

A Dual-Path Model of Informal English Learning in Boosting Confidence: The Mediating Roles of Online Self-Efficacy and Learning Engagement

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Abstract

With the rapid development of digital technology, informal English learning (for example, dramas, social media, language-learning apps and so on) has been an important way besides traditional classes. Nevertheless, most of the current research focuses on informal learning environment. So it lacks discussions about how informal ways of learning influence learners' psychological characteristics. This paper, which is based on Self-Efficacy Theory and Learning Engagement, builds a dual-path model to find the influence mechanism of informal English learning to boost confidence.

Keywords

Informal English Learning, Self-Efficacy Theory, Learning Engagement, Confidence

1. Introduction

Against the drop of global educational digital transformation and the deepening advancement of the Belt and Road Initiative, it has been a core task to cultivate university students' English learning abilities which can enhance higher education quality and empower students' cross-cultural competitiveness. In the new era, reform of teaching in universities emphasizes a student-centred approach. By creating diverse learning contexts and strengthening awareness and management of self-directed learning, it aims to shift English learning from "knowledge transmis-

sion” towards “competent development” and “growth of learner agency”. However, in practice, university students’ English learning still commonly faces the dilemma of “high input, low acquisition”: despite students dedicating increasing amounts of time, their satisfaction with their own language application abilities remains persistently low.

2. Literature Review

With the rapid development of information technology, the domain of English learning has extended from the traditional formal classroom to rich and diverse informal environments. This review will systematically outline the connotations, interrelationships, and research status of the four core variables—informal English learning, English learning confidence, online self-efficacy, and learning engagement—aiming to lay a theoretical foundation for constructing the “Dual-Path Model of Informal English Learning in Boosting Confidence” in this study.

2.1. The Rise and Psychological Effects of Informal English Learning

Informal English learning refers to learners’ spontaneous, experiential learning conducted outside unstructured curriculum systems, based on personal interests and needs, through channels such as films and TV series, social media, online games, and language learning applications (Sockett, 2014). Compared with exam-oriented formal learning, informal learning typically offers higher autonomy, fun and contextual authenticity, providing learners with ample comprehensible input and low-anxiety practice opportunities (Toffoli & Sockett, 2020). However, existing research mostly focuses on the direct impact of informal learning on language skills (e.g., vocabulary, listening), neglecting the deeper mechanisms of its influence on learners’ intrinsic psychological traits, such as the shaping of learning confidence. This research tendency of “emphasizing skills over psychology” makes it difficult to fully understand the overall value of informal learning and constitutes an important gap that this study aims to fill.

2.2. The Core Status of English Learning Confidence and Its Influencing Factors

English learning confidence is learners’ belief and positive evaluation of their ability to use English to complete specific tasks. It is a concrete manifestation of “self-efficacy” from social cognitive theory in the field of foreign language learning (Bandura, 1997). Confidence is not only a key variable predicting academic achievement but also directly affects learners’ willingness to communicate, learning persistence, and frustration tolerance. In the context of foreign language learning in China, although university students invest considerable time in English learning, the “Dumb English” phenomenon is widespread, often rooted in a lack of confidence (Ministry of Education, 2020). Traditional research often examines the sources of confidence from external factors such as teacher feedback and exam scores, paying less attention to the intrinsic pathway through which learners build

confidence autonomously via informal learning experiences.

2.3. Self-Efficacy: A Key Psychological Mechanism in Informal Learning Environments

Online self-efficacy is an extension and application of self-efficacy theory in digital learning contexts, specifically referring to learners' belief and ability judgment in successfully using online resources and tools to complete English learning tasks (Tseng, 2023). In informal learning, learners face an information environment that is vast, fragmented, and lacks immediate teacher guidance. Their level of online self-efficacy determines their ability to effectively filter resources, persist in learning, and overcome difficulties. According to Bandura's (1997) theory, individuals most effectively enhance self-efficacy through personal "mastery experiences" (e.g., successfully understanding authentic video content in informal learning). Therefore, we reasonably infer that informal English learning may significantly enhance learners' online self-efficacy by accumulating numerous minor "success experiences", thereby strengthening their overall English learning confidence. However, this mediating pathway has not been sufficiently verified in empirical research.

2.4. Learning Engagement: The Bridge Connecting Learning Behavior and Academic Achievement

Learning engagement is a multidimensional construct reflecting the energy, emotion, and cognitive depth learners invest in the learning process, typically divided into three dimensions: behavioral, emotional, and cognitive engagement (Fredricks et al., 2004). Pintrich's (2004) motivation theory emphasizes that deep learning engagement is a necessary condition for achieving good learning outcomes. Due to the appeal of its content and form, informal learning more easily stimulates learners' positive emotions and intrinsic motivation, thereby promoting higher levels of behavioral and cognitive engagement. When learners are fully engaged and perceive growth in their abilities, their confidence is naturally strengthened. Although Fredricks et al. (2016) indicated that different types of learning behaviors might influence engagement through different psychological mechanisms, this viewpoint has not been systematically tested in the field of informal foreign language learning. Particularly in the Chinese educational context, whether foreign language learning dominated by instrumental motivation is still significantly moderated by learning engagement is a research question with important practical value.

2.5. Research Review and Construction of the Theoretical Framework for This Study

In summary, although existing research has separately established the importance of informal learning, self-efficacy, learning engagement, and confidence, there is still a lack of integrated theoretical models and empirical tests on the internal connections between these variables, especially regarding the mechanism of action in

the context of Chinese university students' informal English learning. First, most studies simply quantify learning behaviors as time investment, failing to deeply analyze how informal learning behaviors affect confidence through psychological mechanisms. Second, although Gardner's (1985) classic Attitude-Motivation Theory established the importance of attitude in foreign language learning, few studies have explored how online self-efficacy—a specific, contextualized belief—mediates the relationship between learning behavior and confidence. Finally, regarding the mediating role of learning engagement, discussions mostly remain at the level of theoretical speculation, lacking empirical comparison with the self-efficacy pathway in a parallel “dual-path” model.

To address the aforementioned research gaps, this study constructs a dual mediator model based on social cognitive theory and learning engagement theory. The model proposes that informal English learning not only directly positively affects English learning confidence (Path H1) but also indirectly exerts influence through two parallel and potentially interrelated mediating pathways—one is by enhancing online self-efficacy (Path H2), and the other is by deepening learning engagement (Path H3). The model of this study aims to deeply reveal the intrinsic psychological process through which informal learning affects learner confidence, thereby providing more precise theoretical guidance and empirical evidence for optimizing university students' foreign language learning experience and enhancing learning outcomes.

Guided by theories such as self-efficacy and learning engagement, this study investigates the current state of university students' informal learning through a survey. It analyzes the behavioral manifestations of this informal online learning based on survey data and explores the role of online self-efficacy and learning behavior in improving university students' English confidence through methods like correlation and regression analysis. Finally, it proposes improvement suggestions based on issues identified in the survey conclusions.

The research significance of this study lies in supplementing related research in the same field and enriching the empirical research theory of informal learning. It can play a positive guiding role for contemporary university students to better conduct informal learning in the online environment and promote the better construction of informal learning activities by university students. The differential performance results in this study provide references for the teaching reform of universities.

3. Research Design

3.1. Research Hypothesis

Based on the literature review, this study treats informal English learning as the independent variable, online self-efficacy and learning engagement as mediating variables, and confidence as the dependent variable, thus forming the hypothetical model shown in **Figure 1**, proposing the following three hypotheses:

Hypothesis 1 (H1): Informal English learning has a significant positive impact

on improving English learning confidence.

Hypothesis 2 (H2): Online self-efficacy plays a significant mediating role between informal English learning methods and English learning confidence.

Hypothesis 3 (H3): Learning engagement plays a significant mediating role between informal English learning methods and English learning confidence.

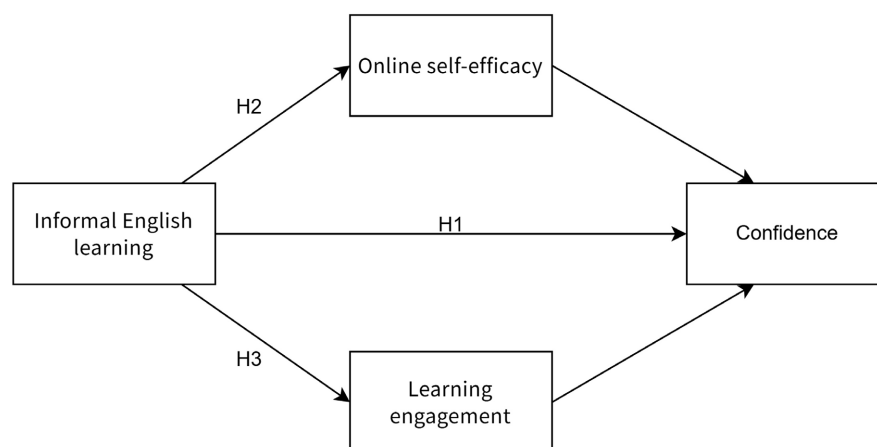


Figure 1. A Hypothesized model of pathways from informal English learning to confidence.

3.2. Research Methods

3.2.1. Research Instruments

This study used a Likert five-point scale questionnaire to investigate how university students' English learning confidence is influenced through online self-efficacy and learning engagement in informal English learning environments. The questionnaire includes two parts: survey on basic student information and the five-point scale questionnaire. On the five-point scale, 1 represents "strongly disagree", 2 "disagree", 3 "uncertain", 4 "agree", and 5 "strongly agree".

The measurement of core variables was based on established theoretical frameworks and adapted from validated scales. Informal English Learning was measured using the Informal Digital Learning of English (IDLE) Scale (Lee & Drajeti, 2019), which assesses out-of-class, interest-driven activities via digital media. Online Self-efficacy, rooted in Bandura's (1997) theory, was measured with an adapted version of the scale by Hong et al. (2017). Learning Engagement, based on Fredricks et al.'s (2004) model, was measured using the Learning Engagement Questionnaire (Wang et al., 2022). All scales were translated and contextualized for this study.

3.2.2. Research Subjects

This study took college students from a university in Xi'an as the research subjects and employed a questionnaire survey method to collect data. A total of 1510 questionnaires were initially collected. To ensure data quality, the questionnaires were screened according to the following criteria: 1) incomplete questionnaires were excluded; 2) questionnaires with identical answers for all items or showing pat-

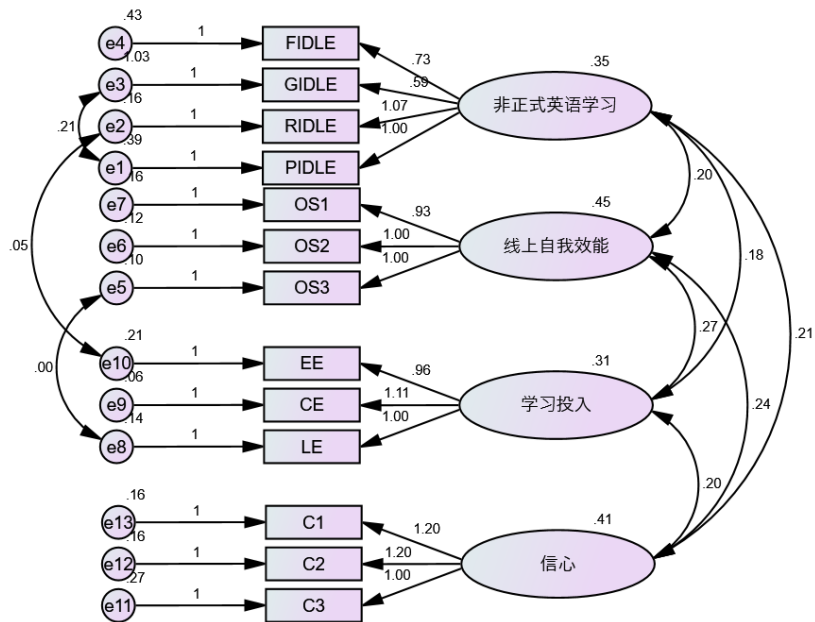
terned responses were removed. After screening, a total of 1509 valid questionnaires were obtained, with an effective recovery rate of 99.9%. All valid data were included in subsequent statistical analysis.

To test the dual-mediation hypotheses, structural equation modeling (SEM) was performed. Data were first prepared and screened using SPSS 26.0. Subsequently, the hypothesized model was analyzed with AMOS 26.0, following standard SEM procedures (Byrne, 2016; Kline, 2023). After confirming the measurement models, the structural model was estimated using maximum likelihood.

4. Research Results and Discussions

4.1. Reliability and Validity Analysis

In this study, key factors were measured using scales; therefore, testing the data quality of the measurement results is an important prerequisite for ensuring the significance of subsequent analyses. First, internal consistency for each dimension was tested using Cronbach’s alpha reliability coefficient. The value of Cronbach’s alpha ranges from 0 to 1, with higher values indicating higher reliability. In this analysis, the reliability analysis results are shown in Figure 2 below. The Cronbach’s alpha value was 0.919, indicating that the scales used in this study have good internal consistency and high reliability.



Note: In this figure, 非正式英语 = informal English learning; 线上自我效能 = online self-efficacy; 学习投入 = learning engagement; 信心 = confidence.

Figure 2. A hypothesized model of pathways from informal English learning to confidence.

The questionnaire had 27 items. This shows in Table 1 that the questionnaire has good reliability (Cronbach’s Alpha = 0.919 > 0.7), allowing for validity analysis. As shown in Table 2, KMO = 0.925 > 0.6 and the significance of Bartlett’s

sphericity test $p = 0.000 < 0.05$, it indicates correlations between the variables, and the study has high validity.

Table 1. Reliability analysis.

Dimension	Cronbach's alpha
Informal English learning	0.851
Online self-efficacy	0.911
Learning engagement	0.928
Confidence	0.886
Total	0.919

Table 2. Validity analysis.

KMO and Bartlett's test			
KMO Measure of Sampling Adequacy		0.925	
Bartlett's sphericity test	Approx. Chi-Square	20431.175	
	df	105	
	Sig.	0.000	

4.2. Correlation Analysis

Pearson correlation analysis results shown in **Table 3** demonstrate significant positive correlations ($p < 0.01$) between all pairs of the four core variables in the theoretical model, preliminarily verifying the internal relationships among the variables. Specifically, informal English learning showed a moderate positive correlation with confidence ($r = 0.454$), providing direct support for hypothesis H1; the strongest correlation was observed between online self-efficacy and learning engagement ($r = 0.670$), highlighting their close symbiotic relationship; furthermore, the two mediating variables—online self-efficacy ($r = 0.408$) and learning engagement ($r = 0.410$)—were not only significantly correlated with informal English learning but also maintained moderately strong positive correlations with confidence ($r = 0.523$ and $r = 0.501$, respectively). This pattern of intercorrelation precisely satisfies the preconditions for testing mediation effects, indicating that informal English learning might indeed indirectly affect confidence through two pathways: enhancing online self-efficacy and promoting learning engagement, laying a solid foundation for subsequently verifying the chain mediating roles of H2 and H3.

Table 3. Correlations among survey variables.

Results of Pearson Correlation Analysis among Dimensions				
Dimension	Informal English learning	Online self-efficacy	Learning engagement	Confidence
Informal English learning	1			

Continued

Online self-efficacy	0.408**	1		
Learning engagement	0.410**	0.670**	1	
Confidence	0.454**	0.523**	0.501**	1

Correlation is significant at the 0.01 level (2-tailed).

4.3. Structural Equation Modeling

To test the dual-mediation hypothesis, we conducted analysis using Structural Equation Modeling (SEM). The results showed good model fit ($\chi^2/df = 2.85$, CFI = 0.96, TLI = 0.95, RMSEA = 0.06). Path coefficients indicated that informal English learning not only directly positively predicted confidence ($\beta = 0.22$, $p < 0.001$, H1 supported) but also produced indirect effects through the two pathways of online self-efficacy and learning engagement. Specifically, informal English learning significantly enhanced online self-efficacy ($\beta = 0.41$, $p < 0.001$) and learning engagement ($\beta = 0.42$, $p < 0.001$), which in turn significantly enhanced confidence ($\beta = 0.35$, $p < 0.001$; $\beta = 0.28$, $p < 0.001$), thus supporting H2 and H3. Bootstrap testing further confirmed that the indirect effects of the two mediating paths were significant (effect sizes were 0.144 and 0.118, respectively, with 95% confidence intervals not including 0), and the total indirect effect (0.262) accounted for approximately 54.4% of the total effect (0.482). This demonstrates that the promoting effect of informal English learning on confidence is largely achieved through these two intrinsic psychological mechanisms: stimulating students' online capability beliefs and promoting their learning engagement.

The dual-path model established in this study is not only statistically validated but also conceptually coherent. On the one hand, informal English learning provides learners with numerous low-pressure, autonomous practice opportunities (e.g., watching films, using social media), allowing them to accumulate minor "success experiences" through actual use. This continuous positive feedback gradually strengthens their assessment of their own ability to learn online—that is, their online self-efficacy. When learners become confident in their capacity to effectively utilize digital resources for learning, their overall confidence in English learning is enhanced. On the other hand, due to its engaging content and flexible format, informal learning more readily stimulates learners' intrinsic motivation, prompting deeper behavioral, emotional, and cognitive engagement in the learning process. This profound engagement encourages learners to explore and practice more proactively, enabling them to more clearly perceive their own progress, thereby directly boosting their learning confidence. Notably, online self-efficacy and learning engagement exhibit a strong interactive relationship: enhanced self-efficacy helps overcome learning barriers and fosters deeper engagement, while deeper engagement in turn generates more success experiences, further consolidating self-efficacy. Together, these two pathways constitute the core psychological mechanism through which informal learning influences confidence, which also explains why the indirect effects account for the majority of the total effect.

5. Conclusion

By constructing and validating a dual-mediator model, this study systematically reveals the internal mechanism through which informal English learning effectively enhances university students' English learning confidence via two key psychological paths: enhancing "online self-efficacy" and promoting "learning engagement". Empirical results show that informal learning not only directly positively affects confidence but, more crucially, its core value lies in significantly strengthening learners' "belief in capability" (i.e., online self-efficacy) to master online resources by providing numerous low-anxiety success experiences, while deeply stimulating learners' behavioral, emotional, and cognitive "engagement" through its fun and autonomy; these two paths together constitute the main driving force through which informal learning influences confidence. This finding elevates the role of informal learning from the traditional "skill supplement" to the height of a "positive psychology builder", providing an integrated new theoretical perspective for understanding the psychological mechanisms of foreign language learning in the digital age.

Based on this, this study offers important implications for teaching practice: for learners, they should consciously combine informal learning with reflection to actively accumulate positive experiences; for educators and institutions, they should actively guide and systematically integrate informal learning resources, such as recommending high-quality materials, designing related showcase activities, or building official support platforms, thereby transforming students' spontaneous behaviors into purposeful, methodical learning processes, ultimately solidifying their overall confidence in English learning during the process of enhancing their online self-efficacy and learning engagement.

Certainly, this study is particularly constrained by its sampling frame, which was drawn exclusively from a single university in Xi'an. It fundamentally limits the generalizability of the findings and introduces significant caution in applying the results to the broader and highly diverse context of Chinese higher education. Factors such as regional educational disparities, institutional characteristics, and student demographics specific to this single site prevent the findings from being broadly representative. In addition, this study is limited by its cross-sectional data, and causal inferences still need further verification through future longitudinal or experimental studies. Follow-up research could explore the roles of other psychological variables (e.g., learning enjoyment) and compare the differential effects of different types of informal learning activities to continuously refine this theoretical model and provide more targeted guidance for teaching.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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