApp, Facebook Messenger, and Telegram, or deployed through dedicated applications like Duolingo's AI chatbot, ChatGPT, Replika, and Andy English Bot, these systems deliver instant feedback, vocabulary scaffolding, and grammar correction aligned with the learners' proficiency levels. Mobile applications such as Mondly and SpeakBot further enrich engagement through voice-based

dialogues that replicate authentic communicative contexts. Empirical research shows that chatbot-mediated learning enhances motivation, autonomy, and communicative confidence as alleviating speaking anxiety, factors that play a critical role in shaping learners' WTC (Du & Daniel, 2024; Ramana et al., 2024). Multimodal conversational agents like Amazon Alexa and Google Assistant extend these benefits by integrating text, speech, and visual input to approximate real-world interactions. Nonetheless, persistent challenges, including limited speech recognition accuracy, contextual adaptability, and pragmatic feedback, continue to hinder their full pedagogical potential (Mageira et al., 2022). Concerns about data privacy, cultural appropriateness, and ethical classroom integration further complicate their implementation, although the long-term effects of chatbot use on authentic communicative competence and sustained WTC remain uncertain. Addressing these gaps requires pedagogically grounded frameworks that align conversational AI capabilities with communicative language-teaching principles to ensure that technological innovation translates into meaningful, lasting communicative readiness and confidence among EFL learners.

WTC in English

WTC is a central construct in second language acquisition, representing learners' readiness to initiate and sustain interaction in the target language (MacIntyre et al., 1998, 2025). In EFL contexts, especially across Asia, where authentic communicative opportunities are often scarce, WTC is frequently inhibited by anxiety, low self-confidence, and fear of negative evaluation. The construct is influenced by multiple individual and contextual variables, including motivation, perceived competence, and prior interactional experiences. Communication confidence, shaped by successful past exchanges and familiarity with discourse patterns, serves as a key predictor of WTC (Knežević et al., 2025; MacIntyre et al., 1998, 2025; Tarp, 2025; Zhang et al., 2025), whereas language anxiety acts as a persistent deterrent by amplifying hesitation and the avoidance of spontaneous speech (Botes et al., 2025; Horwitz et al., 1986). Motivation, both intrinsic and extrinsic, further strengthens WTC by sustaining learners' effort and willingness to take communicative risks (Csizér & Dörnyei, 2005). Within classroom settings, learners' emotional states, personality traits, and situational perceptions interact dynamically, demonstrating that WTC is not a fixed disposition but a context-dependent, fluctuating construct that varies across situations, interlocutors, and communicative conditions (Allahyar et al., 2022; Alrabai, 2024; Wang et al., 2022).

Recent studies have extended this understanding by using positive psychology frameworks, emphasizing that constructs such as grit, enjoyment, and resilience enhance WTC, whereas anxiety and low perceived competence inhibit it (Farrokhi et al., 2023; Jin & Lee, 2022; Lee, 2022; Li & Li, 2022; Sato, 2023; Zhou et al., 2023). Beyond individual factors, contextual influences, including the teachers' feedback, peer support, and culturally mediated communication norms, play a decisive role in shaping learners' confidence and risk-taking behaviors

(Sato, 2025; Soyoo, 2023; Waluyo, 2020; Yashima, 2002). Theoretical perspectives such as the pyramid model of WTC and positive psychology-informed approaches (MacIntyre & Wang, 2021; Wang et al., 2022) point out that successful pedagogy must cultivate both linguistic competence and affective readiness to communicate. These insights provide a critical foundation for examining AI-mediated interaction, as conversational AI and chatbots reproduce the psychological conditions that influence WTC, reducing anxiety, enhancing confidence, and offering judgment-free opportunities for oral practice. Understanding how these digital interlocutors modulate WTC becomes essential for advancing communicative competence and motivation in EFL settings.

Methodology

Research design and approach

This study employed a narrative meta-synthesis to critically integrate empirical research on how interactions with AI chatbot influence Asian EFL learners' WTC, communicative confidence, and motivation in English. Combining the flexibility of a narrative review with the interpretive rigor of meta-synthesis, this qualitative approach systematically integrates the findings from studies involving varied methodologies, learner populations, and technological tools (Sukhera, 2022). Rather than merely aggregating data, it facilitates conceptual interpretation and theoretical insight across heterogeneous contexts, enabling the identification of recurring patterns, contextual influences, and pedagogical implications. Specifically, the analysis explored how regular interaction with AI chatbots affects learners' WTC, how students' perceptions of chatbot-mediated communication relate to their confidence in authentic language use, and how such interactions enhance communication skills and motivation. Grounded in second language acquisition and communicative language teaching frameworks, this approach provides a theory-informed synthesis of how AI-driven chatbots can both support and constrain communicative readiness in Asian EFL settings. As a methodology increasingly adopted in applied linguistics and education (Clemente-Suárez et al., 2022; Sukhera, 2022), the narrative meta-synthesis offers a comprehensive, context-sensitive understanding of the pedagogical and technological factors that shape sustainable WTC and communicative competence, while identifying key gaps and directions for future research.

Data sources and search strategy

The review exclusively relied on the Scopus, Web of Science, EBSCO, and Google Scholar databases to retrieve relevant academic literature, given their extensive indexing of peer-reviewed journal articles, conference proceedings, and high-impact research on AI-driven language learning. To refine the search process, Boolean search operators were employed, integrating keywords such as ("AI chatbots" OR "artificial intelligence" OR "conversational agents") AND ("willingness to communicate" OR "WTC" OR "speaking confidence") AND

(“English language learning” OR “EFL” OR “ESL”) AND (“AI-driven tutoring” OR “intelligent tutoring systems”) AND (“student motivation” OR “language engagement”). Additional searches targeted specialized language education journals, including *TESOL Quarterly*, *System*, *Computer-Assisted Language Learning*, and *Interactive Learning Environments*, ensuring the inclusion of studies specifically addressing AI-mediated language learning. Citation tracking and snowballing techniques also expanded the dataset by identifying highly cited papers and their referenced studies, enhancing the comprehensiveness of the literature review.

Inclusion and exclusion criteria

A two-stage screening process was used, beginning with a title and abstract review followed by a full-text analysis to ensure the selection of relevant studies. Inclusion criteria encompassed studies involving students at any educational level, from elementary to tertiary, who engaged with AI chatbots for English communication. Only research that examined interactions with AI chatbot as the primary intervention for language learning was considered, whereas studies where chatbots served merely as supplementary tools were excluded. Eligible studies assessed at least one of the following outcomes: WTC, students’ confidence in using English in real-world interactions, or improvements in communication skills and motivation. Empirical studies employing experimental, quasi-experimental, mixed-methods, or longitudinal designs were prioritized, with a focus on research conducted in EFL settings. Studies were excluded if they centered on teachers’ perceptions rather than students’ experiences; lacked an assessment of WTC, confidence, or communication skills as primary outcomes; explored AI chatbots in nonlanguage learning contexts; or provided only theoretical discussions without empirical evidence.

Data extraction and analysis

A structured data extraction process was employed to ensure consistency and reliability in synthesizing the findings across studies. Key extracted data included the study design and sample characteristics, encompassing the research methodology, participant demographics, educational level, and sample size. Details of AI chatbot interventions were documented, specifying the type of chatbot (e.g., Google Assistant, Replika, Andy English Bot), platform (e.g., WhatsApp, Telegram, web-based applications), duration, and interaction frequency. Outcome measures were categorized using methods used to assess WTC, such as self-reported surveys and experimental pre/post-tests; confidence levels, measured through communicative competence scales; and language proficiency, evaluated via speaking fluency tests and interactional engagement. Statistical significance, effect sizes, and qualitative themes related to chatbot-assisted communication were also analyzed to assess the overall impact of the interventions. Identified limitations, including methodological constraints and intervention challenges, were systematically reviewed, along

with recommendations for future research to enhance the effectiveness and applicability of AI-driven language learning tools.

The data were analyzed using thematic synthesis to identify key patterns and themes in AI chatbot-assisted language learning. The analysis addressed three aims: (1) how regular chatbot interaction influences learners' WTC in English, (2) how learners' perceptions of chatbot-mediated communication relate to their confidence and real-world readiness, and (3) how chatbots enhance communication skills and motivation. Studies were grouped by common findings and contextual factors, such as gains in WTC, confidence, or competence, to identify pedagogical trends and contextual variations. Comparative analysis across chatbot types, educational levels, and cultural settings further clarified how these variables moderated outcomes and shaped learners' engagement and communicative development.

Addressing research questions through data synthesis

The selected studies were categorized according to their relevance to the three research questions. To address the first research question, six studies conducted in Iran, South Korea, Taiwan, and China were analyzed; the second research question was examined through the synthesis of 10 studies from Saudi Arabia, Iran, South Korea, China, Egypt, and Thailand. The third research question was explored using 10 studies involving EFL learners in Taiwan, Vietnam, Iran, South Korea, and China. The selection process was guided strictly by the relevance of each study to the research objectives, ensuring a focused and comprehensive analysis. However, the review may not encompass all the relevant studies conducted in other Asian contexts because of limitations in accessibility and awareness. Despite these constraints, every effort was made to collect and critically evaluate the most appropriate literature to address the formulated research questions. The details of the reviewed studies are systematically presented in Tables 1, 3, and 4.

Results

The effect of regular interaction with AI chatbots on Asian students' WTC in English

The first research question examined how regular interaction with AI chatbots influences Asian EFL learners' WTC in English. Insights drawn from six studies across elementary, secondary, university, and pre-service teacher contexts reveal that AI-mediated communication generally enhances WTC by providing accessible, low-pressure opportunities for oral practice, reducing speaking anxiety, and building communicative confidence. The extent of this improvement, however, varies according to the technological design and implementation. Voice assistants such as Google Assistant and Amazon Alexa create flexible, real-world communication environments that promote spontaneous interaction (Tai, 2024; Tai & Chen, 2023). In contrast, purpose-built chatbots such as

Andy and Lora offer personalized, adaptive feedback that improves pronunciation accuracy and confidence (Fathi et al., 2024; Zhang et al., 2024), whereas immersive three-dimensional (3D) Metaverse chatbots generate realistic scenarios that foster natural language use and fluency (Lee et al., 2024). Although these platforms demonstrate promise, methodological differences across studies make their comparative effectiveness difficult to determine, accentuating the need for further research on how the AI design influences sustained communicative engagement. Tables 1 and 2 summarize the reviewed studies and their characteristics, respectively.

Theme 1: Technology-specific factors influencing WTC. Technological affordances are central to understanding how AI chatbots shape students' WTC in English. Studies show that accessibility, adaptability, and interactivity are key enablers of engagement. Integrating AI chatbots into commonly used mobile and online platforms increases the learners' exposure and convenience, allowing practice in flexible, low-stakes environments (Tai, 2024; Tai & Chen, 2023). Personalization and adaptive feedback mechanisms, where the AI systems provide corrective input and scaffolded responses, help reduce hesitation and enhance communicative accuracy (Fathi et al., 2024; Zhang et al., 2024). Similarly, immersive 3D virtual spaces offer dynamic contexts that simulate authentic discourse, encouraging spontaneous speech and greater participation (Lee et al., 2024). These findings jointly indicate that AI chatbots, when effectively designed and integrated, can create responsive, supportive, and interactive conditions that promote active oral communication and sustained WTC.

Theme 2: Psychological and affective factors contributing to WTC's growth. AI chatbots foster psychological readiness to communicate by reducing anxiety, increasing confidence, and enhancing intrinsic motivation. Across the reviewed studies, learners consistently reported feeling more comfortable speaking English in AI-mediated settings because of the nonjudgmental and patient nature of chatbot interactions (Tai & Chen, 2023; Zhang et al., 2024). This supportive environment helps alleviate language anxiety and promotes greater willingness to initiate speech. Communicative confidence is further strengthened by immediate AI-generated feedback, which enables the learners to refine their pronunciation and fluency without fear of peer evaluation (Lee et al., 2024; Tai, 2024). Gamified and interactive elements, such as role-playing and conversational challenges, sustain motivation by turning practice into engaging, low-pressure communication experiences (Zhang et al., 2024). These affective benefits demonstrate that AI chatbots can play an essential role in addressing the psychological barriers that traditionally constrain WTC in Asian EFL contexts.

Theme 3: Educational and contextual considerations. The influence of interactions with AI chatbots on WTC varies according to the learners' educational levels, proficiency, and cultural context. Studies indicate that chatbot-based

practice benefits a wide range of learners, from elementary pupils (Yuan, 2024) to secondary and university students (Tai & Chen, 2023; Zhang et al., 2024), by promoting confidence and oral participation. At the same time, research involving pre-service teachers highlights how AI-mediated communication enhances professional confidence and global awareness of English varieties (Lee et al., 2024). Despite these encouraging results, most studies were conducted in Asian EFL environments, where limited exposure to authentic English communication may heighten reliance on AI for interaction. This raises questions about the generalizability of the findings to EFL contexts, where naturalistic exposure is more frequent. Consequently, future research should examine how cultural and pedagogical variables interact with chatbot-assisted learning to ensure that AI-based interventions are contextually appropriate, pedagogically sound, and capable of sustaining WTC across diverse learning settings.

Table 1. Summary of the reviewed studies on regular interaction with AI chatbots.

Study	Change in WTC	Context
Fathi et al. (2024)	Improved WTC and speaking skills	EFL learners using Andy Chatbot in Iran
Lee et al. (2024)	Stronger EFL confidence and intention to communicate	Pre-service teachers using AI chatbots in 3D Metaverse environments in South Korea
Tai & Chen (2023)	Significant increase in WTC	Eighth-grade EFL learners using Google Assistant in Taiwan
Tai (2024)	Greater WTC in AI interaction groups	First-year college students using Alexa/Google Assistant in Taiwan
Yuan (2024)	Increased oral proficiency and WTC	Elementary school EFL learners using unspecified chatbots in China
Zhang et al. (2024)	Significant enhancement in WTC	University EFL students using the AI-speaking assistant Lora in China

Table 2. Study characteristics.

Aspect	Details
Study designs	Four quasi-experimental, two experimental/intervention-based; mixed methods used for qualitative insights
Participants	571 EFL learners (elementary to university and pre-service teachers)
AI technologies	Google Assistant, Alexa, Andy English chatbot, the AI-speaking assistant Lora, 3D Metaverse chatbots
Duration of the intervention	2–16 weeks, with longer interactions yielding stronger improvements in WTC
Measurement tools	WTC scales, communicative confidence surveys, language anxiety assessments

The second research question explored how students' perceptions of interactions with AI chatbot relate to their communicative confidence in English. A synthesis of ten studies conducted across diverse Asian EFL contexts (see Table 3) indicated a consistent positive association between favorable learner perceptions and enhanced confidence in language use. Across various educational settings, AI chatbots are perceived as engaging, low-anxiety tools that encourage more spontaneous participation and reduce the fear of making mistakes. Nonetheless, although short-term gains in confidence are well-documented, the durability and transferability of these effects to real-world communication remain uncertain, highlighting the need for longitudinal and context-sensitive research. The analyzed studies employed mixed-methods, quasi-experimental, and controlled designs using self-assessments of confidence, qualitative reflections, and performance-based measures to evaluate learning outcomes. Overall, the findings confirm that positive attitudes toward AI chatbots increase learners' self-efficacy and motivation, though technical limitations and a lack of human interaction continue to constrain deeper conversational and pragmatic competence development.

Theme 1: Students' perceptions of interactions with AI chatbots. Students generally perceive AI chatbots as valuable, interactive, and supportive learning companions that facilitate both speaking and writing practice. These systems are frequently commended for their accessibility, structured dialogue, and the ability to support autonomous learning through immediate feedback and adaptive scaffolding (Alrajhi, 2024; Liu et al., 2024; Mohamed & Alian, 2023). Gamified and adaptive learning features further strengthen engagement, as the learners respond positively to personalized challenges and feedback mechanisms that sustain motivation (Lee, 2019; Songsiengchai et al., 2023). Nonetheless, limitations persist, where some students express frustration when the chatbots fail to sustain extended or contextually thorough conversations, revealing gaps in the understanding of natural language and conversational depth (Alrajhi, 2024). Although AI chatbots clearly enhance learners' engagement and motivation, their pedagogical potential remains partially constrained by the current technological capacity for meaningful, human-like interaction.

Theme 2: AI chatbots and their impact on confidence in communication. AI chatbots play a substantial role in building students' confidence in English communication by improving self-efficacy, reducing anxiety, and offering consistent practice opportunities. Learners report heightened confidence after sustained chatbot interactions, attributing these improvements to structured conversational feedback and the absence of judgment during practice sessions (Han, 2020a, 2020b; Kim, 2018; Mohamed & Alian, 2023). These low-pressure environments enable learners to overcome fear and hesitation, promoting greater fluency and spontaneous speech (Han, 2020a, 2020b; Mohamed & Alian, 2023). Quantitative results reinforce these findings. For example, Mohamed and Alian

(2023) reported an average communication confidence score of 3.90/5 and a stress reduction score of 4.04/5 among chatbot users. Thus, AI-mediated learning not only cultivates confidence but also fosters a more positive orientation toward English communication. Nevertheless, the extent to which this increased confidence translates into durable, real-world communicative competence remains an open question requiring further empirical validation.

Theme 3: Direct and indirect influences on confidence development.

Learners' confidence in AI-mediated communication develops through a combination of direct and indirect influences, including perceived social presence, interactivity, and WTC. A strong sense of social presence, enhanced by natural, human-like responsiveness, has been shown to increase motivation and comfort during interaction, fostering greater confidence (Ebadi & Amini, 2024). Gamified and interactive tasks also contribute by promoting repeated, enjoyable engagement that builds language familiarity and competence (Lee, 2019; Songsienchai et al., 2023). Moreover, increased participation in chatbot interactions correlates with heightened WTC, suggesting that the confidence gained in digital settings may extend to face-to-face communication (Fathi et al., 2024). The findings demonstrate that AI chatbots support confidence not only by providing structured feedback but also by cultivating psychologically safe environments that encourage communicative experimentation and long-term engagement.

Theme 4: Uncertainty regarding long-term real-world transfer. Despite consistent short-term gains in communication confidence, uncertainty remains regarding the long-term transfer of these benefits to authentic, real-world interaction. A key limitation in the existing literature is the lack of longitudinal research to determine whether the confidence developed through AI-mediated interactions persists beyond structured learning contexts. Moreover, chatbot-based communication tends to be predictable and controlled, differing from the fluidity and socio-pragmatic complexity of natural discourse (Fathi et al., 2024). This discrepancy suggests that AI chatbots, though effective in building fluency and reducing anxiety, may not fully replicate the communicative demands learners face outside the classroom. Therefore, future research should investigate how the confidence acquired in AI-mediated environments translates into real-world performance, addressing how cultural, affective, and contextual factors mediate this process. Clarifying this relationship is essential to assess the enduring pedagogical value of chatbot-assisted language learning for developing communicative competence.

Table 3. The reviewed studies on students’ perceptions of interactions with AI chatbot and their confidence.

Study	Study design	Sample size	Context	Primary outcomes
Alrajhi (2024)	Mixed methods	143	Undergraduate EFL students (Saudi Arabia)	Chatbot perceptions, confidence in L2 writing/ speaking
Ebadi & Amini (2024)	Mixed methods	256	University EFL students (Iran)	AI chatbots’ impact on motivation, social presence, and human-likeness
Fathi et al. (2024)	Randomized controlled trial	65	EFL learners (Iran)	Effects of AI-mediated interactions on speaking skills and confidence
Han (2020a)	Experimental (control group)	44	Middle school EFL students (South Korea)	AI chatbots’ effects on speaking ability and affective factors
Han (2020b)	Pre-test/post-test	44	Middle school EFL students (South Korea)	AI chatbot impact on speaking competence and confidence
Kim (2018)	Experimental (control group)	47	College EFL students (South Korea)	AI chatbots, vocabulary learning, and confidence
Lee (2019)	Experimental (control group)	15	Grade 6 elementary English learners (South Korea)	A gamification-based chatbot effects on speaking confidence
Liu et al. (2024)	Mixed methods	867	Chinese EFL learners (China)	Adoption AI and confidence in informal English learning
Mohamed & Alian (2023)	Survey-based study	64	First-year secondary EFL students (Egypt)	Attitudes toward chatbots, confidence (rated 3.90/5)
Songsingchai et al. (2023)	Mixed methods	120	First-year pre-service teachers (Thailand)	Effectiveness of ChatGPT in learning English

AI chatbots’ contribution to English communication skills and motivation to engage in conversations

The third research question examined how AI chatbots contribute to the development of English communication skills and the enhancement of learners’ motivation to engage in conversations. Unlike the first research question, which focused on learners’ WTC as an affective readiness to initiate an interaction, this section emphasizes observable communicative performance, such as speaking fluency, listening comprehension, and vocabulary use, alongside motivational outcomes. A synthesis of 10 studies (see Table 4) indicates that AI-mediated learning supports measurable improvements in language proficiency and engagement while also fostering greater enjoyment, persistence, and self-directed learning. Comparative analyses between AI-assisted and traditional instruction reveal the clear advantages of chatbot-based learning, including increased interactivity, adaptive feedback, and reduced communication

anxiety across elementary to university contexts. Nevertheless, despite these benefits, longitudinal evidence remains limited, and further research is required to evaluate the long-term sustainability of these improvements across varied learning environments and learner demographics. The reviewed studies utilized a range of chatbot platforms, from text- and voice-based assistants to custom-built agents, accentuating the need for a systematic investigation into the optimal technological and pedagogical integration strategies for real-world communicative development.

Theme 1: Development of speaking and conversational fluency. Empirical evidence consistently demonstrates that AI chatbot-assisted learning significantly enhances speaking proficiency and conversational fluency compared with traditional classroom instruction. Fathi et al. (2024) reported that AI-mediated speaking tasks promoted dynamic, interactive language practice, yielding greater gains in oral fluency and coherence than conventional methods. Moreover, Han (2020a, 2020b) observed a marked improvement among middle school students using Amazon Alexa, highlighting the potential of voice-activated AI to facilitate naturalistic speech production. Research by Ruan et al. (2021) further confirmed that university learners using EnglishBot exhibited deeper conversational engagement and more spontaneous language use, illustrating how chatbot-mediated interactions foster continuity and confidence in communication. These findings emphasize that AI chatbots can create immersive and adaptive learning conditions that enable sustained, low-anxiety oral practice, which is essential for communicative skill development.

Theme 2: Listening comprehension and vocabulary learning. Although AI chatbots show substantial promise for enhancing speaking skills, evidence regarding listening comprehension and vocabulary acquisition remains mixed. Chien et al. (2022) found modest improvements in listening skills among chatbot users but noted no statistically significant advantage over traditional instruction, suggesting that the current AI systems may not yet fully replicate authentic auditory complexity. Conversely, Kim (2018) documented significant vocabulary gains among university students engaging in AI-assisted dialogue, although the absence of a specific chatbot details limited interpretive generalization. These contrasting findings indicate a need for further refinement of chatbot technologies to strengthen receptive skills, particularly through adaptive speech recognition, context-sensitive input, and multimodal instructional design. Developing chatbots capable of delivering naturalistic, varied linguistic exposure may be key to advancing both listening and lexical competence.

Theme 3: Students' motivation and engagement. AI chatbots have emerged as powerful catalysts for enhancing learners' motivation, engagement, and persistence in conversational practice. Across multiple studies, learners have reported that chatbot-mediated tasks were enjoyable, autonomy-supportive, and conducive to sustained interest (Chien et al., 2022; Ebadi & Amini, 2024; Kang & Sung, 2024). Fathi et al. (2024) and Yuan (2024) observed that

chatbot-assisted learning significantly increased participation and self-confidence by providing low-pressure opportunities for authentic communication. Ruan et al. (2021) also found that chatbot-based discussions generated 2.1 times more voluntary engagement than traditional interactions, demonstrating that adaptive conversational systems can cultivate a more active and motivated learning disposition. Intrinsic motivation was particularly strengthened when the chatbots exhibited social presence and responsiveness, making the learning experience feel interactive and human-like (Ebadi & Amini, 2024). Moreover, Kang and Sung (2024) stressed increased self-directed learning behaviors, as the students perceived AI activities to be both stimulating and personally relevant. Taken together, these findings suggest that AI chatbots enhance motivation not merely by reducing anxiety but by fostering meaningful engagement, curiosity, and a sustained sense of progress in language learning.

Theme 4: Implementation effectiveness and learning contexts. AI chatbots have demonstrated flexibility and effectiveness across varied educational levels and instructional settings. Yuan (2024) found positive outcomes among elementary learners, with chatbots supporting foundational vocabulary and speaking development. Similarly, Han (2020a, 2020b) documented successful integration in middle school classrooms, where AI tools facilitated structured oral practice and corrective feedback. At the high school level, Chien et al. (2022) reported that chatbots were scalable and adaptable to communicative tasks, whereas Ruan et al. (2021) observed effective use in informal learning environments that encouraged spontaneous conversation. In tertiary education, Duong and Suppasetseree (2024) showed that chatbot-based instruction complemented traditional teaching, creating more interactive and student-centered experiences. The degree of personalization also emerged as a key determinant of success: Yuan (2024) found that adaptive error correction supported language development, whereas Kang and Sung (2024) emphasized that customized chatbots using the Dialogflow CX Console enhanced contextual relevance and learner autonomy. Overall, these findings illustrate that successful implementation depends on aligning the chatbots' affordances with the learners' proficiency, educational goals, and cultural context to maximize communicative and motivational gains.

Table 4. Summary of the reviewed studies on the role of AI chatbots.

Study	Study design	Sample size	Chatbot type	Duration
Chien et al. (2022)	Quasi-experimental	73 (high school in Taiwan)	LINE ChatBot	4 weeks
Duong & Suppasetseree (2024)	Single-group intervention	30 (undergraduates in Vietnam)	AI voice chatbot (unspecified)	8 weeks
Ebadi & Amini (2024)	Single-group intervention	256 (university in Iran)	CSIEC (Computer Simulation in Educational Communication)	Not reported
Fathi et al. (2024)	Randomized controlled trial	65 (EFL learners in Iran)	Andy English Chatbot	Not reported
Han (2020a)	Quasi-experimental	44 (middle school in South Korea)	EchoDot (Amazon Alexa)	10 sessions
Han (2020b)	Quasi-experimental	44 (middle school in South Korea)	EchoDot (Amazon Alexa)	10 weeks
Kang & Sung (2024)	Comparative study	112 (eighth graders in South Korea)	Custom chatbots (Dialogflow CX Console)	Not reported
Kim (2018)	Quasi-experimental	47 (college in South Korea)	Unspecified chatbot	8 weeks
Ruan et al. (2021)	Comparative study	56 (college) in China	EnglishBot	Two 6-day studies
Yuan (2024)	Experimental (control group)	74 (elementary school) in China	Unspecified chatbot	3 months

Discussion

This study conducted a narrative meta-synthesis to critically integrate empirical evidence on how interactions with AI chatbots affect Asian EFL learners' WTC, communicative confidence, and motivation. Addressing gaps in prior research, predominantly the absence of systematic analyses explaining how AI-mediated text- and voice-based environments foster lasting communicative engagement rather than short-term gains (Belda-Medina & Calvo-Ferrer, 2022; Jeon, 2024; Zadorozhnyy & Lai, 2023), the study examined both the benefits and constraints of chatbot-assisted learning. Although previous studies have highlighted the potential of chatbots to reduce anxiety and increase engagement (Du & Daniel, 2024; Fathi et al., 2024; Ramana et al., 2024), few have explored the mechanisms or conditions that enable these effects to translate into genuine communicative competence (Kim & Su, 2024; Yang et al., 2022; Yashima, 2002). Grounded in WTC theory (MacIntyre et al., 1998, 2025), positive psychology (Farrokhi et al., 2023; Jin & Lee, 2022; Wang et al., 2022), and technology-mediated language learning frameworks (Han, 2020a; Hussain et al., 2019; Ramesh et al., 2017), this synthesis moves beyond descriptive reporting to critically analyze how technological affordances, pedagogical design, and affective and cultural variables interact to shape communicative development. Through the integration of these perspectives, the study presents a concise

yet comprehensive interpretation of the potential and limitations inherent in chatbot-assisted learning for fostering sustainable communicative readiness among Asian EFL learners.

Critically reviewing the first research objective, this synthesis confirms that AI chatbots can meaningfully enhance the learners' WTC, but only when their design and integration align with learners' affective needs and contextual realities. Platforms such as Google Assistant, Amazon Alexa, and Metaverse-based chatbots promote spontaneous, flexible, and immersive interaction (Lee et al., 2024; Tai, 2024; Tai & Chen, 2023), yet their effectiveness depends on responsive feedback, adaptive personalization, and well-structured task mediation (Chien et al., 2022; Fathi et al., 2024; Yuan, 2024). The evidence challenges earlier assumptions of uniform improvement, revealing that WTC gains are strongest when the interventions are sustained, contextually scaffolded, and supported by mechanisms for reducing anxiety and building confidence (Belda-Medina & Kokošková, 2023; Mageira et al., 2022). Consistent with sociocultural theory and pyramid models of WTC (MacIntyre & Wang, 2021; Wang et al., 2022), chatbots function as mediational tools whose impact is mediated by the learners' prior experiences, motivation, and exposure to authentic communication (Arabai, 2024; Knežević et al., 2025; Yashima, 2002). The methodological diversity of the reviewed studies, spanning experimental, quasi-experimental, and mixed-methods designs, also indicates that outcomes are shaped as much by pedagogical quality as by technological innovation, accentuating the need to move beyond technological determinism toward context-sensitive, pedagogically informed implementation strategies.

The second objective of research revealed a positive yet complex relationship between learners' perceptions of interactions with AI chatbots and their communicative confidence. Across educational contexts, students consistently valued chatbots for their accessibility, structured feedback, and supportive, nonjudgmental nature, features that contribute to reduced anxiety and greater willingness to take communicative risks (Alrajhi, 2024; Ebadi & Amini, 2024; Mohamed & Alian, 2023). These environments align with positive psychology frameworks, fostering grit, resilience, and risk-taking (Farrokhi et al., 2023; Jin & Lee, 2022), and are associated with short-term gains in confidence and lower language anxiety (Botes et al., 2025; Horwitz et al., 1986; Kim, 2018; Lee, 2019). Nonetheless, a closer examination of the evidence exposes uncertainty about the durability and authenticity of these improvements. Most studies were short-term and classroom-based, leaving it unclear as to whether the confidence developed in predictable, AI-mediated exchanges translates to the spontaneity and pragmatic demands of real-world English communication (Fathi et al., 2024; Hwang & Chang, 2023; Jeon, 2024). Although research by Han (2020a, 2020b) and Ruan et al. (2021) reported increased confidence and engagement, these studies lacked longitudinal follow-up to assess sustained communicative outcomes. Moreover, limitations in contextual adaptability and conversational depth raise concerns that chatbots may cultivate surface-level or inflated confidence, leaving learners underprepared for authentic socio-pragmatic interaction (Belda-Medina & Calvo-Ferrer, 2022; Hwang & Chang, 2021; Mageira et al.,



2022). To advance this line of inquiry, future studies should adopt longitudinal, mixed-methods designs incorporating real-world performance assessments and ethnographic approaches to examine how digital confidence transfers, or fails to transfer, to genuine communicative competence.

Regarding the third research question, the synthesis revealed that AI chatbots contribute to measurable improvements in English communication skills and motivation, with documented gains in speaking fluency, vocabulary development, and learner engagement (Fathi et al., 2024; Han, 2020a, 2020b; Ruan et al., 2021; Yuan, 2024). Interactive and adaptive features, such as gamification, roleplay, and instant feedback, proved to be particularly effective in sustaining motivation and promoting autonomous learning (Ebadi & Amini, 2024; Kang & Sung, 2024; Lee, 2019; Songsiengchai et al., 2023). Nevertheless, the synthesis also critiques overly optimistic claims of chatbots' effectiveness, noting that improvements in listening comprehension were comparatively weak and inconsistent due to current AI limitations in modeling naturalistic auditory input (Chien et al., 2022; Kim, 2018). The findings emphasize that AI chatbots realize their pedagogical potential only when embedded in scaffolded, context-sensitive instructional frameworks that account for learners' proficiency levels, affective factors, and cultural contexts (Duong & Suppasetserree, 2024; Hapsari & Wu, 2022; Kim et al., 2019; Mageira et al., 2022). Moreover, the review highlights ethical and equity concerns, including data privacy, algorithmic bias, and cultural appropriateness, which remain underexplored but are essential for ensuring that AI-assisted learning environments are inclusive, safe, and socially responsible (Al-Amin et al., 2024; Belda-Medina & Calvo-Ferrer, 2022; Waluyo et al., 2023).

In comparing these findings with prior literature, this review reaffirms the potential of AI chatbots to reduce anxiety, enhance engagement, and strengthen communicative confidence, aligning with the results of Fathi et al. (2024), Kim and Su (2024), Du and Daniel (2024), and others. Nevertheless, it offers a critical counterbalance to overly optimistic perspectives by stressing three key points: first, that the gains are conditional upon technological quality, affective readiness, and contextual fit; second, that excessive reliance on AI may hinder the development of pragmatic and sociolinguistic competence; and third, that sustaining and transferring digital gains to authentic, real-world communication remains an unresolved challenge (Belda-Medina & Kokošková, 2023; Hwang & Chang, 2023; Sato, 2025). The review calls for interdisciplinary collaboration among second language acquisition theorists, technologists, educators, and cultural scholars to design AI systems that are adaptive, context-aware, ethically responsible, and culturally responsive. Moreover, it stresses the need for longitudinal, ecologically valid, and critically informed research to move beyond the fascination with technological novelty toward enduring, pedagogically meaningful transformation in language education. In doing so, this synthesis not only consolidates current evidence but also reorients the field toward a more sustainable, context-sensitive, and reflexively critical research agenda.

Conclusion

The findings of this study stress the crucial role of AI chatbots in enhancing the WTC, confidence, and motivation of Asian EFL learners, especially in situations where access to authentic English interaction is limited. AI-driven communication helps reduce speaking anxiety, provides personalized feedback, and creates low-pressure environments that encourage spontaneous language use. The incorporation of chatbots through voice assistants, gamified applications, and immersive digital platforms further promotes engagement and participation in language learning. Nonetheless, we acknowledge several limitations. Most of the studies reviewed were short-term and conducted in classroom settings, leaving it uncertain whether improvements in WTC and confidence last beyond these instructional environments or transfer to real-world communication. Moreover, variations in the chatbots' design, responsiveness, and feedback quality emphasize the necessity for more standardized and context-sensitive systems. Future research should employ longitudinal and comparative methods to evaluate the long-term effects of chatbot-mediated learning and enhance the systems' capabilities for more adaptive, natural, and pragmatically rich interactions. Furthermore, there is a need for pedagogical frameworks to guide the systematic integration of chatbots into language curricula, not as substitutes for teachers but as complementary tools that extend communicative practice, foster learners' autonomy, and encourage authentic engagement with English. Addressing these gaps will lead to a more comprehensive understanding of how AI-mediated environments can support sustainable communicative competence and the long-term development of WTC among EFL learners.

Implications for AI chatbots' integration within language education

The findings of this study have several pedagogical and technological implications for the integration of AI chatbots into language education. First, AI-driven adaptive learning models should be further refined to enhance chatbots' responsiveness, contextual understanding, and turn-taking strategies, ensuring that digital interactions more closely mirror authentic human conversations. Second, the transferability of chatbot-induced confidence to real-world communication needs further investigation, particularly through longitudinal studies tracking WTC and communicative competence beyond structured AI interactions. Third, educators should consider how chatbot-assisted learning can be strategically incorporated into formal language curricula, ensuring that AI-driven tools complement, rather than replace, face-to-face speaking practice. Moreover, multimodal AI features integrating speech, text, and visual cues should be prioritized to enhance listening comprehension and contextual language learning. The implementation of cultural awareness modules, interactive roleplay scenarios, and real-world conversation simulations would further bridge the gap between AI-mediated and human-to-human communication. Addressing these areas would enable AI chatbots to evolve into more effective, immersive, and pedagogically aligned tools, capable of fostering long-term

engagement, sustained motivation, and genuine communicative competence among English language learners.

References

- Adamopoulou, E., & Moussiades, L. (2020). Chatbots: History, technology, and applications. *Machine Learning with Applications*, 2, 100006. <https://doi.org/10.1016/j.mlwa.2020.100006>
- Al-Amin, M., Ali, M. S., Salam, A., Khan, A., Ali, A., Ullah, A., Nur Alam, M. & Chowdhury, S. K. (2024). History of generative Artificial Intelligence (AI) chatbots: past, present, and future development. *arXiv preprint arXiv:2402.05122*. <https://doi.org/10.48550/arXiv.2402.05122>
- Allahyar, N., Zarrinabadi, N., & Reinders, H. (2022). How teachers' perceptions of learners' willingness to communicate affect frequency and method of turn allocation. *Language Teaching Research Quarterly*, 30, 50–68. <https://doi.org/10.32038/ltrq.2022.30.04>
- Alrabai, F. (2024). Modeling the relationship between classroom emotions, motivation, and learner willingness to communicate in EFL: Applying a holistic approach of positive psychology in SLA research. *Journal of Multilingual and Multicultural Development*, 45(7), 2465–2483. <https://doi.org/10.1080/01434632.2022.2053138>
- Alrajhi, A. S. (2024). Artificial intelligence pedagogical chatbots as L2 conversational agents. *Cogent Education*, 11(1), 2327789. <https://doi.org/10.1080/2331186X.2024.2327789>
- Belda-Medina, J., & Calvo-Ferrer, J. R. (2022). Using chatbots as AI conversational partners in language learning. *Applied Sciences*, 12(17), 1–16. <https://doi.org/10.3390/app12178427>
- Belda-Medina, J., & Kokošková, V. (2023). Integrating chatbots in education: Insights from the Chatbot–Human Interaction Satisfaction Model (CHISM). *International Journal of Educational Technology in Higher Education*, 20(1), 1–20. <https://doi.org/10.1186/s41239-023-00432-3>
- Botes, E., Resnik, P., Moskowitz, S., Dewaele, J. M., Mercer, S., & Greiff, S. (2025). A tangled web: Learner autonomy as a predictor of learner emotions, willingness to communicate and academic achievement in online language learning. *Language Teaching Research Quarterly*, 48, 10–29. <https://doi.org/10.32038/ltrq.2025.48.02>
- Chien, Y. C., Wu, T. T., Lai, C. H., & Huang, Y. M. (2022). Investigation of the influence of artificial intelligence markup language-based LINE ChatBot in contextual English learning. *Frontiers in Psychology*, 13, 785752. <https://doi.org/10.3389/fpsyg.2022.785752>
- Clemente-Suárez, V. J., Rodríguez-Besteiro, S., Cabello-Eras, J. J., Bustamante-Sanchez, A., Navarro-Jiménez, E., Donoso-Gonzalez, M., Beltrán-Velasco, A. I., & Tornero-Aguilera, J. F. (2022). Sustainable development goals in the COVID-19 pandemic: A narrative review. *Sustainability*, 14(13), 7726. <https://doi.org/10.3390/su14137726>

- Csizér, K., & Dörnyei, Z. (2005). The internal structure of language learning motivation and its relationship with language choice and learning effort. *The Modern Language Journal*, 89(1), 19–36. <https://doi.org/10.1111/j.0026-7902.2005.00263.x>
- Du, J., & Daniel, B. K. (2024). Transforming language education: A systematic review of AI-powered chatbots for English as a foreign language speaking practice. *Computers and Education: Artificial Intelligence*, 6, 100230. <https://doi.org/10.1016/j.caeai.2024.100230>
- Duong, T., & Suppasetserree, S. (2024). The effects of an artificial intelligence voice chatbot on improving Vietnamese undergraduate students' English speaking skills. *International Journal of Learning, Teaching and Educational Research*, 23(3), 293–321. <https://doi.org/10.26803/ijlter.23.3.15>
- Ebadi, S., & Amini, A. (2024). Examining the roles of social presence and human-likeness on Iranian EFL learners' motivation using artificial intelligence technology: A case of CSIEC chatbot. *Interactive Learning Environments*, 32(2), 655–673. <https://doi.org/10.1080/10494820.2022.2096638>
- El Shazly, R. (2021). Effects of artificial intelligence on English speaking anxiety and speaking performance: A case study. *Expert Systems*, 38(3), e12667. <https://doi.org/10.1111/exsy.12667>
- Farrokhi, F., Zohrabi, M., & Azarberis, A. G. (2023). A sociocognitive account of willingness to communicate from the perspective of complex dynamic systems theory. *Language Teaching Research Quarterly*, 36, 35–54. <https://doi.org/10.32038/ltrq.2023.36.03>
- Fathi, J., Rahimi, M., & Derakhshan, A. (2024). Improving EFL learners' speaking skills and willingness to communicate via artificial intelligence-mediated interactions. *System*, 121, 103254. <https://doi.org/10.1016/j.system.2024.103254>
- Han, D. E. (2020a). The effects of voice-based AI chatbots on Korean EFL middle school students' speaking competence and affective domains. *Asia-Pacific Journal of Convergent Research Interchange*, 6(7), 71–80. <https://www.dbpia.co.kr/Journal/articleDetail?nodeId=NODE10752756>
- Han, D. E. (2020b). The effects of voice-based AI chatbot on Korean EFL students' speaking ability and affective factors. *International Journal of Computer Science and Information Technology for Education*, 5(1), 25–30.
- Hapsari, I. P., & Wu, T. T. (2022, August). AI chatbots learning model in English speaking skill: Alleviating speaking anxiety, boosting enjoyment, and fostering critical thinking. In Y.-M. Huang, S.-C. Cheng, J. Barroso, & F. E. Sandnes (Eds.), *Innovative technologies and learning* (pp. 444–453). Springer International Publishing.
- Horwitz, E. K., Horwitz, M. B., & Cope, J. (1986). Foreign language classroom anxiety. *The Modern Language Journal*, 70(2), 125–132. <https://doi.org/10.2307/327317>

- Hussain, S., Ameri Sianaki, O., & Ababneh, N. (2019). A survey on conversational agents/chatbots classification and design techniques. In L. Barolli, M. Takizawa, F. Khafa, & T. Enokido (Eds.), *Web, artificial intelligence and network applications: WAINA 2019* (Advances in Intelligent Systems and Computing, Vol. 927. Springer.
- Hwang, G. J., & Chang, C. Y. (2023). A review of opportunities and challenges of chatbots in education. *Interactive Learning Environments*, 31(7), 4099–4112. <https://doi.org/10.1080/10494820.2021.1952615>
- Jeon, J. (2024). Exploring AI chatbot affordances in the EFL classroom: Young learners' experiences and perspectives. *Computer Assisted Language Learning*, 37(1–2), 1–26. <https://doi.org/10.1080/09588221.2021.2021241>
- Jin, S., & Lee, H. (2022). Willingness to communicate and its high-evidence factors: A meta-analytic structural equation modeling approach. *Journal of Language and Social Psychology*, 41(6), 716–745. <https://doi.org/10.1177/0261927X221092098>
- Kane, D. A. (2016). The role of chatbots in teaching and learning. *E-Learning and the Academic Library: Essays on Innovative Initiatives*, 131–147.
- Kang, S., & Sung, M. (2024). EFL students' self-directed learning of conversation skills with AI chatbots. *Language Learning & Technology*, 28(1), 1–19. <https://hdl.handle.net/10125/73600>
- Kim, N. Y. (2018). Chatbots and Korean EFL students' English vocabulary learning. *Journal of Digital Convergence*, 16(2), 1–7. <https://doi.org/10.14400/JDC.2018.16.2.001>
- Kim, N. Y., Cha, Y., & Kim, H. S. (2019). Future English learning: Chatbots and artificial intelligence. *Multimedia-Assisted Language Learning*, 22(3), 1–32. <https://doi.org/10.15702/mall.2019.22.3.32>
- Kim, A., & Su, Y. (2024). How implementing an AI chatbot impacts Korean as a foreign language learners' willingness to communicate in Korean. *System*, 122, 103256. <https://doi.org/10.1016/j.system.2024.103256>
- Knežević, L., Topalov, J. P., & Halupka-Rešetar, S. (2025). No picture, no sound? The effect of anxiety, disinhibition and online attention control on willingness to communicate in different modes of communication in a synchronous online foreign language classroom. *Language Teaching Research Quarterly*, 48, 84–102. <https://doi.org/10.32038/ltrq.2025.48.06>
- Lee, J. S. (2022). The role of grit and classroom enjoyment in EFL learners' willingness to communicate. *Journal of Multilingual and Multicultural Development*, 43(5), 452–468. <https://doi.org/10.1080/01434632.2020.1746319>
- Lee, S. (2019). The effects of gamification-based artificial intelligence chatbot activities on elementary English learners' speaking performance and affective domains. *Primary English Education*, 25(3), 75–98.
- Lee, S., Jeon, J., & Choe, H. (2024). Enhancing pre-service teachers' global Englishes awareness with technology: A focus on AI chatbots in 3D metaverse environments. *TESOL Quarterly*, 59(1), 49–74. <https://doi.org/10.1002/tesq.3300>

- Li, Z., & Li, B. (2022). Individual differences and willingness to communicate in second language: The role of student age, gender and socioeconomic status. *Language Teaching Research Quarterly*, 30, 18–31. <https://doi.org/10.32038/ltrq.2022.30.02>
- Liu, G. L., Darvin, R., & Ma, C. (2024). Exploring AI-mediated informal digital learning of English (AI-IDLE): A mixed-method investigation of Chinese EFL learners' AI adoption and experiences. *Computer Assisted Language Learning*, 38(7), 1632–1660. <https://doi.org/10.1080/09588221.2024.2310288>
- Mageira, K., Pittou, D., Papasalouros, A., Kotis, K., Zangogianni, P., & Daradoumis, A. (2022). Educational AI chatbots for content and language integrated learning. *Applied Sciences*, 12(7), 1–16. <https://doi.org/10.3390/app12073239>
- MacIntyre, P. D., & Wang, L. (2021). Willingness to communicate in the L2 about meaningful photos: Application of the pyramid model of WTC. *Language Teaching Research*, 25(6), 878–898. <https://doi.org/10.1177/13621688211004645>
- MacIntyre, P., Panahi, A., & Mohebbi, H. (2025). Peter D. Macintyre's 35-year research contribution to psychology, language education and communication: A systematic review. *Language Teaching Research Quarterly*, 48, 297–336. <https://doi.org/10.32038/ltrq.2025.48.18>
- MacIntyre, P. D., Clément, R., Dörnyei, Z., & Noels, K. A. (1998). Conceptualizing willingness to communicate in a L2: A situational model of L2 confidence and affiliation. *The Modern Language Journal*, 82(4), 545–562. <https://doi.org/10.1111/j.1540-4781.1998.tb05543.x>
- Mohamed, S., & Alian, E. (2023). Students' attitudes toward using chatbot in EFL learning. *Arab World English Journal (AWEJ)*, 14(3), 15–27. <https://dx.doi.org/10.24093/awej/vol14no3.2>
- Ramana, P. V., Mohanty, D. S., Ngullie, D. Y., Rajeswari, D. T., Abinaya, D., Sharma, S., & Sunalini, K. K. (2024). Exploring AI-powered chatbots in English language learning: A study on effectiveness, user experience, and future directions. *Nanotechnology Perceptions*, 20(14), 2168–2175. <https://doi.org/10.62441/nano-ntp.vi.3079>
- Ramesh, K., Ravishankaran, S., Joshi, A., & Chandrasekaran, K. (2017, May). A survey of design techniques for conversational agents. In *International Conference on Information, Communication and Computing Technology* (pp. 336–350). Springer Singapore.
- Ruan, S., Jiang, L., Xu, Q., Liu, Z., Davis, G. M., Brunskill, E., & Landay, J. A. (2021). EnglishBot: An AI-powered conversational system for second language learning. In *Proceedings of the 26th International Conference on Intelligent User Interfaces* (pp. 434–444). Association for Computing Machinery. <https://doi.org/10.1145/3397481.3450648>
- Sato, R. (2023). Examining fluctuations in the WTC of Japanese EFL speakers: Language proficiency, affective and conditional factors. *Language Teaching Research*, 27(4), 974–994. <https://doi.org/10.1177/1362168820977825>

- Sato, R. (2025). Japanese EFL speakers' fluctuation of willingness to communicate: Its interplay and association with feedback. *Language Teaching Research Quarterly*, 48, 69–83. <https://doi.org/10.32038/ltrq.2025.48.05>
- Songsienchai, S., Sereerat, B. O., & Watananimitgul, W. (2023). Leveraging artificial intelligence (AI): ChatGPT for effective English language learning among Thai students. *English Language Teaching*, 16(11), 1–68. <https://pdfs.semanticscholar.org/b07a/9572e15b0b2ea025fe1ef40280e2009ee1c6.pdf>
- Soyoof, A. (2023). Iranian EFL students' perception of willingness to communicate in an extramural digital context. *Interactive Learning Environments*, 31(9), 5922–5939. <https://doi.org/10.1080/10494820.2021.2024579>
- Sukhera, J. (2022). Narrative reviews in medical education: Key steps for researchers. *Journal of Graduate Medical Education*, 14(4), 418–419. <https://doi.org/10.4300/JGME-D-22-00481.1>
- Tai, T. Y. (2024). Comparing the effects of intelligent personal assistant–human and human–human interactions on EFL learners' willingness to communicate beyond the classroom. *Computers & Education*, 210, 104965. <https://doi.org/10.1016/j.compedu.2023.104965>
- Tai, T. Y., & Chen, H. H. J. (2023). The impact of Google Assistant on adolescent EFL learners' willingness to communicate. *Interactive Learning Environments*, 31(3), 1485–1502. <https://doi.org/10.1080/10494820.2020.1841801>
- Tarp, G. (2025). English as a lingua franca and its impact on willingness to communicate in a second language. *Language Teaching Research Quarterly*, 48, 125–138. <https://doi.org/10.32038/ltrq.2025.48.08>
- Wallace, R. S. (2009). *The anatomy of ALICE*. Springer Netherlands.
- Waluyo, B. (2020). Thai EFL learners' WTC in English: Effects of ICT support, learning orientation, and cultural perception. *Humanities, Arts and Social Sciences Studies*, 20(2), 477–514. <https://doi.org/10.14456/hasss.2020.18>
- Waluyo, B., & Kusumastuti, S. (2024). Generative AI in student English learning in Thai higher education: more engagement, better outcomes? *Social Sciences & Humanities Open*, 10, 101146. <https://doi.org/10.1016/j.ssaho.2024.101146>
- Waluyo, B., Phanrangsee, S., & Whanchit, W. (2023). Gamified grammar learning in online English courses in Thai higher education. *Online Journal of Communication and Media Technologies*, 13(4), 1–17. <https://doi.org/10.30935/ojcmnt/13752>
- Wang, M., Wang, H., & Shi, Y. (2022). The role of English as a foreign language learners' grit and foreign language anxiety in their willingness to communicate: Theoretical perspectives. *Frontiers in Psychology*, 13, 1002562. <https://doi.org/10.3389/fpsyg.2022.1002562>
- Weizenbaum, J. (1966). ELIZA—a computer program for the study of natural language communication between man and machine. *Communications of the ACM*, 9(1), 36–45. <https://dl.acm.org/doi/pdf/10.1145/365153.365168>

- Yang, H., Kim, H., Lee, J. H., & Shin, D. (2022). Implementation of an AI chatbot as an English conversation partner in EFL speaking classes. *ReCALL*, 34(3), 327–343. <https://doi.org/10.1017/S0958344022000039>
- Yashima, T. (2002). Willingness to communicate in a second language: The Japanese EFL context. *The Modern Language Journal*, 86(1), 54–66. <https://doi.org/10.1111/1540-4781.00136>
- Yuan, Y. (2024). An empirical study of the efficacy of AI chatbots for English as a foreign language learning in primary education. *Interactive Learning Environments*, 32(10), 6774–6789. <https://doi.org/10.1080/10494820.2023.2282112>
- Zadorozhnyy, A., & Lai, W. Y. W. (2023). ChatGPT and L2 written communication: A game-changer or just another tool? *Languages*, 9(1), 1–11. <https://doi.org/10.3390/languages9010005>
- Zhang, J., Beckmann, N., & Beckmann, J. F. (2025). No pain, no gain: Willingness to communicate vis-à-vis communication behaviour and their effects on language performance. *Language Teaching Research Quarterly*, 48, 103–124. <https://doi.org/10.32038/ltrq.2025.48.07>
- Zhang, C., Meng, Y., & Ma, X. (2024). Artificial intelligence in EFL speaking: Impact on enjoyment, anxiety, and willingness to communicate. *System*, 121, 103259. <https://doi.org/10.1016/j.system.2024.103259>
- Zhou, L., Xi, Y., & Lochtman, K. (2023). The relationship between second language competence and willingness to communicate: The moderating effect of foreign language anxiety. *Journal of Multilingual and Multicultural Development*, 44(2), 129–143. <https://doi.org/10.1080/01434632.2020.1801697>