ReCALL (2026), 38: 2, 224–239
doi:10.1017/S0958344025100414

RESEARCH ARTICLE

Enhancing intercultural competence through self-efficacy, grit, and informal digital learning of English

Jiana Liu
Guangzhou Xinhua University, Guangdong, China (hopeful0606@126.com)

Ju Seong Lee
The Education University of Hong Kong, Hong Kong SAR, China (jslee@eduhk.hk)

Abstract

Learners' confidence in using a second language (L2 self-efficacy) and their L2 grit are key psychological factors in developing intercultural competence (ICC). As English as a foreign language (EFL) students increasingly encounter diverse cultures though informal digital learning of English (IDLE), this study examines whether IDLE serves as a pathway connecting these psychological traits to ICC. Grounded in the broaden-and-build theory, this explanatory mixed-methods research investigates how L2 self-efficacy and grit contribute to ICC through IDLE among 416 Chinese EFL students. Structural equation modeling revealed that higher L2 self-efficacy fosters greater L2 grit, which in turn promotes more frequent engagement in both receptive IDLE activities (e.g. watching English media) and productive ones (e.g. participating in online conversations). This increased engagement was positively linked to higher levels of ICC. Qualitative findings further illuminated the mechanisms behind this process, illustrating how psychological strengths support meaningful digital encounters across cultures. The findings offer pedagogical insights: by cultivating students' self-efficacy and grit, educators can encourage deeper engagement in IDLE, thereby equipping learners with effective and culturally sensitive communication in an increasingly interconnected digital world.

Keywords: intercultural competence; informal digital learning of English; positive psychology; L2 grit; L2 self-efficacy

1. Introduction

As Pusch (2009) notes, education plays a crucial role in shaping individuals who can skillfully navigate intercultural interactions – a vital ability in today's globally connected world. The development of intercultural competence (ICC) has long been a focus in education, with researchers primarily approaching it through the lens of language learning (e.g. Bennett, 1993; Byram, 2008). Responding to the growing need for culturally competent individuals, Zhang (2007) introduced the concept of "intercultural foreign language education" in China. This reflects a rising demand for graduates who not only possess a global mindset but also understand international norms and engage confidently in cross-cultural exchanges (Huang, 2017). Over the past two decades, Chinese scholars have made efforts to promote ICC in foreign language

Corresponding author: Ju Seong Lee; Email: jslee@eduhk.hk

Cite this article: Liu, J. & Lee, J.S. (2026). Enhancing intercultural competence through self-efficacy, grit, and informal digital learning of English. *ReCALL* 38(2): 224–239. https://doi.org/10.1017/S0958344025100414

© The Author(s), 2025. Published by Cambridge University Press on behalf of EUROCALL, the European Association for Computer-Assisted Language Learning. This is an Open Access article, distributed under the terms of the Creative Commons Attribution licence (https://creativecommons.org/licenses/by/4.0/), which permits unrestricted re-use, distribution and reproduction, provided the original article is properly cited.

https://doi.org/10.1017/S0958344025100414 Published online by Cambridge University Press

education (e.g. Wu, Fan & Peng, 2013; Zhang, 2007). However, recent studies continue to highlight gaps in the ICC of Chinese university students (Mu & Yu, 2023).

In parallel, the rise of digital learning has opened new avenues for acquiring language and cultural knowledge. Chinese EFL learners increasingly engage with English through digital platforms and online resources, gaining access to authentic language input and culturally rich contexts – both essential for deepening their understanding of English and its global contexts. Past research has explored the role of self-efficacy in intercultural settings, including its links to communication apprehension (Jing & Zhang, 2019), intercultural communication (Kabir & Sponseller, 2020), and ICC (Genkova, Schreiber & Fässler, 2023). While the relationship between self-efficacy and ICC has been well examined, the role of grit – a learner's perseverance and passion for long-term goals – remains underexplored. Some studies (e.g. Lee & Lee, 2020; Liu & He, 2024) have begun to investigate how L2 grit might influence willingness to communicate (WTC) and ICC, but comprehensive insights into this connection are lacking.

At the same time, a growing body of research points to the positive effects of informal digital learning of English (IDLE) on ICC. For example, Liu, Ma, Bao and Liu (2025) found that engaging in IDLE activities enables Chinese college students to improve both their language proficiency and cultural awareness, better preparing them for intercultural encounters. Despite these findings, the intersection of IDLE and ICC remains insufficiently studied in the Chinese context. Even less is known about how positive psychology constructs, such as self-efficacy and grit, interact with IDLE to shape ICC.

To address these gaps, this study investigates the relationships among L2 self-efficacy, L2 grit, IDLE, and ICC among Chinese EFL students. Using an explanatory mixed-methods design that combines quantitative survey data with qualitative interviews, this research seeks to uncover how these psychological traits and informal learning behaviors collectively contribute to the development of ICC. In doing so, it aims to offer a richer and more holistic understanding of how Chinese learners prepare for intercultural communication in the digital age.

2. Literature review

2.1. L2 grit and L2 self-efficacy

Grit, as defined by Duckworth, Peterson, Matthews and Kelly (2007: 1087), is the "perseverance and passion for long-term goals" – the capacity to stay committed and enthusiastic even when faced with setbacks. It includes two core components: *perseverance of effort (POE)*, which reflects one's sustained effort toward long-term goals, and *consistency of interest (COI)*, which refers to maintaining focus over time despite challenges. Research by Credé, Tynan and Harms (2017) suggests that POE is a stronger predictor of academic success than COI, even after accounting for traits like conscientiousness. As a result, some studies (e.g. Lee, 2022a; Lee & Lee, 2020) prioritize POE as a more reliable indicator in educational settings.

When applied to second language acquisition, *L2 grit* is seen as a vital personality trait among successful learners – marked by persistent effort and deep motivation to master a new language (Teimouri, Plonsky & Tabandeh, 2022). Learners who demonstrate higher levels of grit are more likely to thrive in language learning environments, positioning L2 grit as a critical individual difference variable (Yang, Azari Noughabi & Jahedizadeh, 2024). Previous research has linked L2 grit with related psychological constructs, including motivation (e.g. Alamer, 2021), growth mindset (Teimouri *et al.*, 2022), and WTC in a second language (e.g. Lee & Lee, 2020). Yet, despite its promising potential, L2 grit remains an emerging area of inquiry with many aspects still to be explored (Shirvan, Taherian & Yazdanmehr, 2022).

Self-efficacy – the belief in one's capacity to succeed in specific tasks (Bandura, 1997) – is another foundational factor in language learning. Numerous studies underscore the role of L2

https://doi.org/10.1017/S0958344025100414 Published online by Cambridge University Press

self-efficacy in influencing learners' confidence and performance (e.g. Todaka, 2016). Notably, researchers have started examining how self-efficacy interacts with L2 grit. For instance, Zheng, Heydarnejad and Aberash (2022) highlighted how both traits contribute to emotional regulation, which in turn enhances learning outcomes. Yang *et al.* (2024) found that learners with higher self-efficacy are more likely to display stronger L2 grit, reinforcing resilience in demanding academic environments. However, while these findings suggest a meaningful link between the two constructs, the direct pathway from L2 self-efficacy to L2 grit remains underexplored. Based on these insights, this study proposes the following hypothesis:

H1: L2 self-efficacy is positively related to L2 grit.

2.2. IDLE and L2 grit

Soyoof, Reynolds, Vazquez-Calvo and McLay (2023) have called for greater attention to out-of-classroom practices like IDLE. IDLE, as defined by Lee (2022b), refers to self-directed activities conducted in informal digital environments, driven by personal interests and not subject to formal assessment by an English teacher. IDLE activities are often categorized into productive IDLE activities (PIA) and receptive IDLE activities (RIA) (Lee & Drajati, 2019). Previous studies (e.g. Lee & Drajati, 2019; Liu *et al.*, 2025) have shown a positive correlation between PIA and RIA, suggesting that engagement in receptive activities (e.g. watching English media and reading digital materials) often leads to participation in productive activities (e.g. speaking and writing in English online).

Recent research has increasingly explored the link between L2 grit and IDLE. Barkati, Kiyanfar, Noughabi and Ershadi (2025) identified a positive relationship between L2 grit and overall engagement in IDLE – covering both receptive and productive activities – among Iranian EFL learners. In a similar vein, Lee and Drajati (2019) found that Indonesian EFL students with higher grit levels were more actively engaged in both types of IDLE. They also observed that participation in receptive IDLE was positively related to productive IDLE. Despite these encouraging findings, research in this area remains scarce, particularly among Chinese EFL learners. To address this gap, the following hypotheses focus on Chinese EFL students:

H2: L2 grit is positively related to PIA.

H3: L2 grit is positively related to RIA.

H4: RIA is positively related to PIA.

2.3. L2 grit and ICC

There is no universally accepted definition of ICC (Deardorff, 2006). While ICC should encompass various values in diverse cultures, its key elements – knowledge, attitudes, skills, and awareness – are generally recognized, with many researchers agreeing that these dimensions must exist for effective ICC (e.g. Deardorff, 2006; Wu *et al.*, 2013). In China, due to a shortage of intercultural talents, Zhang (2007) introduced the concept of "intercultural foreign language education," which aims to enhance learners' foreign language communication skills while fostering their intercultural communication abilities and overall literacy. Over the past decades, Chinese scholars have worked to improve students' ICC in foreign language education (e.g. Wu *et al.*, 2013; Zhang, 2007).

https://doi.org/10.1017/S0958344025100414 Published online by Cambridge University Press

Although research on self-efficacy and ICC is extensive (e.g. Genkova *et al.*, 2023; Jing & Zhang, 2019), studies on grit and ICC are still limited. Lee (2022a) explores how grit affects students' L2 WTC, offering insights into L2 grit and ICC. Liu and He (2024) emphasize the importance of L2 grit on ICC, focusing on how L2 grit influences digital WTC, which in turn affects ICC. These findings support the hypothesis that L2 learners with higher levels of grit are more likely to engage in digital and informal language communication, ultimately enhancing their ICC. As a result, the following hypothesis is formed with Chinese EFL students:

H5: L2 grit is positively related to ICC.

2.4. IDLE and ICC

Intercultural communication in an online context has become the norm at all levels of our lives due to globalization in the digital age (Friedman, 2005). In light of this, there have been calls for learners to develop skills as proficient L2 speakers in online multilingual and multicultural settings (Porto, Houghton & Byram, 2018). In addition, intercultural understanding can occur in the evident intercultural exchanges overseas and "at home" through the virtual online intercultural exchange (O'Dowd, 2007). With the application of virtual exchange (e.g. Çolak & Balaman, 2022), 3D contextual interactive games (e.g. Zhang, Goodman & Gu, 2022), digital storytelling (e.g. Oakley, Pegrum, Xiong, Lim & Yan, 2018), and other various digital ways, online intercultural communication is developing fast under this context. By accessing online resources that challenge stereotypes and cultural norms, students can be encouraged to recognize multicultural and multilingual realities that are often overlooked in formal education (Larsen-Freeman, 2018). Supporting this, Liu *et al.* (2025) found a positive relationship between IDLE and intercultural communicative competence among 1,490 Chinese EFL students. However, their study did not distinguish how RIA versus PIA individually contributed to ICC. Therefore, the following hypotheses are proposed, focusing on Chinese EFL learners:

H6: PIA is positively related to ICC.

H7: RIA is positively related to ICC.

2.5. Conceptualizing the model through the broaden-and-build theory

Fredrickson's (1998, 2001) broaden-and-build theory provides a compelling lens to interpret the proposed relationships among L2 self-efficacy, grit, IDLE engagement, and ICC. According to this theory, positive emotions broaden individuals' momentary thought–action repertoires, encouraging them to explore new ideas, actions, and social bonds ("broaden"), which over time helps them develop enduring personal and social resources ("build"). Applying this framework to the current study, learners with high L2 self-efficacy (**H1**) are more likely to demonstrate L2 grit, reflecting a broadened mindset toward challenges and sustained effort. This grit then drives learners to actively engage in informal digital learning environments, leading to greater participation in both productive (**H2**) and receptive (**H3**) IDLE activities. Moreover, the broadened engagement in receptive IDLE is expected to support productive output (**H4**), showing how digital input can scaffold output. Over time, these sustained engagements "build" higher-order communicative resources, such ICC (**H5–H7**). In this way, the broaden-and-build theory offers a cohesive explanation of how emotional and motivational resources catalyze language learning and intercultural development through informal digital practices. This conceptual model is illustrated in Figure 1.

https://doi.org/10.1017/S0958344025100414 Published online by Cambridge University Press

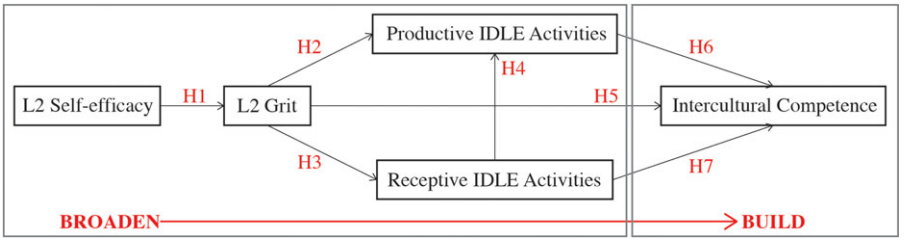


Figure 1. Conceptual model.

3. Methodology

3.1. Participants and context

The participants consist of 416 Chinese EFL students (85.8% female). Most participants are first-year (42.8%, 178) and second-year (35.3%, 147) students, with fewer in their third (17.3%, 72) and fourth (4.6%, 19) years. The mean age is 19.58 years, with a standard deviation of 1.36, and most fall within the 18 to 20 age range. With ethical review committee approval (Ref. no. 2022-2023-0346), we used purposeful sampling to recruit Chinese EFL students from one university in Guangzhou. All participants had passed China's National College Entrance Examination (*Gaokao*), demonstrating a foundational proficiency in English listening, speaking, reading, and writing. None of them had lived abroad for an extended period, and their educational background was exclusively shaped by the Chinese academic system. The participants were recruited through WeChat (a multifunctional social media and communication app in China). All the participants in the questionnaires were volunteers and were invited into a WeChat group and given necessary information and appreciation.

3.2. Explanatory mixed-methods approach

To gain a well-rounded understanding of the research questions, this study adopts an explanatory mixed-methods design (Greene, Caracelli & Graham, 1989). This approach blends the strengths of both quantitative and qualitative methods to explore not only what is happening but also why it happens. The quantitative phase captures measurable patterns, such as how often, how strongly, or how long certain behaviors occur, through structured questionnaires. These results are then deepened in the second phase through semi-structured interviews, which offer rich insights into the learners' thoughts, values, and motivations (Castleberry & Nolen, 2018). By first identifying trends and then unpacking the personal stories behind them, this two-phase design helps bring the data to life with both breadth and depth.

3.2.1. Questionnaire

The survey was divided into five parts: (a) demographic information, including gender, age, academic year; (b) L2 self-efficacy; (c) L2 grit; (d) IDLE; and (e) intercultural communication competence.

The *L2 self-efficacy* questionnaire, adapted from Zadorozhnyy and Lee (2025), included four items ($\alpha = .88$), such as "I'm confident I can become proficient in English with enough effort and practice." Responses were rated from 1 (*strongly disagree*) to 5 (*strongly agree*) on a 5-point Likert scale.

The *L2 grit* questionnaire, based on Lee (2022a), also features four items ($\alpha = .81$), such as "I work hard to learn English." A 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) was employed.

https://doi.org/10.1017/S0958344025100414 Published online by Cambridge University Press

The *IDLE* questionnaire, drawing from Lee and Drajati (2019), is divided into two subscales: (a) *receptive IDLE* ($n = 4$, $\alpha = .76$; e.g. "I read content written in English on digital devices [e.g. phone, computer, pad]") and (b) *productive IDLE* ($n = 4$, $\alpha = .86$; e.g. "I communicate orally with others in English on digital devices [e.g. phone, computer, pad]"). Likert-type scales ranging from 1 (*never*) to 6 (*very often*) were employed.

Lastly, the ICC questionnaire, revised from Peng, Wu and Fan (2015), consists of 15 items ($\alpha = .88$), such as "Understanding native history." Participants responded using a 5-point Likert scale ranging from 1 (*very low*) to 5 (*very high*).

3.2.2. Semi-structured interview

To gain deeper insight into the quantitative results, follow-up semi-structured interviews were conducted in Chinese. To ensure linguistic accuracy and cultural relevance, the English-to-Chinese translations of the interview questions were reviewed by three experienced English teachers. Interviews were held online via Tencent Meeting, providing a convenient and comfortable platform for student participants. With their consent, each session, lasting approximately 30 minutes, was recorded for later analysis. In total, 15 students (three males and 12 females) volunteered to take part, each responding to around 10 open-ended questions. To thank them for their time and input, each participant received a 60-yuan incentive.

4. Data analysis

SPSS and R's lavaan package (Rosseel, 2012) were employed to analyze data collected from the questionnaire. SPSS was employed to present demographic information including age, the percentage of male and female participants, and the percentage of participants from grade one to four. The lavaan package in R was used to conduct confirmatory factor analysis (CFA) with maximum likelihood robust (MLR) estimation. Last, structural equation modeling (SEM) was used to test the hypothesized model. Subsequently, the model evaluation was conducted by assessing the chi-square to degrees of freedom ratio (χ^2/df), comparative fit index (CFI), root-mean-square error of approximation (RMSEA), and standardized root-mean-square residual (SRMR). In light of our sample size ($n = 416$), the number of observed variables ($m = 31$), and the model fit indices guidelines established by Hair, Tatham, Anderson and Black (1998), a model is considered to be well fitting if the chi-square to degrees of freedom ratio is less than 3, CFI and Tucker–Lewis index (TLI) exceed .90, RMSEA is less than .07, and SRMR is equal to or less than .08. In addition, we employed 5,000 bootstrapping resamples with a 95% confidence interval to assess the indirect paths, following the methodology suggested by Preacher and Hayes (2008).

For the follow-up qualitative phase, deductive thematic analysis was carried out using Boyatzis's (1998) three-stage framework. Two independent external coders analyzed the data separately, and any disagreements were resolved through discussion, resulting in over 90% intercoder agreement. To address potential researcher bias – since the researcher also conducted the interviews and analyzed the data (Miles & Huberman, 1994) – all transcripts were returned to the participants for member checking, ensuring the accuracy and trustworthiness of the findings.

4.1. Quantitative findings

4.1.1. Initial analysis

To begin the process, the initial focus was on examining the data to identify and eliminate any outliers, errors, or participant misconduct that could potentially affect the subsequent analysis (Collier, 2020). Initially, we collected 428 questionnaires, all complete with no missing data. After removing outliers (identified with the Z-score method) and questionnaires with 80% repetitive answers, we reserved 416 effective questionnaires. All items displayed skewness and kurtosis well

https://doi.org/10.1017/S0958344025100414 Published online by Cambridge University Press

Table 1. CFA fit indices for the constructs, initial and revised models

Indices	Chi-square value	χ^2/df	CFI	TLI	SRMR	RMSEA
L2 self-efficacy	12.104	6.052	0.973	0.920	0.030	0.110
L2 grit	15.990	7.995	0.970	0.911	0.031	0.130
Receptive IDLE	17.789	8.894	0.946	0.839	0.044	0.138
Productive IDLE	16.129	8.064	0.973	0.920	0.034	0.130
ICC	497.608	5.786	0.870	0.842	0.103	0.107
Initial model	1114.564	2.654	0.890	0.878	0.063	0.077
Revised model	650.351	1.935	0.944	0.937	0.060	0.047

Note. CFA = confirmatory factor analysis; CFI = comparative fit index; TLI = Tucker–Lewis index; SRMR = standardized root-mean-square residual; RMSEA = root-mean-square error of approximation; IDLE = informal digital learning of English; ICC = intercultural competence.

within the recommended limits of |3.0| and |8.0| (Kline, 2015), confirming that the data were normally distributed. The mean scores for L2 self-efficacy items fell between 3.65 and 3.86, with standard deviations ranging from 0.78 to 0.85. L2 grit items showed means from 3.25 to 4.18 and standard deviations between 0.76 and 0.92. For receptive IDLE, means ranged from 3.04 to 3.36 ($SD = 1.01$–1.07), while productive IDLE items had means from 1.93 to 2.46 ($SD = 0.94$–0.97). Regarding ICC components, "knowledge of self" items reported means of 3.81 to 4.05 ($SD = 0.77$–0.83), "knowledge of others" items ranged from 2.75 to 2.88 ($SD = 0.92$–0.95), "intercultural communicative skills" items spanned from 2.88 to 3.92 ($SD = 0.80$–1.11), and "intercultural cognitive skills" items ranged from 3.17 to 3.36 ($SD = 0.84$–0.86). These results illustrate consistent distributions and provide a clear picture of participants' responses across all measured constructs.

4.1.2. Validity and reliability checks

The original questionnaire consisted of 31 items, each measuring one of the constructs: *L2 self-efficacy* (4 items, with factor loadings ranging from 0.78 to 0.85), *L2 grit* (4 items, loadings from 0.64 to 0.79), *receptive IDLE activities* (4 items, loadings from 0.63 to 0.74), *productive IDLE activities* (4 items, loadings from 0.71 to 0.85), and *intercultural competence* (15 items, loadings from 0.26 to 0.94). To assess the validity of each scale, separate CFAs were conducted for each construct. Detailed results, including the range of factor loadings and model fit indices, are presented in Table 1.

We preserved the items with standardized factor loadings above 0.6 and deleted the items with low factor loadings. Upon examination, it was determined that ICC1, ICC2, and ICC6 did not meet the desired factor loading criteria and therefore were eliminated. There are 28 final items for the eight constructs. The fit indices of the revised model are presented in Table 1. All the models were estimated using MLR to account for potential non-normality. Although the separate CFA for individual constructs and the initial model did not demonstrate satisfactory model fit, the revised model demonstrated significantly improved fit after removing items with factor loadings below 0.6.

The removal of low factor loadings serves as a crucial basis for conducting subsequent SEM analysis and mediation analysis. Table 2 presents descriptive statistics and correlations. The α-values and ω-values for the eight constructs exceeded the recommended threshold value of .7. This confirms satisfactory internal consistency, with all indicators exceeding the threshold, demonstrating reliability. Although the correlation between self-efficacy and grit ($r = .843$) was relatively high, further analysis indicated no concern for multicollinearity. Variance inflation factors for all variables remained well below the commonly accepted threshold of 5, confirming that these correlations did not adversely affect the model.

https://doi.org/10.1017/S0958344025100414 Published online by Cambridge University Press

Table 2. Descriptive statistics and correlations ($n = 416$)

				Correlation				
	M (*SD*)	α	ω	1	2	3	4	5
1. SE	3.74 (0.81)	.878	.879	1				
2. GRIT	3.74 (0.84)	.811	.813	.843***	1			
3. RIA	3.17 (1.05)	.764	.766	.316***	.410***	1		
4. PIA	2.24 (0.98)	.859	.861	.257***	.360***	.691***	1	
5. ICC	3.30 (0.86)	.876	.876	.361***	.401***	.465***	.481***	1

Note. SE = L2 self-efficacy; GRIT = L2 grit; RIA = receptive IDLE activity; PIA = productive IDLE activity; ICC = intercultural competence. ***$p < .001$. **$p < .01$. *$p < .05$.

Table 3. Goodness-of-fit indices of the final model

Indices	Chi-square value	χ^2/df	CFI	TLI	SRMR	RMSEA
Model	672.091	2.147	0.944	0.937	0.059	0.053
Recommended value	N/S	≤ 3	≥ 0.90	≥ 0.90	≤ .08	≤ .07

Note. CFI = comparative fit index; TLI = Tucker–Lewis index; SRMR = standardized root-mean-square residual; RMSEA = root-mean-square error of approximation; N/S = non-significance.

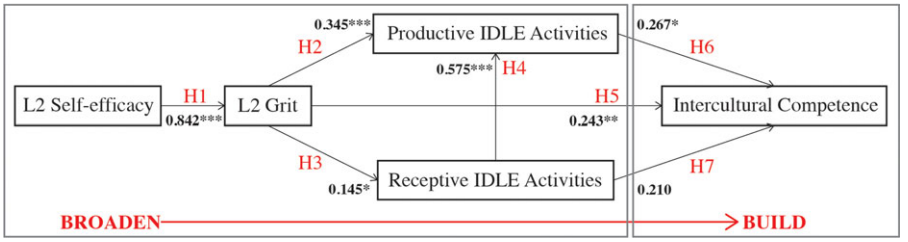


Figure 2. The final version of the research model
***$p < .001$. **$p < .01$. *$p < .05$.

4.1.3. Model testing

As is presented in Table 3, the final model's fit indices indicated a strong alignment with the data and satisfied the suggested criteria. Figure 2 presents the results of SEM of the mediation model. The path estimates for the structural models are presented in Table 4. To assess the proposed relationships between the latent constructs, we used standardized coefficients (β), significance levels, and standard errors (*SE*).

The analysis revealed that L2 self-efficacy had a strong positive effect on L2 grit ($\beta = 0.842^{***}$, $SE = 0.064$), supporting **H1**. L2 grit, in turn, significantly predicted both PIA ($\beta = 0.345^{***}$, $SE = 0.081$) and RIA ($\beta = 0.145^{*}$, $SE = 0.037$), confirming **H2** and **H3**. RIA also positively influenced PIA ($\beta = 0.575^{***}$, $SE = 0.074$), validating **H4**. Additionally, L2 grit showed a significant positive relationship with ICC ($\beta = 0.243^{**}$, $SE = 0.042$), supporting **H5**. PIA further contributed positively to ICC ($\beta = 0.267^{*}$, $SE = 0.041$), affirming **H6**. However, the link between RIA and ICC was not statistically significant, leading to the rejection of **H7**.

https://doi.org/10.1017/S0958344025100414 Published online by Cambridge University Press

Table 4. Path estimates of the model

Direct effect	β	Estimate	*SE*	Bootstrapping 95% confidence interval BC	
				Lower	Upper
H1: L2 self-efficacy → L2 grit	0.842***	0.780***	0.064	0.656	0.909
H2: L2 grit → PIA	0.345***	0.480***	0.081	0.325	0.643
H3: L2 grit → RIA	0.145*	0.186*	0.037	0.338	0.398
H4: RIA → PIA	0.575***	0.529***	0.074	0.677	0.731
H5: L2 grit → ICC	0.243**	0.162**	0.042	0.258	0.240
H6: PIA → ICC	0.267*	0.128*	0.041	0.239	0.243
H7: RIA → ICC	N/S	N/S	N/S	N/S	N/S

Note. β = standardized coefficients; *SE* = standard errors; N/S = non-significance.
***$p < .001$. **$p < .01$. *$p < .05$.

4.2. Qualitative findings

In line with the explanatory mixed-methods design, we purposefully selected qualitative insights that directly complement the quantitative findings, particularly those supporting Hypotheses H1 through H6. Since the data collection did not specifically explore the rejected hypothesis (H7), we addressed this non-significant relationship in the discussion using previous research as supporting context.

4.2.1. H1: L2 self-efficacy → L2 grit

The interviews revealed a strong, direct link between learners' self-efficacy, defined as their belief in their own ability to succeed, and the development of grit, or their determination to keep learning English despite obstacles. Students described how feeling confident gave them the emotional fuel to persist:

> *With greater confidence, you may also become grittier and motivated to keep learning. Before entering high school, my academic performance was below average. During one summer vacation, I made an effort to practice reading every day, even if it was just small passages. After the break, my grades improved significantly, and I even ranked among the top students in the class. Many of my classmates were impressed by my change. This experience boosted my belief in learning well and made me more willing to learn. (Judy)*

> *Regarding the relationship between self-efficacy and grit, I believe there is a strong connection. Only when I am mentally convinced that I can learn something well will I have the motivation to persist. Therefore, self-efficacy plays a very important role for me. (Wendy)*

4.2.2. H2 and H3: L2 grit → PIA and RIA

The interviews revealed how learners' L2 grit, reflected in their perseverance and sustained effort, actively shaped their engagement in IDLE activities. Students described how their determination pushed them to explore various forms of IDLE, such as watching TV shows, using language apps, and seeking interaction with native speakers, even when facing setbacks or limited immediate results:

> *I agree that grit has helped me expand my informal learning practices. I practice English every day by watching American TV shows and studying authentic expressions. Even when I don't*

https://doi.org/10.1017/S0958344025100414 Published online by Cambridge University Press

get replies from native speakers on HelloTalk, I keep trying because I'm determined to improve. (Molly)

I think perseverance does have an impact. Activities like listening to music or watching movies are naturally entertaining, so I'm willing to do them on my own. I often look for films that interest me, sometimes even less popular ones. When I want to improve my listening skills, I tend to watch the same parts multiple times if I don't understand them at first. I feel I've learned a lot through this process, and it also reflects the influence of grit. (Dora)

Yes, I believe that perseverance is key to making the most of IDLE. I use apps like Duolingo and watch foreign movies to improve my English. When I feel tired, I push myself to keep learning because I know it will pay off in the long run. (Bonnie)

4.2.3. H4: RIA → PIA

The interviews demonstrated a direct link between learners' receptive IDLE and the development of productive IDLE. Students described how accumulated input gave them the linguistic resources and confidence to produce language naturally:

These two types of activities are closely connected. I believe that receptive IDLE activities serve as a knowledge reservoir for productive ones. The vocabulary, grammar, and authentic expressions learned and accumulated through receptive activities directly influence the accuracy and fluency of productive tasks such as writing, translation, and speaking. (Cara)

There is an impact. Based on my daily learning experience, receptive IDLE through watching TV shows, listening to songs, and reading articles has helped me accumulate a lot of language input. For example, when I watch American TV series, I naturally remember common vocabulary and expressions after hearing and seeing them repeatedly. Later, when chatting with people, I sometimes use these phrases without even thinking. (Anne)

Receptive IDLE input provides both linguistic resources and confidence for productive output. It helps me develop a sense of language, accumulate diverse ways of expression, and reduce my psychological barriers to speaking. It feels like filling a reservoir – the more input I store, the more naturally and fluently the output flows. (Bonnie)

4.2.4. H5: L2 grit → ICC

The interviews revealed a clear connection between learners' L2 grit and the development of ICC. Students described how their perseverance helped them persist in understanding unfamiliar cultural behaviors and communication styles, even when facing misunderstandings and cultural barriers. Their grit provided the motivation to seek out resources and learning opportunities to bridge cultural gaps:

I think it does have an impact because of my interactions with foreigners. My learning, especially in terms of language, relies on my perseverance. If I can't communicate smoothly or fully understand their culture, regardless of different cultural backgrounds, I will keep striving to understand their culture. So, even though I don't understand it at first, I want to learn more about it. The challenges posed by my interactions with them make me feel that I need to constantly learn through perseverance. (Mary)

I think grit has an impact. In my process of learning about different cultures, there are many times when I struggle to understand certain language expressions or behaviors because we don't

https://doi.org/10.1017/S0958344025100414 Published online by Cambridge University Press

share the same cultural background. Sometimes it's really difficult to grasp their ways of speaking or acting. When this happens, I try to use different learning resources to better understand their cultural differences. Even when I face challenges, I feel it's my perseverance that drives me to keep exploring and seeking explanations for these differences, so I can better understand the cultural gap between us. (Dora)

4.2.5. H6: PIA → ICC

The interviews demonstrated that PIA contributed meaningfully to their developing ICC. Students described how engaging in real-time conversations with foreigners, adapting their language use for cultural appropriateness, and building personal language corpora helped them better understand cultural differences, enhance their communication flexibility, and improve their sensitivity to diverse cultural norms:

For productive IDLE activities, I usually use social apps where I can chat with foreigners through text. By engaging in conversations with them, I improve my English expression skills. During these chats, we talk about various aspects of daily life, which helps me learn about different countries' policies, cultures, daily habits, and even religious beliefs. Having foreigners personally share their life experiences allows me to better understand and respect their cultures, and it broadens my horizons, enhancing my intercultural competence. For example, when chatting with a girl from the Philippines, I learned that many Filipinos are multilingual due to their historical background. I also discovered that some Filipinos have the habit of eating with their hands. (Lily)

Productive types of informal digital English learning have helped me communicate more appropriately and flexibly in English, enhancing my cultural sensitivity in expression. For example, I've learned to use phrases like "I'd love to, but . . . " instead of simply saying "No," making my responses not just grammatically correct but also culturally appropriate. In addition, these experiences have improved my ability to understand diverse accents and strengthened both my listening skills and adaptability in communication. (Ella)

Productive IDLE has helped me become more familiar with the language used in intercultural communication, including daily spoken expressions, grammatical usage, and translation between Chinese and English. Over time, I have also built my own personal corpus of useful language resources through these experiences. (Molly)

5. Discussion

Unlike earlier studies that examined components of ICC in isolation (e.g. Liu *et al*., 2025), this study offers a holistic analysis of how L2 self-efficacy, L2 grit, and IDLE work together to influence ICC among Chinese EFL learners, integrating both quantitative and qualitative evidence.

First, **L2 self-efficacy** significantly predicts **L2 grit** (**H1**). Qualitative evidence illustrates how students' belief in their language abilities gives them the confidence to persevere through difficulties. As Judy shared, gaining self-efficacy through progress made her more determined to keep learning, demonstrating how self-efficacy fuels grit. This mechanism is explained by Bandura's (1997) theory of self-efficacy. When learners believe they can succeed at specific language tasks, they are more likely to invest sustained effort and remain resilient in the face of setbacks. Fredrickson's (1998, 2001) broaden-and-build theory also offers a complementary lens: a strong sense of self-efficacy generates the positive emotions that "broaden" a learner's mindset, allowing them to "build" the enduring personal resource of grit. Consequently, learners with high self-efficacy do not just hope to succeed; they are equipped to endure the journey required to do so. This finding echoes earlier work (Sun & Mu, 2023; Yang *et al*., 2024; Zheng *et al*., 2022),

https://doi.org/10.1017/S0958344025100414 Published online by Cambridge University Press

reinforcing the pivotal role of self-efficacy in nurturing persistent learning behavior – or grit – among EFL students.

Second, **L2 grit** is positively associated with **both receptive and productive IDLE engagement** (**H2** and **H3**). Qualitative narratives illustrated how students with high grit consistently pursued informal English learning, such as watching English media, using language apps, or practicing with native speakers online, despite obstacles. As Dora described, grit enhances IDLE by motivating learners to persistently engage with challenging content, such as rewatching movie scenes multiple times, thereby turning entertainment into effective learning. This process is explained by the two core components of grit, as defined by Duckworth *et al.* (2007). Learners with higher L2 grit possess *perseverance of effort* – the sustained drive to work toward long-term goals – and *consistency of interest* – the ability to maintain focus and passion over years, not just weeks. Together, these traits enable students to persistently engage with English through diverse digital activities. This finding aligns with the established view of L2 grit as a critical trait for success in language learning (Teimouri *et al.*, 2022). Furthermore, the mechanism can be understood through Fredrickson's (1998, 2001) broaden-and-build theory. The positive emotions associated with grit essentially broaden a learner's mindset, making them more likely to explore and build skills through a wider range of IDLE activities. While previous studies in other contexts have hinted at this relationship (e.g. Barkati *et al.*, 2025; Lee & Drajati, 2019), this evidence compellingly extends it to the population of Chinese EFL learners.

Third, we found a significant positive link between **receptive IDLE** (e.g. watching, listening, reading) and **productive IDLE** (e.g. speaking, writing), supporting **H4**. Interview data supported this connection, showing that passive exposure often led to more active language use. As Anne demonstrated, receptive IDLE through watching shows and reading naturally translates into productive IDLE, with vocabulary and grammar patterns emerging effortlessly in her speech and writing. This is in line with Lee, Kiaer and Jeong (2025), who reported that Korean language learners transitioned from binge-watching K-dramas to actively using the expressions they picked up with native speakers online. Similarly, previous work with Indonesian EFL learners (Lee & Drajati, 2019) showed this input–output progression, but our study provides the first evidence of this pattern among Chinese learners.

Fourth, **L2 grit** was positively linked to **ICC** (**H5**). Qualitative insights reinforced these quantitative results, revealing how L2 grit actively supports the development of ICC. As Mary's experience illustrates, L2 grit cultivates ICC by motivating learners to persistently decode unfamiliar cultural behaviors, overcome communication barriers, and work through misunderstandings. This suggests that students who persisted through linguistic and cultural challenges reported deeper engagement in cross-cultural interactions. As intercultural interactions often require quick thinking and navigating complex situations, maintaining motivation and flexibility is crucial (Deardorff, 2006; Wu *et al.*, 2013). Learners with high L2 grit tend to possess *perseverance of effort* – the unwavering commitment to pursue long-term goals – and *consistency of interest* – the ability to remain focused and passionate over extended periods (Duckworth *et al.*, 2007; Teimouri *et al.*, 2022). These qualities may enable EFL students to fully participate in intercultural communication and strengthen their competence. Significantly, while earlier studies (e.g. Lee, 2022a; Liu & He, 2024) explored grit's indirect links to WTC or ICC, our findings present direct empirical evidence that students with higher grit are better equipped to navigate and thrive in intercultural settings.

Fifth, a significant relationship was found between **productive IDLE** and **ICC** (**H6**). This suggests that learners who actively used English online, whether by joining digital communities, engaging in real-time conversations, or exchanging cultural perspectives, frequently immersed themselves in intercultural experiences. According to Fredrickson's (1998, 2001) broaden-and-build theory, such productive IDLE not only encourages genuine participation in cross-cultural exchanges but also gradually fosters ICC over time. Qualitative accounts further illustrate this connection. For example, Lily described how chatting with foreigners on social platforms gave her firsthand insight into different cultural traditions, beliefs, and lifestyles, which greatly enhanced

https://doi.org/10.1017/S0958344025100414 Published online by Cambridge University Press

her intercultural understanding. While Liu *et al.* (2025) found a general link between IDLE and ICC, they did not distinguish between receptive and productive activities. By contrast, our study makes this distinction and provides nuanced evidence that productive IDLE, in particular, plays a vital role in promoting intercultural growth.

Lastly, we did not find a significant link between **receptive IDLE** and **ICC**, thus rejecting **H7**. While receptive activities can enhance cultural awareness and sensitivity by exposing learners to diverse perspectives, this does not necessarily translate into communicative competence. ICC requires interactive, experiential engagement with speakers from different cultural backgrounds – something that receptive input alone cannot provide. It is important to note, however, that our measure of ICC relied on self-reported surveys, which may not have fully captured its complexity. To strengthen these findings, future research should consider using more robust tools or methods to assess ICC in greater depth.

To interpret these interconnected relationships, Fredrickson's (1998, 2001) broaden-and-build theory offers a conceptual framework. The theory posits that positive emotions expand individuals' attention and engagement (*broaden*), which in turn cultivates long-term personal and social resources (*build*). Applied to this study, learners with higher **L2 self-efficacy** are more likely to adopt a resilient mindset (**L2 grit**), pushing them to explore and persist in informal learning environments. This sustained engagement supports both **receptive and productive language use**, which eventually builds higher-order communicative skills like **ICC**. Notably, the theory also explains the gap found in H7: while passive input broadens awareness, it is intentional, active participation that ultimately builds ICC.

In summary, our study contributes a comprehensive model linking motivation, informal learning, and intercultural development, offering both theoretical depth and practical insights for supporting Chinese EFL learners in digitally mediated environments.

6. Implications and limitations

This study offers theoretical insights into the complex connections between L2 self-efficacy, L2 grit, IDLE (PIA and RIA), and ICC in Chinese EFL learners. This research uses a mixed-methods approach to analyze the relationship between psychological traits and IDLE practices in ICC, combining quantitative data with qualitative insights. Quantitative data shows the relationships, while qualitative insights explain the mechanism. This emphasizes the value of a mixed-methods approach in understanding learners' experiences and validating theories related to IDLE activities. The qualitative data enriches the theoretical understanding by illustrating how L2 grit drives continuous engagement in both RIA and PIA, enhancing ICC in the end. This research enhances the theoretical understanding of L2 self-efficacy, L2 grit, IDLE activities, and ICC among Chinese EFL learners through a mixed-methods approach. The study also demonstrates that the principles of the "broaden-and-build theory of positive emotions" are applicable to the field of positive psychology in L2 acquisition.

Pedagogically, this study emphasizes the need to cultivate positive psychological traits in language education and encourage Chinese EFL learners to participate in IDLE activities. By focusing on cultivating L2 self-efficacy and L2 grit, and by introducing balanced and diverse IDLE activities, educators could enhance Chinese EFL learners' language skills and promote their ICC development. These pedagogical strategies help L2 learners effectively engage in a globalized world by encouraging intercultural communicative skills and valuing intercultural diversity.

Our study has a few limitations that offer directions for future research. First, our participants were over 400 Chinese EFL learners from a single university. Although this is a sizable sample, the lack of diversity in institutional backgrounds means our findings might not fully represent the wider population of EFL learners in China. Future studies should include participants from a variety of regions and institutions to enhance generalizability. Second, the gender distribution in our sample was notably uneven, with females ($n = 357$) greatly outnumbering males ($n = 59$).

https://doi.org/10.1017/S0958344025100414 Published online by Cambridge University Press

This imbalance was also evident in the semi-structured interviews (12 females compared to three males). Future research would benefit from a more balanced gender representation to provide a broader perspective on the findings. Lastly, our assessment of ICC relied on self-reported surveys, which might not have captured the full complexity of this construct. To gain deeper insights, future studies should employ more comprehensive tools or methods for measuring ICC.

7. Conclusion

This study investigated the relationship between positive psychology and intercultural communicative competence among Chinese EFL learners, with IDLE acting as a mediator. SEM supported six out of seven hypotheses. Specifically, L2 self-efficacy was found to significantly predict L2 grit, which in turn was positively associated with both receptive and productive IDLE engagement. Receptive IDLE activities (e.g. watching, listening, reading) were positively linked to productive ones (e.g. speaking, writing), and both L2 grit and productive IDLE were significantly related to ICC. However, no significant relationship was found between receptive IDLE and ICC. These quantitative findings were further enriched by qualitative data, offering deeper insights into learners' experiences and perspectives.

The study was framed by Fredrickson's broaden-and-build theory, which suggests that positive emotions expand individuals' attention and engagement, ultimately building lasting personal and social resources. In this context, learners with higher L2 self-efficacy are more likely to develop L2 grit, enabling them to persist in informal learning environments. This sustained engagement supports both receptive and productive language use, which contributes to the development of ICC. Pedagogically, the findings highlight the importance of fostering positive psychological traits in language education and promoting diverse IDLE activities. By cultivating L2 self-efficacy and grit, educators can help EFL learners enhance their language proficiency and ICC, preparing them to thrive in a globalized world.

Supplementary material. To view supplementary material for this article, please visit https://doi.org/10.6084/m9.figshare.30446192

Data availability statement. Data not available due to privacy/ethical restrictions.

Authorship contribution statement. Jiana Liu: Writing – original draft, Data curation, Formal analysis, Investigation, Resources, Visualization, Project administration; Ju Seong Lee: Conceptualization, Methodology, Project administration, Supervision, Visualization, Writing – review & editing.

Funding disclosure statement. This research did not receive any specific funding.

Competing interests statement. The authors declare no competing interests.

Ethical statement. This research was approved by the ethical review committee of The Education University of Hong Kong (Ref. no. 2022-2023-0346). Informed consent was secured from all interview participants, who were given comprehensive details regarding the study's objectives, procedures, and any potential risks or benefits involved. Each participant was assigned a pseudonym to ensure confidentiality.

GenAI use disclosure statement. We utilized ChatGPT-4 to enhance the readability and clarity of the manuscript; however, the literature review, data analysis, interpretation of findings, and formulation of implications are entirely the authors' original work and intellectual contribution.

References

Alamer, A. (2021) Grit and language learning: Construct validation of L2-Grit Scale and its relation to later vocabulary knowledge. *Educational Psychology*, 41(5): 544–562. https://doi.org/10.1080/01443410.2020.1867076

Bandura, A. (1997) *Self-efficacy: The exercise of control*. New York: W. H. Freeman and Company.

Barkati, M., Kiyanfar, Z., Noughabi, M. A. & Ershadi, F. (2025) Contributions of self-efficacy, L2 grit and digital literacy to informal digital learning of English: A structural equation modelling approach. *British Journal of Educational Technology*, 56(5): 2183–2201. https://doi.org/10.1111/bjet.13547

https://doi.org/10.1017/S0958344025100414 Published online by Cambridge University Press

Bennett, M. J. (1993) Towards ethnorelativism: A developmental model of intercultural sensitivity. In Paige, R. M. (ed.), *Education for the intercultural experience*. Yarmouth: Intercultural Press, 21–71. https://doi.10.1016/S0147-1767(03)00034-8

Boyatzis, R. E. (1998) *Transforming qualitative information: Thematic analysis and code development*. Thousand Oaks: SAGE Publications.

Byram, M. (2008) Assessment and/or evaluation of intercultural competence and intercultural citizenship. In Byram, M. (ed.), *From foreign language education to education for intercultural citizenship: Essays and reflections*. Clevedon: Multilingual Matters, 219–226. https://doi.org/10.21832/9781847690807-016

Castleberry, A. & Nolen, A. (2018) Thematic analysis of qualitative research data: Is it as easy as it sounds? *Currents in Pharmacy Teaching and Learning*, 10(6): 807–815. https://doi.org/10.1016/j.cptl.2018.03.019

Çolak, F. & Balaman, U. (2022) The use of online dictionaries in video-mediated L2 interactions for the social accomplishment of virtual exchange tasks. System, 106: Article 102772. https://doi.org/10.1016/j.system.2022.102772

Collier, J. E. (2020) *Applied structural equation modeling using AMOS: Basic to advanced techniques*. New York: Routledge.

Credé, M., Tynan, M. C. & Harms, P. D. (2017) Much ado about grit: A meta-analytic synthesis of the grit literature. *Journal of Personality and Social Psychology*, 113(3): 492–511. https://doi.org/10.1037/pspp0000102

Deardorff, D. K. (2006) Identification and assessment of intercultural competence as a student outcome of internationalization. *Journal of Studies in International Education*, 10(3): 241–266. https://doi.org/10.1177/1028315306287002

Duckworth, A. L., Peterson, C., Matthews, M. D. & Kelly, D. R. (2007) Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology*, 92(6): 1087–1101. https://doi.org/10.1037/0022-3514.92.6.1087

Fredrickson, B. L. (1998) What good are positive emotions? *Review of General Psychology*, 2(3): 300–319. https://doi.org/10.1037/1089-2680.2.3.300

Fredrickson, B. L. (2001) The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist*, 56(3): 218–226. https://doi.org/10.1037/0003-066X.56.3.218

Friedman, T. L. (2005) *The world is flat: A brief history of the twenty-first century*. New York: Farrar, Straus and Giroux.

Genkova, P., Schreiber, H. & Fässler, V. (2023) The role of parenting styles for the relationship of stays abroad, self-efficacy and intercultural competence. *Intercultural Education*, 34(4): 362–377. https://doi.org/10.1080/14675986.2023.2187347

Greene, J. C., Caracelli, V. J. & Graham, W. F. (1989) Toward a conceptual framework for mixed-method evaluation designs. *Educational Evaluation and Policy Analysis*, 11(3): 255–274. https://doi.org/10.3102/01623737011003255

Hair, J. F., Tatham, R. L., Anderson, R. E. & Black, W. (1998) *Multivariate data analysis* (5th ed.). New York: Prentice Hall.

Huang, L. (2017) Co-curricular activity-based intercultural competence development: Students' outcome of internationalisation at universities. *Innovations in Education and Teaching International*, 54(3): 184–193. https://doi.org/10.1080/14703297.2016.1184098

Jing, Y. & Zhang, J. (2019) The influence of short-term overseas internship on English learners' self-efficacy and intercultural communication apprehension. *English Language Teaching*, 12(9): 6–12. https://doi.org/10.5539/elt.v12n9p6

Kabir, R. S. & Sponseller, A. C. (2020) Interacting with competence: A validation study of the self-efficacy in intercultural communication scale-short form. *Frontiers in Psychology*, 11: Article 2086. https://doi.org/10.3389/fpsyg.2020.02086

Kline, R. B. (2015) *Principles and practice of structural equation modeling* (4th ed.). New York: The Guilford Press.

Larsen-Freeman, D. (2018) Looking ahead: Future directions in, and future research into, second language acquisition. *Foreign Language Annals*, 51(1): 55–72. https://doi.org/10.1111/flan.12314

Lee, J. S. (2022a) The role of grit and classroom enjoyment in EFL learners' willingness to communicate. *Journal of Multilingual and Multicultural Development*, 43(5): 452–468. https://doi.org/10.1080/01434632.2020.1746319

Lee, J. S. (2022b) *Informal digital learning of English: Research to practice*. New York: Routledge. https://doi.org/10.4324/9781003043454

Lee, J. S. & Drajati, N. A. (2019) Affective variables and informal digital learning of English: Keys to willingness to communicate in a second language. *Australasian Journal of Educational Technology*, 35(5): 168–182. https://doi.org/10.14742/ajet.5177

Lee, J. S., Kiaer, J. & Jeong, S. (2025) The role of informal digital learning of Korean in KFL students' willingness to communicate. *Journal of Multilingual and Multicultural Development*, 46(3): 863–879. https://doi.org/10.1080/01434632.2023.2216671

Lee, J. S. & Lee, K. (2020) Affective factors, virtual intercultural experiences, and L2 willingness to communicate in in-class, out-of-class, and digital settings. *Language Teaching Research*, 24(6): 813–833. https://doi.org/10.1177/1362168819831408

Liu, G., Ma, C., Bao, J. & Liu, Z. (2025) Toward a model of informal digital learning of English and intercultural competence: A large-scale structural equation modeling approach. *Computer Assisted Language Learning*, 38(3): 342–368. https://doi.org/10.1080/09588221.2023.2191652

Liu, J. & He, Y. (2024) An analysis of the impact of L2 grit on the intercultural competence of Chinese EFL students with willingness to communicate digitally as the mediator. *SHS Web of Conferences*, 190: Article 02002. https://doi.org/10.1051/shsconf/202419002002

Mu, Y. & Yu, B. (2023) Developing intercultural competence in college business English students: A study of innovative teaching in China. *International Journal of Intercultural Relations*, 92: Article 101747. https://doi.org/10.1016/j.ijintrel.2022.101747

https://doi.org/10.1017/S0958344025100414 Published online by Cambridge University Press

Miles, M. B. & Huberman, A. M. (1994) *Qualitative data analysis: An expanded sourcebook* (2nd ed.). Thousand Oaks: SAGE Publications.

Oakley, G., Pegrum, M., Xiong, X. B., Lim, C. P. & Yan, H. (2018) An online Chinese-Australian language and cultural exchange through digital storytelling. *Language, Culture and Curriculum*, 31(2): 128–149. https://doi.org/10.1080/07908318.2017.1386193

O'Dowd, R. (ed.) (2007) *Online intercultural exchange—An introduction for foreign language teachers* (Vol. 63, No. 1, pp. 81–84). Oxford University Press. https://doi.org/10.1093/elt/ccn065

Peng, R.-Z., Wu, W.-P. & Fan, W.-W. (2015) A comprehensive evaluation of Chinese college students' intercultural competence. *International Journal of Intercultural Relations*, 47: 143–157. https://doi.org/10.1016/j.ijintrel.2015.04.003

Porto, M., Houghton, S. A. & Byram, M. (2018) Intercultural citizenship in the (foreign) language classroom [Editorial]. *Language Teaching Research*, 22(5): 484–498. https://doi.org/10.1177/1362168817718580

Preacher, K. J. & Hayes, A. F. (2008) Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40(3): 879–891. https://doi.org/10.3758/BRM.40.3.879

Pusch, M. D. (2009) The interculturally competent global leader. In Deardorff, D. K. (ed.), *The SAGE handbook of intercultural competence*. Thousand Oaks: SAGE Publications, 66–84. https://doi.org/10.4135/9781071872987.n3

Rosseel, Y. (2012) lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, 48(2): 1–36. https://doi.org/10.18637/jss.v048.i02

Shirvan, M. E., Taherian, T. & Yazdanmehr, E. (2022) L2 grit: A longitudinal confirmatory factor analysis-curve of factors model. *Studies in Second Language Acquisition*, 44(5): 1449–1476. https://doi.org/10.1017/S0272263121000590

Soyoof, A., Reynolds, B. L., Vazquez-Calvo, B. & McLay, K. (2023) Informal digital learning of English (IDLE): A scoping review of what has been done and a look towards what is to come. *Computer Assisted Language Learning*, 36(4): 608–640. https://doi.org/10.1080/09588221.2021.1936562

Sun, Z. & Mu, B. (2023) Motivating online language learning: Exploring ideal L2 self, grit, and self-efficacy in relation to student satisfaction. *Frontiers in Psychology*, 14: Article 1293242. https://doi.org/10.3389/fpsyg.2023.1293242

Teimouri, Y., Plonsky, L. & Tabandeh, F. (2022) L2 grit: Passion and perseverance for second-language learning. *Language Teaching Research*, 26(5): 893–918. https://doi.org/10.1177/1362168820921895

Todaka, Y. (2016) Self-efficacy of English listening skills in Japanese college EFL learners. *International Journal of Education and Practice*, 4(1): 21–36. https://doi.org/10.18488/JOURNAL.61/2016.4.1/61.1.21.36

Wu, W. P., Fan, W. W. & Peng, R. Z. (2013) Zhongguo daxuesheng kuawenhua nengli weidu ji pingjia liangbiao fenxi [An analysis of the assessment tools for Chinese college students' intercultural communicative competence]. *Foreign Language Teaching and Research*, 45(4): 581–592.

Yang, S., Azari Noughabi, M. & Jahedizadeh, S. (2024) Modelling the contribution of English language learners' academic buoyancy and self-efficacy to L2 grit: Evidence from Iran and China. *Journal of Multilingual and Multicultural Development*, 45(7): 2701–2717. https://doi.org/10.1080/01434632.2022.2062368

Zadorozhnyy, A. & Lee, J. S. (2025) Informal digital learning of English and willingness to communicate in a second language: Self-efficacy beliefs as a mediator. *Computer Assisted Language Learning*, 38(4): 669–689. https://doi.org/10.1080/09588221.2023.2215279

Zhang, B., Goodman, L. & Gu, X. (2022) Novel 3D contextual interactive games on a gamified virtual environment support cultural learning through collaboration among intercultural students. *SAGE Open*, 12(2): 1–14. https://doi.org/10.1177/21582440221096141

Zhang, H. L. (2007) *Kuawenhua waiyu jiaoxue* [Intercultural approach to foreign language teaching]. Shanghai Foreign Language Education Press.

Zheng, S., Heydarnejad, T. & Aberash, A. (2022) Modeling the interplay between emotion regulation, self-efficacy, and L2 grit in higher education. *Frontiers in Psychology*, 13: Article 1013370. https://doi.org/10.3389/fpsyg.2022.1013370

About the authors

Jiana Liu is affiliated with the Department of Foreign Languages at Guangzhou Xinhua University, Guangdong, China. Liu's research interests include intercultural communication, willingness to communicate, and informal digital learning of English (IDLE).

Ju Seong Lee is an associate professor in the Department of English Language Education at the Education University of Hong Kong. Lee's research focuses on IDLE and its social impact.

https://doi.org/10.1017/S0958344025100414 Published online by Cambridge University Press