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Exploring Chinese EFL learners' AI continuance use intention based on the ECM-ISC: Theoretical validation and contextual extension

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Abstract

Grounded in the Expectation–Confirmation Model of Information System Continuance (ECM-ISC), this study employs semi-structured interviews to investigate the usage experiences and continuance intention of Chinese EFL learners toward AI tools. Through systematic coding and thematic analysis, ten key influencing factors within the dimensions of perceived usefulness and confirmation were identified, encompassing both theoretical and contextual dimensions. Findings indicate that learners' satisfaction with AI tools is often implicitly expressed through nuanced emotional responses, reflecting a complex psychological negotiation among functional value, cultural identity, ethical concerns, and academic norms. The study further reveals the distinctive influence mechanisms of localized factors, such as policy support and cultural context, within the Chinese educational ecology on continuance intention. Building on the validation of ECM-ISC's core variables, this research deepens the model's localized interpretation, enriches understanding of AI tool usage behaviors in cross-cultural digital learning environments, and offers practical implications for localized educational technology design, teacher professional development, and policy formulation.

Keywords: ECM-ISC, AI continuance use intention, Chinese EFL learners, educational technology

Introduction

Artificial Intelligence (AI) tools have undergone rapid development and witnessed widespread application in recent years. These tools have demonstrated substantial potential in areas such as text generation, speech recognition, and data mining. However, its extensive deployment has concurrently raised significant challenges across ethical, technical, regulatory, and policy domains (Fui-Hoon Nah et al., 2023). In recent years, with the continuous evolution of large-scale models such as ChatGPT, Claude, and Gemini, alongside the rapid maturation of China's domestic model ecosystem—represented by open-source language models such as DeepSeek—remarkable advances have been achieved in deep reasoning, long-chain logic, and complex data processing. Consequently, the capabilities of AI in language processing and knowledge construction have been significantly enhanced. Among various application contexts, the integration of AI tools into education—particularly language education—has attracted considerable scholarly attention, as its transformative capacity is reshaping traditional educational paradigms (Dai & Liu, 2024).

In the early stages of research on AI tools in language education, studies mainly explored its pedagogical potential through conceptual discussions or instructional descriptions (Schmidt & Strasser, 2022; Chiu et al., 2023). In actual learning contexts, English as a Foreign Language (EFL) learners are frequently required to engage in extensive language production tasks, including academic writing, interlingual translation, and intercultural communication. Within such contexts, the immediate feedback, linguistic refinement, and culture-sensitive recommendations afforded by AI technologies have gradually been recognized as essential scaffolding for the enhancement of learners' linguistic competence and academic performance. In recent years, the increasing prevalence of empirical studies has further highlighted the role of AI tools in language education, as its practical utility has been systematically examined in areas such as writing (Dizon & Gayed, 2021), translation (Kruk & Kałużna, 2025), speaking (Young & Shishido, 2023), learning engagement (Shen & Teng, 2025) and metacognitive awareness (Teng, 2025). At the same time, the rapid advancement of AI has provoked divergent perspectives within higher education: on the one hand, it has been argued that AI tools reshape conventional modes of language learning by providing more intelligent and personalized forms of support; on the other hand, concerns have been expressed that it may foster learner overdependence, thereby constraining the development of creativity and critical thinking (Dai & Liu, 2024).

Although these studies have broadened the understanding of AI use in language learning, explanations of the underlying psychological mechanisms in the long-term process remain insufficient. In particular, existing research has predominantly focused on learners' acceptance intention at the stage of initial adoption, while comparatively little attention has been directed toward their continuance intention after sustained use. Moreover, for specific learner groups, especially English majors with higher language proficiency and strong demands for academic writing—research remains limited regarding how the pedagogical value, cultural adaptability, ethical implications, and functional reliability of AI tools are perceived. Within the Chinese context, the use of AI tools is further shaped by local factors such as educational policies, academic conventions, and linguistic practices; thus, their contextual adaptability and sustainable value warrant systematic investigation.

To address this research gap, the present study adopts the Expectation Confirmation Model for Information System Continuance (ECM-ISC) as the theoretical framework to investigate the key determinants influencing Chinese English majors' AI continuance use intention. Compared with traditional technology acceptance models, ECM-ISC extended the Expectation–Confirmation Model (ECM), which has been widely applied to explain users' post-adoption behaviors in general information system contexts, to the educational technology domain. It emphasizes post-adoption

behavioral change and provides a more comprehensive account of the psychological transition from initial trial use to the routine integration of technology into learning practices. Given AI's highly interactive nature, uncertain output, and complex cultural embeddedness, learners' perceptions and confirmation processes regarding its effectiveness are inherently subjective and dynamic. This characteristic renders the ECM-ISC framework particularly suitable for the current investigation, offering new theoretical and practical insights. On one hand, the application of this model contributes to bridging the research gap concerning sustained use intention in AI-enhanced education and extends the applicability of existing theories of technology acceptance and behavioral continuance within the domain of language education. On the other hand, it provides theoretical foundations and practical implications for enhancing the integration of AI tools within China's higher education system at both the theoretical and contextualized dimensions.

Literature Review

Expectation-Confirmation Model for Information Systems Continuance

The sustained attention of scholars in the fields of information technology and education has long been directed toward understanding users' perceptions of technological structures and their continuance use intentions (Oliver, 1980; Bhattacherjee, 2001). Given the conceptual parallels between users' continued engagement with information systems and consumers' repeat purchasing behavior, Bhattacherjee (2001) integrated Expectation Confirmation Theory with the Technology Acceptance Model (TAM) to propose the Expectation Confirmation Model for Information Systems Continuance (ECM-ISC). This model was designed to examine users' continuance behaviors in relation to information system products or services. ECM-ISC has since become one of the most influential and widely applied frameworks for explaining user satisfaction and continued usage intention within information system contexts and has been extensively utilized in domains such as education, e-commerce, and social media.

Bhattacherjee (2001) emphasized that ECM-ISC specifically addresses post-adoption behaviors within information system environments. A key contribution of this model lies in the introduction of the construct *confirmation*, which refers to "the congruence between expectation and actual performance" (Bhattacherjee, 2001, p. 359). This emphasis shifts the analytical focus toward *satisfaction* and *confirmation*, thereby expanding the understanding of post-adoption decision-making processes. The model comprises four core constructs: *confirmation*, *perceived usefulness*, *satisfaction*, and *continuance use intention*. Among these, the first three variables are widely recognized as critical determinants of users' sustained engagement with information systems (Pasupuleti & Thiyyagura, 2024; Duong et al., 2024). The interaction pathways among these variables reveal the "cognition–affect–behavior" transformation mechanism that occurs after users engage with a technology, which constitutes a core theoretical foundation for explaining the continuance adoption of complex technological systems.

ECM-ISC offers a structured framework for understanding how users form continuance intention after initial adoption. Given that AI tools now exhibit key characteristics of information systems—such as task support, feedback delivery, and interactive learning (Collins et al., 2021; Bahroun et al., 2023)—they align well with the cognitive appraisal mechanisms defined in IS research. Compared with pre-adoption models like TAM, ECM-ISC emphasizes satisfaction and behavioral persistence post-adoption, making it more suitable for analyzing sustained AI engagement (Bhattacherjee et al., 2008; Franque et al., 2021). However, existing studies have predominantly relied on quantitative survey methods, which, although capable of illustrating the structural relationships among variables, are limited in capturing learners' dynamic experiences, behavioral adjustments, and meaning-making processes during actual engagement

with AI tools. Therefore, the adoption of qualitative approaches is necessary to investigate the mechanisms underlying learners' continuance intention from the perspective of authentic usage contexts, thereby addressing the current insufficiency in contextualized understanding and process-oriented analysis.

Research on AI Continuance Use Intention and Its Influencing Factors

Continuance Use Intention refers to the user's behavioral tendency to persist in using a particular system or product after its initial adoption (Bhattacherjee, 2001). In line with this definition, the present study conceptualizes the continuance use intention of AI tools as learners' proactive tendency to continue utilizing AI-assisted learning tools, formed through their comprehensive perception of the tool's actual effectiveness, usage experience, and various contextual factors. Continuance use intention not only influences the promotion and sustainable development of AI technologies but also plays a critical role in determining the effectiveness of their practical implementation (Xie et al., 2023). Existing studies have employed classical theoretical frameworks—such as the Technology Acceptance Model (TAM), the Expectation Confirmation Model (ECM), and the Unified Theory of Acceptance and Use of Technology (UTAUT)—to explain the factors underpinning users' continued engagement with AI (Ashfaq et al., 2020; Huang & Zou, 2024; Li et al., 2024).

In addition to these theory-based core variables, researchers have increasingly begun to explore emerging influencing factors in specific contexts. For instance, Lin et al. (2017) extended the ECM-ISC framework by incorporating variables such as *perceived privacy risk*, *perceived enjoyment*, *perceived reputation*, and *community identification* to investigate users' continuance behaviors within social networking environments. This line of inquiry indicates a shift from traditional explanatory models to those that account for multidimensional contextual variables in AI-related usage scenarios, including *perceived intelligence* (Lee et al., 2023) and affective factors (Ashfaq et al., 2020). Moreover, the use of AI is often embedded within specific socio-cultural contexts or shared community structures, which means that socio-cultural factors are increasingly incorporated into studies of continuance intention. For example, ethical considerations (Liu & Du, 2020; Niu & Mvondo, 2024), along with social norms and community influences (Xu et al., 2024), play an increasingly prominent role in shaping users' sustained engagement with AI technologies. This trend indicates that the continuance use of AI has shifted from an early rational evaluation model to a multidimensional and dynamic process shaped by the interplay of social, cultural, and affective mechanisms. It further suggests that researchers need to move beyond a "technological determinism" perspective and return to user-centered practice contexts to construct analytical frameworks attuned to the contemporary technological landscape, thereby uncovering the underlying mechanisms and pathway logic of AI continuance behavior (Moussawi et al., 2023).

Research on AI Continuance Use Intention in EFL Setting

Mageira et al. (2022) pointed out that AI is particularly effective in delivering educational content, engaging in dialogue with learners, and providing immediate feedback, thereby complementing, to some extent, the role of human educators and offering learners continuous assistance and support. This function has been regarded as especially significant in distance learning and second language acquisition. The advancement of AI has further facilitated the realization of personalized learning, cross-linguistic learning approaches, intelligent instructional strategies, efficient academic planning, and optimized management systems. It has thus been positioned not only as an important auxiliary tool for educators but also as a virtual tutor for learners, assisting with tasks such as curriculum planning, language translation

(Kruk & Kałużna, 2025), speaking practice (Young & Shishido, 2023), and academic writing (Dizon & Gayed, 2021; Tai, 2024; Fathi et al., 2025). Empirical evidence further demonstrates that AI tools can enhance learning outcomes at multiple levels: they can increase EFL learners' writing motivation and collaborative engagement (Teng, 2024), strengthen affective and behavioral engagement during feedback processes (Teng & Huang, 2025), and foster critical appropriation and transfer of AI-generated suggestions, which is significantly influenced by learners' metacognitive capacity (Teng, 2025). In addition, AI has also been shown to hold potential in alleviating foreign language anxiety, improving learner participation, and promoting learning through multimodal interaction (Ai et al., 2025).

Given the multifaceted effectiveness of AI in education, ensuring its long-term pedagogical value hinges on understanding learners' continuance intention to use AI tools in authentic learning contexts. Previous studies have indicated that learners generally perceive AI as advantageous in supporting affective regulation, alleviating task-related stress, and enhancing learning efficiency in tasks such as writing (Dizon & Gayed, 2021), translation (Dizon et al., 2025), and speaking practice (Young & Shishido, 2023), thereby strengthening their motivation and identification with the tool (Tai & Chen, 2023; Kwon et al., 2023; Abdelhalim, 2024; Sun, 2024). In addition, continuance intention toward AI has been found to be closely associated with the quality of its feedback (Lin & Lee, 2023; Song & Song, 2023; Zou et al., 2024). When AI consistently aligns with learners' instructional goals, its functional adaptability and information quality can substantially facilitate behavioral engagement and cognitive strategy adjustment (Tian et al., 2024; Liu et al., 2025; Dole, 2007). Furthermore, learners' evaluations of AI tools are not static; rather, they are dynamically constructed through ongoing trade-offs among emotions, cognition, and task demands (Chen & Girish, 2023; Palací et al., 2019). In practice, learners continuously negotiate among perceived value, emotional acceptance, and risk perception, thereby generating highly contextualized usage experiences (Dai et al., 2020; Huang & Yu, 2023; Al-Shafei, 2025; Homburg et al., 2006; Lent & Brown, 2006).

It is noteworthy that, although existing studies have confirmed the positive impact of AI tools on the academic performance of EFL learners, most of these investigations have focused on the immediate effects of instructional interventions or on single-variable analyses, lacking a comprehensive framework for understanding the process from initial use to continuance. In particular, research remains limited on how learners engaged in long-term, high-order language tasks continuously regulate their AI use, cognitive evaluations, and strategic choices under the combined influences of task demands, affective experiences, and socio-cultural interactions. Existing studies have primarily concentrated on perceived usefulness and satisfaction (Li, 2021) or on AI characteristics such as perceived intelligence and anthropomorphism (Lin & Lee, 2023). However, AI usage does not occur in a vacuum; it is embedded within specific socio-cultural contexts and shaped by multidimensional institutional factors, including national policies and educational systems (Wu et al., 2022; Lindell & Utterberg Modén, 2025), socio-cultural norms (Eynon & Young, 2021), ethical considerations (Tram et al., 2024; Mohamed, 2024; Zhu et al., 2025; Huang et al., 2023), and technological security (Salih et al., 2025). Significant variations in technological perceptions and usage behaviors are observed across cultural groups (Franque et al., 2021; Essien et al., 2024). In the Chinese context, higher education institutions have promoted digital education strategies, encouraging the use of AI tools in teaching and research while imposing strict requirements regarding data privacy, academic integrity, and technical compliance; such institutional mandates also influence students' attitudes toward and behaviors in using AI tools (Niu & Mvondo, 2024).

Therefore, it is necessary to construct a comprehensive analytical framework within the Chinese higher education EFL context that encompasses technological functionalities, user

psychology, and socio-cultural regulatory mechanisms, and to employ qualitative research to systematically investigate learners' AI usage behaviors and cognitive processes. On the one hand, such an approach can systematically reveal learners' psychological trajectories during actual AI use; on the other hand, it can illuminate the formation process of continuance intention, which involves not only technological alignment but also the complex interplay of cognition, affect, and cultural experience. The adoption of qualitative methods not only addresses the limitations of existing research in depth and contextualized understanding but also captures learners' experiences in authentic task settings, thereby extending the explanatory power of the ECM framework in the EFL domain and responding to methodological and contextual gaps in the literature.

Against this background, the present study aims to address the following research question: *What are the key factors influencing Chinese EFL learners' continuance intention to use AI tools?*

Method

In this study, a qualitative research methodology was adopted, with data primarily collected through semi-structured interviews. The data were subsequently coded and subjected to thematic analysis using NVivo12 to ensure systematic and rigorous analysis. Compared to quantitative research, qualitative inquiry relies on the interaction between the researcher and the participants, allowing for a nuanced and dynamic description and analysis of phenomena. This approach facilitates the identification of problems or the proposition of new perspectives, thereby enabling an in-depth exploration of motivation, context, and underlying logic, which contributes to a more comprehensive understanding of the complexity of phenomena (Tondeur et al., 2013). Semi-structured interviews, characterized by open-ended questions and flexible probing techniques, not only capture participants' verbal responses but also account for contextual cues, emotional expressions, and non-verbal information. This method enables the researcher to delve deeply into participants' perceptions of AI, their usage experiences, attitudes, and levels of satisfaction, which is essential for understanding individual behavior and decision-making processes.

Settings and Participants

The study focused on 15 undergraduate EFL learners from a language-focused university in Northeast China. This institution was chosen due to its strong academic foundation in English language teaching and its well-established expertise in the integration of digital humanities and AI technology in education and research. The university hosts a Digital Humanities Laboratory and an AI Laboratory, and also has accumulated extensive experience in the integration of language learning and technology. Furthermore, English majors rely heavily on AI technology in areas such as academic writing, translation, and interpretation. The application of AI tools in text refinement, corpus analysis, and intelligent translation makes them a key user group of AI technology. Consequently, the AI usage patterns and continued use intentions of EFL learners at this institution hold high research value and exhibit a certain degree of representativeness.

Purposeful sampling was employed in this study to select English majors with prior experience in using AI tools. Participants were required to have used AI tools (such as ChatGPT, Grammarly, DeepL, etc.) continuously for at least three months during their learning process to ensure they possessed sufficient user experience and cognitive understanding of AI technology. A total of 10 to 12 participants were invited to participate in the interviews, and data collection was concluded once data saturation was achieved, i.e., when no new themes or insights emerged from subsequent interviews.

This study adhered to the ethical guidelines of BERA (2018) and implemented multiple measures to protect the privacy of research participants. These measures included obtaining informed consent with the option for participants to withdraw at any time, implementing anonymization procedures (using pseudonyms and removing identifying information about the institution), and conducting member checks to ensure the accuracy of data interpretation. Details of the research participants are presented in Table 1.

Table 1. Demographic information of participants

Participants	Gender	Grade	Major	AI usage experience	Interview time and duration
S1	Female	Master-2nd year	English education	3 years	2025.04.15 32 min
S2	Female	Master-2nd year	English education	3 years	2025.04.04 34 min
S3	Female	Doctor-1st year	English Language and Literature	3 years	2025.04.05 40 min
S4	Male	Master-3rd year	English education	5 years	2025.04.06 31 min
S5	Female	Undergraduate-1st year	English	1 year	2025.04.08 30 min
S6	Female	Undergraduate-1st year	English	1 year	2025.04.08 33 min
S7	Female	Undergraduate-1st year	English	1 year	2025.04.08 35 min
S8	Female	Undergraduate-1st year	English	1 year	2025.04.08 33 min
S9	Male	Master-1st year	English education	6 months	2025.04.12 32 min

Instrument and Procedure

In this study, core data were collected through semi-structured interviews, with each interview expected to last approximately 30 to 45 minutes. The interview protocol was designed in accordance with the research objectives, covering participants' basic information, AI usage experiences and attitudes, as well as the factors influencing their continued intention to use AI.

All interviews were conducted in Chinese to ensure that participants could freely and comprehensively express their genuine thoughts (Creswell, 2014). Prior to the formal interviews, 2 to 3 pilot interviews were conducted to assess the clarity of the questions and the feasibility of the interview process. The interview protocol was then refined based on the feedback from these pilot interviews. The final interview protocol was reviewed by experts with extensive knowledge of the research topic or methodology to ensure content validity. Sample questions included: "Do you intend to continue using AI in your academic life? If so/not, what are the reasons behind your continued use (or lack thereof) of AI?"

Data collection involved audio recording and interview notes. Upon obtaining participants' informed consent, the interviews were audio-recorded and subsequently transcribed into text

for initial processing. The transcribed data were then reviewed and refined by the researcher to eliminate redundant content, after which the cleaned transcripts were returned to the participants for member checking to ensure data completeness and accuracy. Finally, the verified transcripts were imported into NVivo12 for further coding and thematic analysis.

Data Analysis

This study was grounded in ECM-ISC and employed Braun and Clarke's (2006) thematic analysis framework to extract key themes. First, the interview transcripts were read multiple times to develop a comprehensive understanding of the data. Initial codes related to factors influencing the continued use intention of AI were then generated based on the research objectives. These initial codes were subsequently merged to form broader themes. The identified themes were further reviewed to ensure their alignment with the research objectives. After refinement and naming, a qualitative report was produced by incorporating relevant excerpts from the interviews. Since the focus of this study was to explore factors influencing the continued use intention of AI, the final themes reflected specific categories of these influencing factors.

To further ensure the rigor of the study, the researchers strictly adhered to the trustworthiness criteria proposed by Lincoln and Guba (1985) and implemented quality control through peer debriefing and triangulation. First, independent coding was conducted separately by the second and third authors. During the integration phase, the researchers engaged in an in-depth discussion of the emergent themes derived from the coding process to ensure that these themes accurately captured the characteristics of the data and maintained alignment with the research objectives. Subsequently, the research data, data collection methods, analysis procedures, and preliminary findings were subjected to an additional audit by the first author to further validate the accuracy of the coding. The first author, a Chinese researcher with extensive expertise in the field of applied linguistics, conducted a comprehensive review of the data collection and analysis processes, drawing upon their professional knowledge and experience. Necessary modifications and refinements were made by the research team based on the feedback provided. Finally, the results of the data analysis were subjected to member checking with the research participants to ensure that the findings authentically reflected their perspectives and experiences, thereby enhancing the overall validity and reliability of the study.

Findings

Grounded in the ECM-ISC, the present study investigates the key factors influencing the continuance use intention of AI tools among English majors. Drawing on interview data, the study identifies ten specific themes categorized under the two core dimensions of *perceived usefulness* and *confirmation*. The definitions and coding frequencies of these themes are presented in Figures 1 and 2. It is noteworthy that *satisfaction* was not conceptualized as an independent theme in this study. This is because *satisfaction*, as reflected in the interview data, manifested primarily as a latent emotional response. Rather than being directly articulated, it was frequently embedded in learners' internal evaluations and cognitive negotiations between the perceived usefulness of AI tools and the extent to which their expectations were confirmed.

Within the *Confirmation* dimension, 'Functional Confirmation' (38) and 'Content Quality Confirmation' (37) were most frequent, showing that learners prioritize whether AI tools meet academic tasks and ensure accurate, well-structured content. 'Intercultural Confirmation' (8) was less considered, suggesting cultural neutrality is not yet a major factor.

In *Perceived Usefulness*, 'Task Coverage' (59), 'Learning Efficiency' (54), and 'Feedback Quality' (47) dominated, indicating learners focus on practicality, time savings, and feedback

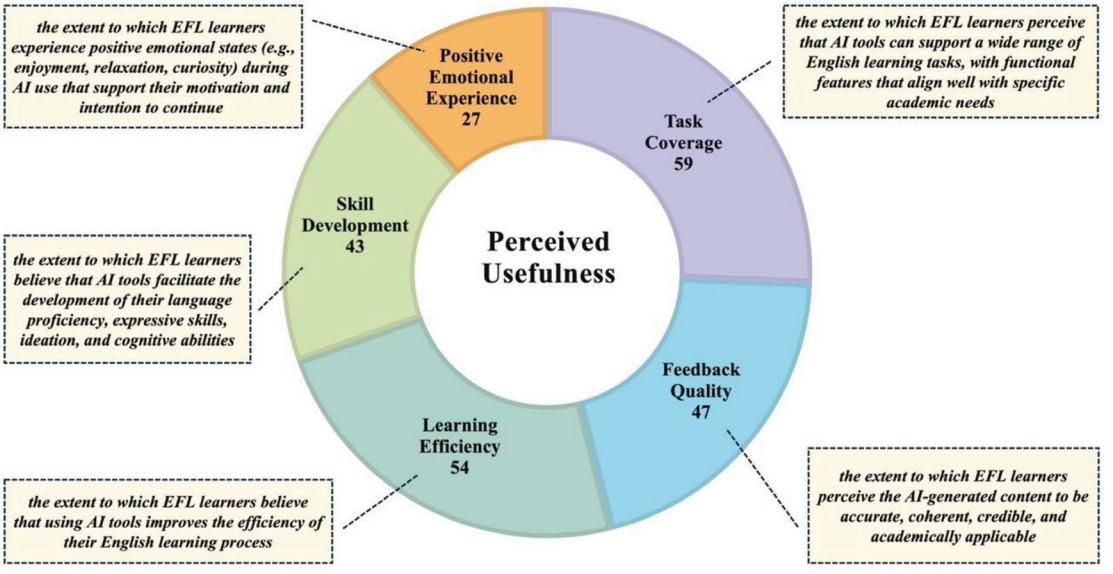

Figure 1. *Factors related to Perceived Usefulness influencing Chinese EFL learners' AI continuance use intention.*

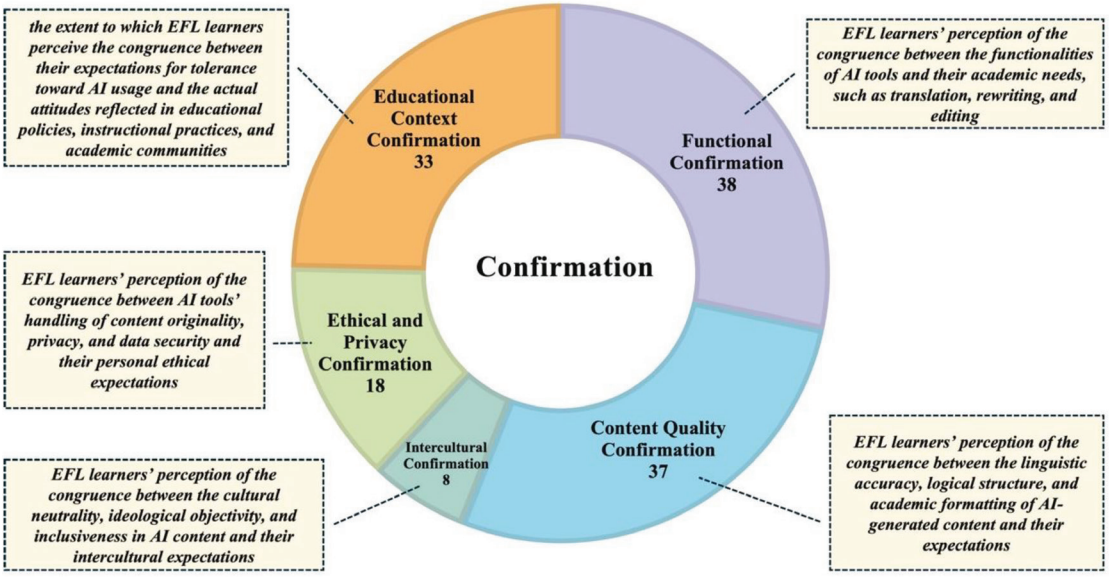

Figure 2. *Factors related to Confirmation influencing Chinese EFL learners' AI continuance use intention.*

quality. 'Positive Emotional Experience' (27) was noted but largely viewed as a by-product rather than a direct driver of continued use.

Besides, Figure 3 reveals a strong link between *Confirmation* and *Perceived Usefulness*: even time-saving AI is not deemed truly useful if functions are unstable or feedback unclear,

supporting *Satisfaction*'s mediating role in the ECM-ISC model, often reflected in hesitation, compromise, and trust.

Finally, 'Educational Context Confirmation' (33) and 'Ethical and Privacy Confirmation' (18) highlight contextual influences: learners' evaluations are shaped by school policies, classroom climate, teacher attitudes, and privacy standards, emphasizing the need to adapt ECM to localized educational contexts."

Perceived Usefulness: Value Perception Driven by Multidimensionality

The ECM-ISC posits that users' *perceived usefulness* of a technology exerts a direct influence on their continuance use intention (Bhattacherjee, 2001). Findings from the present study indicate that EFL learners' perceptions of AI tools extend beyond functional evaluations; rather, they represent a multidimensional construct shaped by the interplay between actual task demands and individual emotional experiences. Six key themes were identified as contributing to learners' perceived usefulness of AI tools:

Task Coverage (59 Occurrences)

Task coverage refers to the breadth of applicability of AI tools across multiple learning scenarios. This theme emerged as the most frequently mentioned, serving as learners' primary point of reference when appraising the utility of AI—especially in the early stages of adoption. As such, task coverage may be considered a precursor variable to perceived usefulness, as it determines whether learners can experience the value of the technology from the outset. Multiple participants described AI as "*powerful*" in its functionalities. For example, S1 noted:

> *From prepping for class to completing assignments, I rely on AI entirely—it helps with translation, editing, speaking practice, and more across nearly every part of my learning. (S1, interview, April 17, 2025)*

Learning Efficiency (54 Occurrences)

Learning efficiency pertains to whether AI tools can provide timely and valuable feedback by leveraging advanced retrieval capabilities and interactive intelligence, thereby helping learners quickly identify and correct errors while reducing cognitive and time costs. Many participants highlighted AI's "*speed in retrieving information,*" its ability to "*summarize key points from literature quickly,*" and its capacity to "*generate frameworks rapidly.*" For instance, S2 explained:

> *AI's efficiency lets me skip hours of reading—its summaries and translations highlight key points, saving time and reducing burnout. (S2, interview, April 4, 2025)*

Such reflections underscore AI's significant advantages in timesaving and productivity, which contribute to learners' continued engagement (Mageira et al., 2022).

Feedback Quality (47 Occurrences)

Feedback quality involves not only the linguistic accuracy, logical coherence, and academic appropriateness of AI-generated content, but also its alignment with users' linguistic proficiency levels and educational roles. While several participants described AI feedback as "*coherent,*" "*multi-perspective,*" and "*inspiring,*" concerns about the limitations of such feedback were also voiced. For example, S6 commented:

> *Sometimes AI overestimates my level, giving too advanced vocabulary and sticking to its logic—even making up references. It can be frustrating. (S6, interview, April 8, 2025)*

This suggests that perceived usefulness is influenced not only by the formal quality of AI output but also by the degree to which the tool adapts to the learner's identity. Both overly advanced and overly simplistic feedback can reduce learners' willingness to continue using AI tools.

Skill Development (43 Occurrences)

In terms of skill development, learners expressed mixed perceptions about whether AI tools contribute to their linguistic and cognitive growth as EFL learners. On one hand, some respondents viewed AI as a form of *cognitive* or *knowledge scaffolding* (Wei, 2023), noting that it "*provides native-like expressions,*" "*facilitates brainstorming,*" and helps them "*grasp new research methods,*" thereby enhancing language proficiency, writing logic, and academic skills. This indicates that perceived usefulness encompasses not only immediate utility but also long-term developmental benefits.

On the other hand, concerns were raised about the risk of over-reliance. For instance, S7 remarked:

> *I worry that if I always depend on AI, my thinking ability might deteriorate. I might forget grammar, vocabulary, and expressions I used to know. (S7, interview, April 8, 2025)*

Such comments reveal a tension between functional support and the erosion of learner autonomy, echoing findings that excessive AI reliance may hinder critical thinking and self-efficacy (Hasanein & Sobaih, 2023). When learners' confidence in their own abilities is undermined, their initial perceptions of usefulness may be challenged, reducing their motivation for continued use.

Positive Emotional Experience (27 Occurrences)

This dimension captures the emotional value of AI tools in regulating learners' affective states. Several participants noted that using AI in oral practice and academic writing helped alleviate speaking anxiety. Moreover, AI, as a "*non-judgmental conversational partner,*" created a psychologically safe environment, reducing performance pressure and promoting engagement. This emotional support function aligns with previous findings that AI can mitigate learning-related anxiety and enhance motivation (Ai et al., 2017). As S9 shared:

> *AI is very useful—I'm often too shy to ask others, but with AI, I don't worry about social factors. It feels very positive emotionally. (S9, interview, April 12, 2025)*

Confirmation: Functional and Situational Matching in Continuous Interaction

Confirmation refers to users' post-adoption evaluation of the consistency between their prior expectations and actual experiences. The thematic analysis in this study reveals that EFL learners' confirmation of AI tools extends beyond practical functionality to encompass ethical and cultural dimensions. Five key themes were identified:

Functional Confirmation (38 Occurrences)

Functional confirmation pertains to learners' assessments of whether the core functions of AI tools—such as language processing and creative generation—adequately meet their evolving

academic needs. It centers on whether the tool performs as expected, especially in supporting academic writing and language skill development. High functional confirmation occurs when AI tools are perceived to reliably address specific learning problems. As S3 stated:

> *AI is powerful—efficiently translating literature, extracting key info, refining language, and aiding research design. It meets my expectations perfectly. (S3, interview, April 5, 2025)*

However, not all learners shared this enthusiasm. When AI struggled with interpreting complex linguistic input or misunderstood field-specific prompts, users reported frustration. These instances of functional breakdown or command misinterpretation triggered negative confirmation, undermining learners' trust and dampening satisfaction. For instance, S4 remarked:

> *Most AI tools now have 'deep thinking.' It was smooth at first but lagged when I needed it most—very disappointing. (S4, interview, April 6, 2025)*

Information Quality Confirmation (37 Occurrences)

Learners' expectations of content quality are closely tied to the language accuracy, logical structure, and contextual appropriateness of AI-generated output. When AI responses were perceived as superficial, distorted, or overly templated—e.g., "*lack of analytical depth,*" "*misrepresentation of meaning,*" or "*formulaic structure*"—users expressed dissatisfaction, which often led to discontinuation (Chen et al., 2025). These concerns reflect learners' desire for meaningful, personalized academic support, rather than mere grammatical correction. As S2 expressed:

> *Sometimes AI edits my writing too much, distorting my original meaning. The result doesn't match what I intended to express. (S2, interview, April 4, 2025)*

Ethical and Privacy Confirmation (18 Occurrences)

The use of AI raised concerns related to originality, data security, and ethical compliance. Several participants voiced apprehensions about the risk of plagiarism, embedded political bias, or potential data leakage. These concerns—categorized as "latent deterrents" to continuance intention (Tian et al., 2024)—revealed the rising significance of ethical and privacy considerations. As S2 shared:

> *When I use AI to polish my papers, I'm really worried it might steal my ideas. I'm also afraid the output will be flagged as academic misconduct. (S2, interview, April 4, 2025)*

These concerns reflect the negative confirmation mechanism in the ECM-ISC framework: when ethical risks or regulatory anxieties emerge during usage, learners' satisfaction and trust decline, reducing their willingness to continue. However, the data also revealed a more optimistic view. Some participants expressed increased trust and long-term commitment when AI systems clearly communicated privacy safeguards—describing them as "*reliable long-term language partners*."

Educational Environment Confirmation (33 Occurrences)

This theme reflects the influence of external institutional factors on the confirmation process (Kim & Lee, 2020). Learners' evaluation of whether AI usage is sanctioned and supported by educational systems and classroom norms plays a critical role in shaping their continued use. As universities promote digital transformation, many Chinese institutions have encouraged students to adopt AI tools in appropriate academic contexts. This institutional support provides a "confirmatory signal" that aligns learners' expectations with environmental affordances. As S5 stated:

> *Our department has an open policy on AI. Teachers tell us which tasks we can use it for, and even teach us tips for better use. It really reassures me because it matches what I expected. (S5, interview, April 8, 2025)*

By contrast, negative confirmation occurs when institutional restrictions contradict learners' assumptions. As S9 commented:

> *Our school strictly bans AI use—they even check AI-generated content rates. (S9, interview, April 12, 2025)*

Such restrictive environments result in unmet expectations regarding usage permissions, undermining learners' confidence and discouraging sustained engagement.

Intercultural Confirmation (8 Occurrences)

Cross-cultural confirmation captures learners' subjective assessments of how well AI tools align with their cultural expectations in terms of language, communicative norms, and cognitive styles. For Chinese EFL learners, this dimension is particularly salient. Beyond functional efficacy, they care whether AI-generated content is compatible with local educational logics, linguistic conventions, and cultural values. When cultural mismatches occur, output quality suffers, weakening confirmation. As S3 noted:

> *Some AI models are trained with Western-centric data, which leads to biases in gender, race, and culture. If these biases can't be resolved, I won't use AI for critical analysis anymore. (S3, interview, April 5, 2025)*

Implicit Satisfaction: Conflicted Narratives in Goal-Oriented Use

In this study, *satisfaction* did not manifest explicitly through direct statements such as "*I am satisfied*" or "*I am not satisfied*." Instead, it was conveyed implicitly through learners' contradictory reflections and ambivalent expressions. This phenomenon may partly stem from culturally rooted tendencies toward emotional restraint in Chinese contexts (Chen et al., 2005), but more importantly, it suggests that satisfaction, especially in the early-stage educational adoption of AI in China's EFL setting, may operate in a more nuanced and layered fashion than traditional models presume.

During the interviews, EFL learners frequently expressed their psychological tension through statements such as *"It's useful, but I don't fully trust it"* or *"It helps, but I'm afraid to rely on it."* For example, S4 noted:

> *It's hard to say whether I'm satisfied. It's definitely efficient, but every time I use AI to help with translation or writing, I feel like I'm somehow cheating. (S4, interview, April 6, 2025)*

Such expressions reveal that satisfaction is not derived from a singular, binary evaluation of the tool, but rather emerges through a dynamic trade-off between perceived usefulness (e.g., efficiency, skill development) and confirmation (e.g., ethical concerns, cultural compatibility). While learners acknowledge AI tools' alignment with learning needs and the emotional value they offer (Lam, 2025; Xie et al., 2024), they also remain highly sensitive to issues related to information quality, cultural appropriateness, and ethical boundaries (Kelly et al., 2023; Kim et al., 2023; Niu et al., 2024).

Crucially, *satisfaction* in this context appears to be situationally contingent, shaped by the immediacy and complexity of learners' academic demands. The pursuit of multiple, and at times conflicting, goals often lead to a degree of compromise or prioritization, wherein learners consciously set aside less urgent concerns to meet pressing needs. This cognitive dissonance and psychological negotiation form the implicit fabric of their satisfaction judgments. As S5 articulated:

> *In urgent moments, I'm satisfied with AI's efficiency despite quality worries—even though I still worry about the quality. Sometimes the need just outweighs the concerns. (S5, interview, April 8, 2025)*

Discussion

Based on the results of thematic analysis, this study confirms and extends the applicability of the ECM-ISC in explaining the continued use of AI tools among Chinese EFL students. To more clearly illustrate the relationships among the influencing factors, a conceptual model was developed (see Figure 3), which systematically presents the dynamic process by which learners move

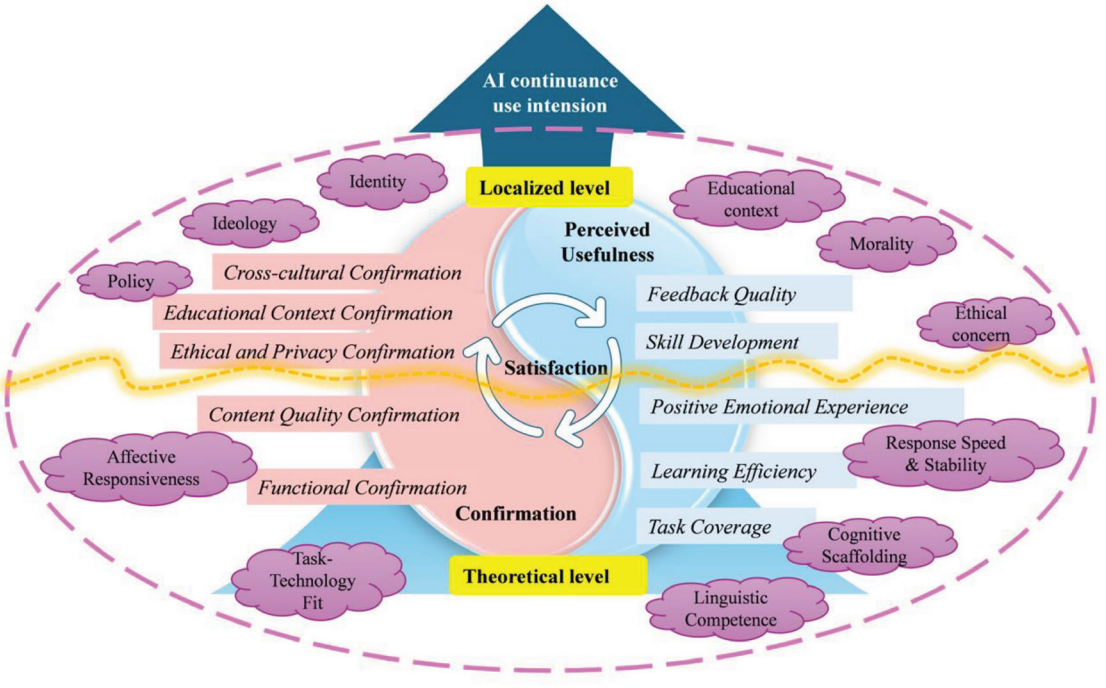

Figure 3. *Conceptual model of Chinese EFL learners' continuance use intention of AI tools based on the ECM-ISC framework.*

from multidimensional perceptions of usefulness and confirmation to implicit satisfaction, and ultimately to continuance intention. This model distinguishes between theoretical-level constructs and localized influencing paths, highlighting the critical role of cultural context, policy support, and other contextualized factors in shaping learners' sustained use of AI. By incorporating these dimensions, the model not only addresses Bhattacherjee's (2001) characterization of continuance behavior mechanisms in the post-adoption phase but also resonates with Moussawi et al.'s (2023) proposal of a context-embedded, multi-path explanatory model, thereby reflecting a paradigm shift in research on learners' interactions with AI technologies in educational settings.

First, this study further reveals that EFL learners' cognitive construction of perceived usefulness of AI tools encompasses not only functional evaluations of technological performance but also incorporates identity and cultural understanding within specific contexts. Specifically, at the theoretical level, learners generally perceive AI tools as capable of supporting multiple learning tasks, including writing, translation, and speaking practice, with high task adaptability—findings consistent with previous research (Dizon & Gayed, 2021; Kruk & Kałużna, 2025; Young & Shishido, 2023). This outcome not only validates the post-adoption "re-evaluation" logic of the ECM-ISC model (Bhattacherjee, 2001) but also extends the practical connotation of perceived usefulness through learners' feedback and responses across multi-task scenarios. Meanwhile, the efficiency advantage of AI in handling cognitively demanding tasks such as academic writing further reshapes learners' cognitive schemas regarding time management and information acquisition strategies, highlighting its instrumental value (Abdelhalim, 2024). In addition, personalized and responsive feedback experiences are frequently coupled with positive emotional reactions, helping to alleviate learning anxiety and enhance trust in the tool, in line with prior findings (Kwon et al., 2023; Tai & Chen, 2023). This cognition–affect interwoven experience not only aligns with mechanisms identified in previous literature regarding perceived intelligence and social interactivity as contributors to tool trust (Lin & Lee, 2023; Ashfaq et al., 2020) but also expands the traditional "instrumental rationality" perspective of perceived usefulness, reinforcing trust and reliance between users and AI.

At the contextual level, learners generally recognize the positive role of AI in supporting long-term skills development, such as academic writing and cross-cultural communication, which further consolidates their overall judgment of tool efficacy, supporting the conclusions of Abdelhalim (2024) and Sun (2024). More critically, feedback quality, as a key dimension affecting the user experience, reflects not only learners' self-assessment but also their evaluation of the logical coherence, accuracy, and operational utility of AI-generated content. When feedback is consistent and constructive, learners' recognition of tool effectiveness accumulates over time (Kwon et al., 2023; Song & Song, 2023); conversely, feedback that is illogical or lacks practical relevance may diminish perceived usefulness and, in turn, reduce continuance intention (Zou et al., 2024).

Consequently, building on the ECM-ISC model's characterization of perceived usefulness as central to post-adoption re-evaluation (Bhattacherjee, 2001), this study further emphasizes the embeddedness of socio-cultural context in its construction process. By addressing the model's prior limitations regarding cultural and relational dimensions, it provides a more explanatory theoretical basis for understanding the mechanisms underlying the continuance use of AI tools in language education.

Second, this study posits that EFL learners' confirmation of AI tools arises from a dynamic alignment between multidimensional expectations and actual experiences, rather than from static perceptions. Such alignment encompasses not only functional and informational

evaluation but also ethical judgments, institutional adaptation, and cultural presuppositions. Consequently, confirmation represents both an evaluative outcome and a cognitive positioning and contextual adjustment mechanism formed during interaction. Specifically, when AI functionalities are stable and consistently meet learning task demands, learners' positive confirmation of the tool is strengthened, thereby enhancing continuance intention and supporting prior ECM-ISC assertions (Tian et al., 2024), particularly when the technology aligns closely with learners' instructional goals (Liu et al., 2025).

Meanwhile, the match between expected and actual generated information constitutes a critical mechanism for stimulating learners' critical and higher-order thinking, with comprehension, evaluation, and integration forming the core of knowledge acquisition in AI-mediated contexts (Dole, 2007; Tram et al., 2024). Furthermore, if AI provides learners with anticipated security regarding ethics and privacy, trust is more readily established, promoting continued use (Tram et al., 2024); conversely, ethical concerns may deter usage even when AI demonstrates superior language generation (Mohamed, 2024), reflecting sensitivity to "ethical costs" (Zhu et al., 2025). In this process, support from teachers and institutions constitutes an important safeguard, reinforcing adherence to usage norms and educational alignment (Wu et al., 2022), although institutional constraints can at times create tension between technology application and pedagogical practice (Lindell & Utterberg Modén, 2025).

This study thereby extends the ECM-ISC model by incorporating non-technical dimensions within the confirmation construct, including institutional adaptation and cultural trust. More importantly, cultural context exerts a profound influence on confirmation. As a culturally embedded technology, AI usage varies across social and cultural settings (Eynon & Young, 2021), with significant differences observed in continuance intention and usage behaviors among cultural groups (Franque et al., 2021; Essien et al., 2024). In the present study, Chinese EFL learners' attention to whether AI functionalities align with local educational logic, linguistic practices, and cultural values mirrors this perspective. Distinctively, this study reinterprets the confirmation variable in ECM-ISC through a cultural lens, highlighting the context-dependency of AI continuance intention and enriching the theoretical trajectory of cross-cultural technology use. As emphasized by Tarhini et al. (2017), future research should continue to attend to the role of cultural factors in technology use.

Finally, this study conceptualizes satisfaction as an implicit process manifesting not only through intertwined emotional and cognitive elements but also as a psychological game characterized by "multi-goal rationality" (Chen & Girish, 2023; Palací et al., 2019). Learners continuously regulate between rational and perceived factors such as tool value, emotional acceptance, and risk perception, forming a "satisfaction balancing act" grounded in individual needs and contextual pressures. In other words, satisfaction should not be understood as a static judgment but as a situationally dynamic outcome. This contrasts with prior studies treating satisfaction as a stable variable (Dai et al., 2020; Huang & Yu, 2023). The findings align with the concept of the "complex and shifting nature of satisfaction" (Al-Shafei, 2025; Homburg et al., 2006; Lent & Brown, 2006), indicating that learner satisfaction is not singular or stable but continuously negotiated amid multiple demands.

In summary, this study not only validates the theoretical foundations of the ECM-ISC model but also systematically extends the conceptual boundaries and functional mechanisms of its core constructs in the context of Chinese higher education. By integrating non-technical dimensions such as culture, ethics, and institutional factors, the research enhances the model's explanatory power regarding learners' continuance behavior with AI technologies and offers a practical framework for its contextualized application and theoretical development in language education.

Conclusion

Grounded in the ECM-ISC, this study used semi-structured interviews to investigate English majors' experiences with AI tools and the factors shaping their continuance intention. Thematic analysis identified ten key factors related to perceived usefulness and confirmation, spanning both theoretical and contextual dimensions. These findings reaffirm that perceived usefulness and confirmation remain critical variables for understanding learners' ongoing use of AI technologies. Notably, among Chinese EFL learners, satisfaction did not manifest as explicit statements; instead, it emerged implicitly through nuanced emotional expressions reflecting ambivalent attitudes toward the technology usage process. These factors not only capture the functional characteristics of AI tools but also mirror the multifaceted demands of Chinese EFL learners as they navigate complex intersections of multicultural identities, academic norms, and social expectations. This provides empirical support for the contextualized extension of the ECM-ISC and reveals the unique influence mechanisms of the Chinese educational ecology on learners' continuance intention toward AI.

In sum, this research both validates and deepens the ECM-ISC at theoretical and contextual levels, addressing the practical application of AI tools within China's higher education environment. The study offers a nuanced understanding of Chinese EFL learners' behavioral patterns in the era of cross-cultural digital learning and supplies practical implications for localized educational technology design, teacher professional development, and policymaking. Educators should foster learners' critical engagement with AI both in and beyond the classroom, promoting learning efficiency while safeguarding academic integrity and autonomy. Meanwhile, AI products should enhance localization by balancing Western and Chinese cultural contexts and delivering feedback tailored to EFL learners' usage habits.

Although this study provides novel insights into Chinese EFL learners' continuance intention to use AI, certain limitations remain. The research primarily relied on interviews; future studies could incorporate longitudinal experimental designs to track dynamic changes in learners' attitudes and behaviors. Additionally, integrating individual difference variables such as learning motivation and technological literacy may offer a more comprehensive understanding of the multifaceted mechanisms affecting continuance intention.

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