

GenAI-Powered Multilingual Speaking Development: The Role of Intrinsic and Extrinsic Motivation

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Abstract: In recent years, Generative Artificial Intelligence (GenAI) has emerged as a powerful tool for language learning, offering personalized conversational practice for multilingual learners. Despite the growing adoption of AI-driven English learning applications, there is limited research on multilingual learners' acceptance of GenAI-powered speaking practice. This study investigated Chinese multilingual learners' attitudes towards GenAI-assisted conversational practice and the factors influencing their acceptance. The research was guided by the Integrated Model of Technology Acceptance (IMTA), which incorporates both intrinsic and extrinsic motivational factors. An IMTA questionnaire ($N = 307$) revealed that while the perceived ease of use (PEOU) of GenAI does not directly predict behavioural intention (BI), it significantly predicts perceived usefulness (PU). Enjoyment (ENY) was found to positively influence PEOU, PU, and BI. These findings support the integration of GenAI in intelligent, multilingual learning environments and offer valuable insights for future research, teaching practices, and policy formulation.

Keywords: Multilingual Development, IMTA, Enjoyment, Generative AI, Multilingual Speaking, ChatGPT

1 Introduction

The rapid advancement of artificial intelligence (AI) technologies has transformed language learning, with AI-driven software and chatbots increasingly utilized in English-speaking classrooms [48, 53]. These tools, featuring dialogue simulation, pronunciation evaluation, and detailed feedback systems, provide customized learning pathways that significantly enhance learners' oral proficiency [27, 49]. The emergence of Generative AI (GenAI), underpinned by large language models (LLMs), speech recognition, and speech synthesis, has further propelled these innovations by addressing challenges faced by traditional AI, including semantic comprehension, multimodal interaction, and response efficiency [29, 47, 50, 56].

Moreover, GenAI-powered chatbots offer support for multilingual interaction extending beyond English. For example, ChatGPT-4o supports over 50 languages, enabling learners to engage in real-time voice or text-based dialogues via its website and mobile application. While existing research has explored the acceptance and application of ChatGPT in English-speaking learning through the Technology Acceptance Model (TAM) [31, 32, 57], its utilization in multilingual speaking practice remains an underexplored domain. This

research gap is particularly noteworthy given the unique cognitive and affective needs of multilingual learners, for whom tailored technological support is often scarce. Furthermore, motivational factors, often neglected in TAM studies, play a critical role in shaping language learning engagement [55]. Expanding upon TAM, the Integrated Model of Technology Acceptance (IMTA) integrates both intrinsic and extrinsic motivations, offering a holistic framework to examine the acceptance of innovative technologies [17, 55]. This study seeks to explore the acceptance of GenAI-supported multilingual speaking practice among university learners and the factors influencing their attitudes. Hence, it aims to reveal the opportunities and limitations of GenAI in multilingual education, contributing to both theoretical advancements and practical applications.

2 Literature Review

2.1 Multilingual Development and Challenges

Multilingual learners form a diverse and rapidly growing group worldwide, reflecting increasing global interconnectivity and the demands of participating in multilingual societies [16, 52]. These learners, often situated in multicultural and multilingual contexts, acquire and use multiple languages for academic, professional, or personal purposes [19]. The

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rise of globalization, migration, and advancements in technology has further amplified the need for multilingual proficiency, as individuals strive to communicate effectively across cultural and linguistic boundaries [6]. Additionally, the expansion of English as a lingua franca has encouraged many learners to acquire English alongside their native and other regional or international languages, making multilingualism a necessity rather than an option in many contexts [18]. For instance, multilingual learning is actively promoted within education systems such as China's to strengthen global competitiveness, facilitate cultural exchange, and expand academic opportunities [26].

Despite the cognitive and social benefits of multilingualism, learners face a range of challenges. A primary challenge is cognitive overload, which arises from managing multiple linguistic systems simultaneously [8]. The developmental process may require continuously activating and suppressing different languages based on context, a process that places significant demands on working memory and executive control [21]. As noted by De Angelis [12], when switching between languages in real-time conversations, learners may experience delays in processing or retrieving vocabulary, particularly when the languages share structural similarities or interference patterns.

Language switching further complicates the learning process. While a crucial skill in multilingual contexts, it often results in increased errors due to cross-linguistic interference, where grammatical rules or vocabulary from one language influence another [6, 12]. Such interference can hinder fluency and accuracy, requiring learners to expend additional cognitive effort to monitor and correct their output [20, 22]. Furthermore, the challenges of language switching are heightened by contextual demands and conversational dynamics, requiring learners to navigate linguistic transitions with precision.

In addition to cognitive challenges, managing cross-linguistic influences poses significant difficulties. Multilingual language development often encounters both positive and negative transfer between languages; similarities can facilitate learning, but differences may lead to errors [14, 38]. For instance, learners may unintentionally apply grammatical rules or phonological patterns from their first language when speaking a second or third language, resulting in inaccuracies or reduced confidence [5, 14]. These cognitive demands are compounded by emotional challenges such as language anxiety, which stems from fears of making mistakes or being misunderstood [34]. This anxiety is particularly pronounced in oral communication tasks, where learners may feel pressure to perform fluently and accurately [39, 50]. This sense of pressure can create a significant psychological barrier, inhibiting the spontaneous speech and risk-taking that are crucial for developing oral fluency.

Moreover, the limited availability of resources for oral practice in less common languages poses significant challenges to language output development. For example, Thai language

learners in China often face a scarcity of authentic conversational contexts, while personalized one-on-one coaching remains financially inaccessible for many. Recognizing these challenges underscores the necessity of implementing effective support mechanisms to facilitate multilingual learners' development. GenAI technologies like ChatGPT offer promising solutions by creating supportive environments for practicing oral skills across various languages, providing tailored feedback without time or spatial constraints. Their robust multilingual capabilities also serve as a versatile medium for autonomous learning, further enriching the resources available for multilingual development.

2.2 Using Generative Artificial Intelligence for Multilingual Speaking Development

GenAI has emerged as a powerful tool for language learning, with ChatGPT leading advancements in speaking skills development [7, 29, 48]. One of ChatGPT's key strengths is its ability to support seamless multilingual interaction, allowing learners to engage in natural, contextually appropriate conversations in over 50 languages without time and space limits (See Figure 1). This capability aligns with the principles of communicative language teaching (CLT) and the interaction hypothesis, which emphasize comprehensible input and authentic interaction for language acquisition [33, 41]. Additionally, ChatGPT offers diverse voice options, enabling learners to experience varied accents and intonations¹ and fostering pronunciation practice and cultural understanding. Its ability to adapt responses based on learners' proficiency levels further enhances its teaching potential, making it an effective tool for personalized learning [48, 57].

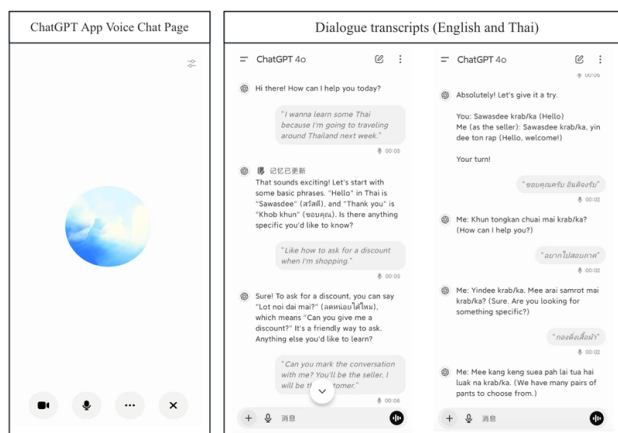


Figure 1. ChatGPT app version's chat page and dialogue transcripts.

ChatGPT's integration of natural-sounding voices and multiple voice choices provides an immersive environment for oral language practice [57]. As highlighted by Verbeke [46], exposure to different accents and speech patterns is critical for

¹<https://openai.com/chatgpt/overview/>

developing listening and speaking skills. By simulating real-life conversational scenarios with human-like voices, ChatGPT reduces the intimidation often associated with speaking practice, encouraging learners to experiment with pronunciation, intonation, and rhythm [32, 57]. Furthermore, its multilingual dialogue system enables smooth transitions between languages, allowing learners to build metalinguistic awareness and apply cross-linguistic strategies [6, 12]. This interactive and adaptive approach not only enhances communicative confidence but also prepares learners for practical communication in various languages within diverse contexts [42, 50].

In addition to its conversational capabilities, ChatGPT demonstrates significant teaching potential by providing immediate, scaffolded feedback on grammar, vocabulary, and fluency [48]. Its ability to adapt to learners' needs and offer targeted corrections creates a supportive learning environment that encourages gradual improvement [54, 57]. For instance, the system can be configured to ignore minor, non-critical errors for beginners to build confidence, while providing more comprehensive corrections for advanced learners. However, due to the limitations of the training data used for LLMs, ChatGPT occasionally generates biased responses [1]. Challenges also persist in less-resourced languages and for advanced linguistic features, such as prosody and pragmatics [35]. Additionally, server crashes can affect users' willingness to engage with the tool and negatively impact their overall experience [3, 43]. Despite these limitations, ChatGPT's multilingual, voice-rich, and interactive teaching capabilities offer valuable opportunities for learners of foreign languages [9, 48]. While the quality of responses in less-resourced languages may not yet match the accuracy of its English output, it remains sufficient for beginner-level learners to facilitate foundational language practice.

2.3 Integrated Model of Technology Acceptance

To investigate the acceptance of GenAI-assisted multilingual speaking development, this study employed the Integrated Model of Technology Acceptance (IMTA) as its theoretical framework. IMTA is adapted from the Technology Acceptance Model (TAM) [11], which is widely used to analyze user acceptance of a technology and predict usage behavior through behavioral intention. TAM posits that behavioral intention is mainly influenced by perceived usefulness and perceived ease of use [11]. Over the past decades, the model has been extensively applied in language education to explain learner and teacher acceptance of emerging technologies, such as mobile learning, AI-driven tools, and game-based learning [2, 30].

Despite its extensive application, TAM focuses primarily on technological characteristics, with limited attention to users' motivational factors [55]. Recognizing the positive effects of both intrinsic and extrinsic motivation on attitudes [15, 36], Fagan [17] incorporated motivational factors into TAM, thereby developing the IMTA (see Figure 2). The IMTA highlights the roles of external motivation (perceived usefulness) and internal motivation (perceived enjoyment) in technology ac-

ceptance. Through structural equation modeling, Fagan [17] identified a positive correlation between extrinsic motivation, intrinsic motivation, and perceived usefulness. In language learning, Hsu and Lin [25] found that intrinsic motivation significantly predicted learners' intention to engage in mobile-assisted multilingual learning based on IMTA. Similarly, Zou et al. [55] found that both motivation types successfully predicted English learners' intention to use AI evaluation systems, further demonstrating the explanatory power of IMTA in Computer-Assisted Language Learning (CALL).

However, IMTA-based research on the acceptance of GenAI for multilingual speaking practice remains underdeveloped. Current literature on the acceptance of GenAI tools for speaking practice primarily utilizes TAM and focuses exclusively on English [31, 32, 44, 57], leaving a gap in applying IMTA to multilingual contexts. To address this gap, this study develops a series of hypotheses grounded in IMTA and informed by the technological characteristics of ChatGPT (see Figure 2 and Table 1). This research aims to evaluate multilingual learners' acceptance of GenAI for speaking practice and to identify the underlying influencing factors, thereby providing a scientific basis for developing relevant educational technologies.

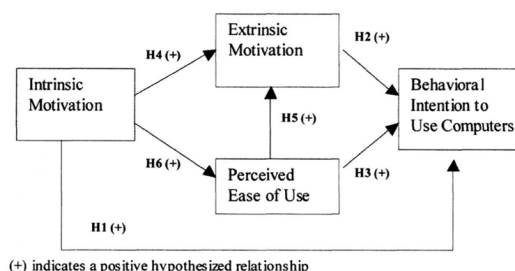


Figure 2. IMTA framework [17].

3 Methods

3.1 Participants

To investigate multilingual learners' acceptance of GenAI-facilitated speaking practice, an online questionnaire was disseminated through social media platforms and university postings in China, targeting language learning and GenAI communities. A total of 437 individuals responded. To focus on multilingual development, only participants learning three or more languages were included, resulting in a final sample of 307 multilingual learners (211 females, 96 males). Participants held or were pursuing undergraduate (60.2%), master's (31.2%), or PhD (8.6%) degrees. Their academic disciplines were predominantly in the humanities and social sciences, followed by the arts and medicine, with a smaller proportion in STEM. Among them, 42.3% used ChatGPT for speaking practice daily, 33.4% several times a week, 15.6% once a week, and 8.7% several times a month. The primary languages studied are detailed in Table 2.

Hypothesis	Description
H1	Perceived Enjoyment (ENY) is positively associated with Behavioural Intention (BI).
H2	Perceived Usefulness (PU) is positively associated with Behavioural Intention (BI).
H3	Perceived Ease of Use (PEOU) is positively associated with Behavioural Intention (BI).
H4	Perceived Enjoyment (ENY) is positively associated with Perceived Usefulness (PU).
H5	Perceived Ease of Use (PEOU) is positively associated with Perceived Usefulness (PU).
H6	Perceived Enjoyment (ENY) is positively associated with Perceived Ease of Use (PEOU).

Table 1. Proposed hypotheses.

Language	Number (N)	Percentage (%)
English	250	81.4
Spanish	142	46.3
French	126	41.0
Japanese	118	38.4
Thai	130	42.3
Korean	78	25.4
German	58	18.9
Italian	56	18.2
Russian	42	13.7
Other Languages	50	16.3

Table 2. Primary Languages Studied by Participants.

3.2 Instrument

A modified IMTA questionnaire was the primary research instrument used to test the six hypotheses. The questionnaire contained two sections. The first collected demographic information, including gender, age, languages being learned, and frequency of ChatGPT use for speaking practice. The second section comprised 15 five-point Likert scale items (1 = "strongly disagree" to 5 = "strongly agree") measuring four IMTA constructs. This section was adapted from previous studies on learners' acceptance of AI educational tools [31,55] and the distinctive features of GenAI [4, 50], ensuring a comprehensive assessment of the factors influencing acceptance of ChatGPT-facilitated speaking development.

3.3 Data analysis

Data analysis was carried out using SPSS 25.0 and AMOS 24.0. Initially, a descriptive statistical analysis was performed to provide an overview of participant demographics and to assess the normality of the dataset. Following this, a two-step structural equation modeling (SEM) approach was applied to evaluate the hypothesized relationships [37]. In the first step, the measurement model was built and assessed to establish the validity and reliability of the IMTA constructs. Subsequently, the structural model was analyzed to test the proposed hypotheses (H1–H6).

4 Results

4.1 Descriptive Statistical Results

As shown in Table 3, the descriptive analysis indicates that the mean values for the IMTA constructs ranged from 4.04 to 4.30 (SDs ranged from 0.68 to 0.84). These results suggest that multilingual learners held a positive attitude towards using ChatGPT for conversational practice, found the experience enjoyable, and expressed a willingness to continue using the tool. Furthermore, the skewness and kurtosis values for all dimensions fell within the acceptable ranges of |3| and |8|, respectively, indicating that the data followed a normal distribution [28] and was suitable for further inferential statistical analyses.

4.2 Results of the Structural Equation Modelling

First, the reliability of the data was assessed; Cronbach's Alpha values for all dimensions exceeded 0.7 (see Table 3), indicating strong internal consistency. Subsequently, a confirmatory factor analysis validated the measurement model. As presented in Table 3, all standardized factor loadings exceeded 0.60, confirming that the questionnaire items were strongly associated with their respective constructs [23]. Furthermore, the composite reliability (CR) for all dimensions surpassed 0.70, and the average variance extracted (AVE) values exceeded 0.50, indicating robust internal consistency and strong convergent validity [27, 51]. Additionally, discriminant validity was supported, with all heterotrait–monotrait (HTMT) ratio coefficients below the 0.90 threshold (see Table 4), indicating acceptable differentiation between constructs [24].

The measurement model exhibited a strong overall fit, with all indices satisfying the recommended thresholds [10, 55, 57] (see Table 5). These results confirm the robustness of the measurement model, establishing its suitability for subsequent structural analysis.

The structural model was then established (Figure 3) and achieved the recommended fit indices, confirming its appropriateness for hypothesis testing (Table 5).

As shown in Table 6, the hypothesis testing revealed that ENY demonstrated a strong direct effect on BI ($\beta = 0.63$, $t = 7.88$, $p < .001$), accounting for a substantial portion of its variance ($R^2 = 0.79$). Additionally, ENY significantly influenced PU ($\beta = 0.25$, $t = 2.94$, $p < .01$) and PEOU ($\beta = 0.75$, $t = 10.90$, $p < .001$), underscoring its broad impact.

Construct	Item	M	SD	Skewness	Kurtosis	S.E	CR	AVE	Cronbach's α
PU	PU1	4.22	0.71	-0.41	-0.76	0.81	0.90	0.68	0.91
	PU2	4.26	0.69	-0.40	-0.89	0.87			
	PU3	4.26	0.71	-0.47	-0.72	0.85			
	PU4	4.29	0.69	-0.45	-0.86	0.78			
	PU5	4.19	0.76	-0.55	-0.34	0.76			
PEOU	PEOU1	4.27	0.71	-0.51	-0.70	0.75	0.75	0.50	0.74
	PEOU2	4.30	0.68	-0.45	-0.82	0.72			
	PEOU3	4.06	0.82	-0.40	-0.71	0.64			
ENY	ENY1	4.14	0.76	-0.47	-0.44	0.83	0.90	0.70	0.90
	ENY2	4.13	0.78	-0.48	-0.47	0.80			
	ENY3	4.16	0.75	-0.37	-0.81	0.85			
	ENY4	4.17	0.72	-0.26	-1.04	0.85			
BI	BI1	4.17	0.82	-0.58	-0.64	0.77	0.88	0.64	0.87
	BI2	4.21	0.75	-0.45	-0.77	0.81			
	BI3	4.04	0.84	-0.43	-0.65	0.85			
	BI4	4.13	0.81	-0.61	-0.12	0.76			

Table 3. Descriptive Analysis, Reliability, and Validity Results.

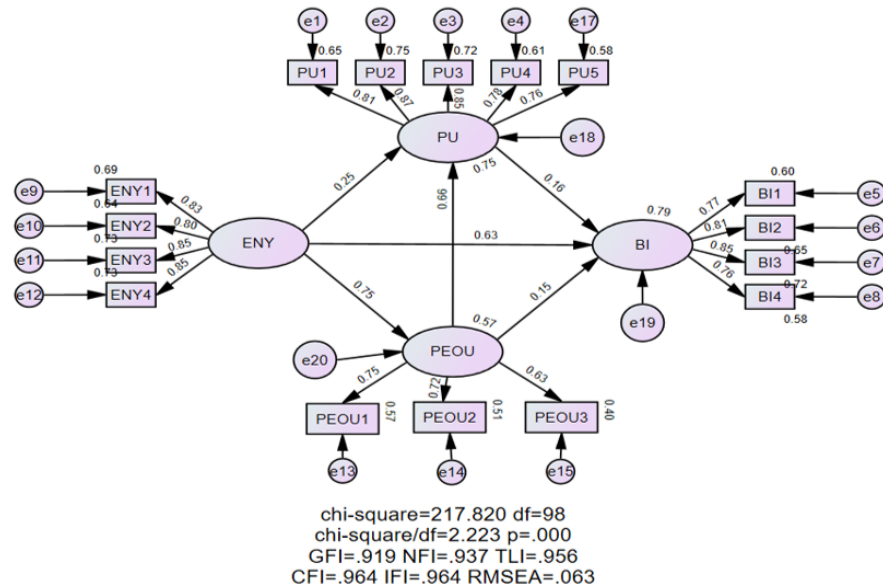


Figure 3. The structural model.

PEOU also had a strong positive effect on PU ($\beta = 0.66$, $t = 6.46$, $p < .001$). In contrast, the direct effects of PU ($\beta = 0.16$, $p = 0.11$) and PEOU ($\beta = 0.15$, $p = 0.19$) on BI were not statistically significant. These findings indicate that ENY is the most influential factor driving BI, with PU and PEOU playing supporting roles in shaping learners' perceptions of GenAI-assisted speaking practice. The high R^2 values for BI (0.79), PU (0.75), and PEOU (0.57) further demonstrate

the strong explanatory power of the IMTA framework in this context.

5 Discussion

This study investigated multilingual learners' acceptance of GenAI-assisted conversational practice through the lens of the IMTA, which integrates intrinsic (perceived enjoyment) and extrinsic (perceived usefulness) motivation. The find-

HTMT	BI	ENY	PEOU	PU
BI	—			
ENY	0.869	—		
PEOU	0.766	0.753	—	
PU	0.772	0.766	0.837	—

Table 4. Discriminant Validity Test (HTMT Ratios).

ings provide valuable insights into how enjoyment (ENY) and perceived usefulness (PU) influence multilingual learners' behavioral intentions to use ChatGPT for speaking skills development. This section explores potential explanations for both the supported and unsupported hypotheses.

5.1 Supported Hypotheses

Perceived enjoyment (ENY) demonstrated a robust impact across all key constructs, significantly predicting BI (H1), PU (H4), and PEOU (H6). This highlights the importance of intrinsic motivation in the acceptance of emerging technology, particularly in multilingual learning contexts. Multilingual learners often face unique challenges, such as cognitive overload from managing multiple linguistic systems [6, 12]. As argued by Hsu and Wang et al. [25, 50], tools that foster enjoyment can alleviate cognitive load and make learning more engaging. GenAI's capacity to provide simulated, dynamic, and personalized conversational practice likely contributed to its high enjoyment ratings. By offering prompt feedback in a relaxed environment, ENY significantly enhanced learners' willingness to engage with ChatGPT regularly. This effectively reframes language practice as a low-stakes, exploratory activity rather than a high-pressure performance, fostering greater psychological comfort and willingness to experiment.

Moreover, ChatGPT can simulate multilingual scenarios where learners practice switching between languages in a controlled environment. For instance, it can dynamically adjust the language in a dialogue based on learner input, allowing practice without interrupting the interaction's flow. This real-time adaptability enhances learners' positive emotions and promotes automaticity in managing linguistic transitions [42, 50].

Perceived Usefulness (PU) was significantly predicted by PEOU (H5), confirming that learners who find a tool easy to use are more likely to perceive it as useful. For multilingual learners, the usefulness of GenAI tools lies in their ability to provide context-sensitive feedback, improve fluency, and address pronunciation issues across different languages. These practical benefits likely enhanced perceptions of PU, even though its direct effect on BI was not significant. An enjoyable process with immediate feedback in a supportive environment may effectively address the challenges faced by multilingual learners, such as managing cross-linguistic influences and maintaining coherence [8, 12, 13, 21]. By addressing emotional, linguistic, and cognitive demands, GenAI tools

support the development of multilingual proficiency, solidifying their perceived usefulness. These findings align with prior studies emphasizing the role of ENY and PU in technology adoption, particularly when tools offer clear benefits that align with learners' goals [55, 57].

5.2 Unsupported Hypotheses

The non-significant relationships between PEOU and BI (H3) and PU and BI (H2) offer deeper insights into the dynamics of GenAI tool acceptance among multilingual learners. One potential explanation is a familiarity effect; over 70% of participants reported frequent use of GenAI applications, which may have normalized ease of use as a baseline expectation rather than a driver of adoption. As suggested by An et al. [2], tech-savvy learners often prioritize advanced functionalities over basic usability. Similarly, Zou et al. [55] observed that frequent users of AI tools tend to focus on novelty and advanced capabilities, diminishing the impact of PEOU on behavioral intention.

Another explanation lies in the limitations of PU in directly predicting BI. While PU is a critical factor, its impact may be mediated by other constructs, such as attitudes or external influences [31, 32, 57]. For example, Zou et al. [57] highlighted that GenAI tools sometimes fail to meet expectations for deeper learning tasks due to perceptions of insufficient intelligence. Additionally, learners in their study expressed a preference for real human interaction, which they felt offered richer, more nuanced feedback. These findings suggest that participants may view GenAI tools as supplementary rather than primary resources, reducing PU's direct influence on their intention to use them. For advanced learners in particular, 'usefulness' may be defined by the AI's capacity for nuanced, culturally-aware dialogue, a benchmark that current systems may not yet consistently achieve.

Finally, contextual factors specific to multilingual learning may explain the non-significant PU-BI relationship. Multilingual learners face the complex task of managing multiple linguistic systems [8, 21], which can overshadow their perceptions of a tool's utility. External pressures, such as institutional requirements or peer influence, may also play a dominant role in shaping their behavioral intentions [40, 44, 45]. These findings highlight the need for a more holistic approach to understanding the interplay of external influences and individual perceptions in technology acceptance.

6 Conclusion, Limitations, and Implications

This study explored multilinguals' acceptance of GenAI-assisted conversational practice via the IMTA framework. The findings highlighted the pivotal role of perceived enjoyment (ENY) as an intrinsic motivator, which significantly influenced behavioural intention (BI), perceived usefulness (PU), and perceived ease of use (PEOU). ENY emerged as the most critical driver of acceptance, underscoring the importance of emotional engagement in technology adoption. Although PU was significantly predicted by PEOU, its direct impact on BI was not statistically significant, suggesting that learners

	χ^2/df	GFI	NFI	TLI	CFI	IFI	RMSEA	SRMR
Measurement model	2.223	0.919	0.937	0.956	0.964	0.964	0.063	0.037
Structural model	2.223	0.919	0.937	0.956	0.964	0.964	0.063	0.037
Advised metrics	< 3	> 0.90	> 0.90	> 0.90	> 0.90	> 0.90	< 0.08	≤ 0.10

Table 5. Model Fitting Statistics.

Hyp.	Relationship	Path coeff. (β)	R^2	t -value	p	Supported
H1	ENY → BI	0.63	0.79	7.88	***	Yes
H2	PU → BI	0.16		1.59	0.11	No
H3	PEOU → BI	0.15		1.31	0.19	No
H4	ENY → PU	0.25	0.75	2.94	**	Yes
H5	PEOU → PU	0.66		6.46	***	Yes
H6	ENY → PEOU	0.75	0.57	10.90	***	Yes

*** $p < .001$, ** $p < .01$

Table 6. Hypothesis test results.

may perceive GenAI tools as supplementary aids rather than essential resources. Similarly, the non-significant relationship between PEOU and BI may reflect the normalization of ease of use among frequent GenAI users, who prioritize advanced features.

Nonetheless, this study has several limitations. First, the sample consisted predominantly of Chinese multilingual learners, which may limit the generalizability of the findings to other cultural contexts. Future research should include more diverse learner populations. Second, the reliance on self-reported data introduces potential biases; incorporating objective measures like usage analytics could provide a more balanced understanding. Third, the cross-sectional design offers only a snapshot in time. Longitudinal studies are needed to examine how acceptance of GenAI evolves with increasing familiarity. Fourth, the study’s scope was confined to user perceptions and acceptance, not objectively measured improvements in speaking proficiency, which remains a key area for future research.

This study also provides meaningful implications for researchers, educators, and developers. Developers should prioritize enhancing enjoyment by embedding gamified elements and culturally relevant content into GenAI tools to foster sustained usage. To address the limitations of PU, developers can focus on advanced features like adaptive learning paths and personalized, context-sensitive feedback. Language teachers should acknowledge the limitations of GenAI and create customized scenarios that align with learners’ unique contexts to enhance the tools’ relevance. Finally, researchers are encouraged to investigate the indirect effects of PU and PEOU through mediators like social norms or external influences. Examining how contextual factors shape technology acceptance will further advance the understanding of GenAI’s role

in multilingualism. These efforts can maximize the potential of GenAI to support multilingual learners and enhance their language proficiency.

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