

Determinants of Chinese University Students' Willingness to Communicate in English: A Structural Equation Model (SEM)

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Abstract: *Low willingness to communicate (WTC) in English among Asian students, particularly Chinese students, is known as the mute English phenomenon, where students remain silent during learning. This study aimed to identify the determinants of Chinese students' WTC in English within a classroom context and examine the mediating role of self-perceived communication competence. The sample consisted of 400 Chinese university students taken from five public universities in Shaanxi Province, China. The influence of the ideal L2 self and the classroom environment on WTC as well as the mediating role of self-perceived communication competence were analyzed with partial least squares structural equation modeling (PLS-SEM). Results showed that Chinese university students' WTC in English was influenced by their ideal L2 self and the classroom environment, with the former exerting a stronger influence. Together, these two factors explained 52.6% of the variance in WTC ($R^2 = 0.526$, $p < 0.01$). The relationships between these variables were significantly mediated by students' self-perceived communication competence. This study offers new insights into the determinants of WTC among Chinese university students, with the implications of these findings discussed in this paper.*

Keywords: willingness to communicate, ideal L2 self, English language learning

1. Introduction

Willingness to communicate (WTC) refers to a learner's intention to speak in the target language when given the choice, and it significantly contributes to individual differences in language learning (MacIntyre, 2020). The lack of WTC in English during class among Chinese students is a serious problem in China. Studies (Zeng & Bao, 2022) showed about 60 % of Chinese university students are reluctant to speak in English class discussions, a common problem for Asian learners of a foreign language. In this cultural context, silence is regarded as a desirable trait and a manifestation of harmony. However, the low WTC among Chinese EFL learners remains a persistent issue. WTC is a prerequisite for the actual communicative behavior of L2 learners (Wang et al., 2017). Some studies explored potential predictors of WTC, including individual and environmental factors (Fatima et al., 2020). However, the influence on the relationship between the ideal L2 self and WTC in English as a foreign context in class is still not well understood (Fathi et al., 2023). The concept of the 'ideal L2 self' refers to how learners envision their future selves using the language, which can vary greatly depending on individual and cultural backgrounds (Ghasemi et al., 2020). The ideal L2 self can act as a robust motivator for learning an L2 due to the desire of language learners to reduce the discrepancy between their actual current L2 selves and their ideal future L2 selves (Dornyei,

2009). In addition to individual factors, the classroom environment plays a critical role in influencing WTC in China (Yin et al., 2020). In China's context, high value is placed on listening over speaking, significantly influencing students' willingness to engage in classroom discussions. Thus, Yin et al. (2020) called for an improved understanding of classroom environments in China concerning their connections to students learning English.

Peng (2010) suggested that classroom contextual variables can be added to other individual variables to make a more complete model of WTC. Fatima et al. (2020) revealed that self-perceived communication competence (SPCC) is the strongest individual factor influencing learners' WTC. The combined influence of individual factors, which is students' ideal L2 self, and the classroom environment on WTC among Chinese university students, as well as the potential mediating role of SPCC, remains unclear (Chen, 2020). To address low WTC effectively, it is crucial to analyze the simultaneous and multivariate relationships between these variables to understand each factor's contribution and the potential indirect influence of the mediator. The findings will provide new insights into the determinants of WTC among Chinese students, which is essential for developing targeted strategies to improve oral communication in EFL learning (Wang & Liu, 2021).

2. Literature Review

In Chinese educational contexts, where English proficiency holds a significant way for academic and career advancement, students who aspire to attain their ideal L2 self are more likely to actively engage in communicative activities (Peng, 2015). MacIntyre et al. (1998) developed a pyramid-type conceptual model that incorporates a wide range of linguistic, situated, and psychological factors that might affect language learners' L2 WTC. Among the variables leading to L2 WTC, L2 motivation is considered a key determinant (Peng & Woodrow, 2010). The L2 motivational self-system (L2MSS) framework proposed by Dornyei (2009) is particularly applicable to the study of L2 perpetuation. Dornyei (2009) suggested that the ideal L2 self can be a key component of the L2MSS as it relates to the language learner's long-term hopes, ambitions, and aspirations for their future L2 self. Feng and Papi (2020) highlight that the ideal L2 self represents learners' specific hopes and desires related to their English language acquisition journey. It serves as a potent motivator closely linked to learners' mastery of the target language (Roshandel et al., 2018). Pan (2023) viewed communication as a vital step towards bridging the gap between their current language abilities and their envisioned future selves. As students strive towards this ideal, they experience heightened determination and purpose in their language-learning journey. The desire to achieve proficiency helps them overcome anxieties about making mistakes or appearing less skilled, thereby boosting their WTC in the classroom (Yang & Lian, 2023). Recent studies on L2 WTC (Bal, 2021) have found that the ideal L2 self can serve as an antecedent to language learners' WTC in the target language. Nevertheless, few studies have addressed the relationship between the ideal L2 self and WTC in English as a foreign language (EFL) contexts (Fathi et al., 2023). These theoretical and empirical backgrounds provide the theoretical basis for the present study's use of the 'L2 ideal self' as a dependent variable.

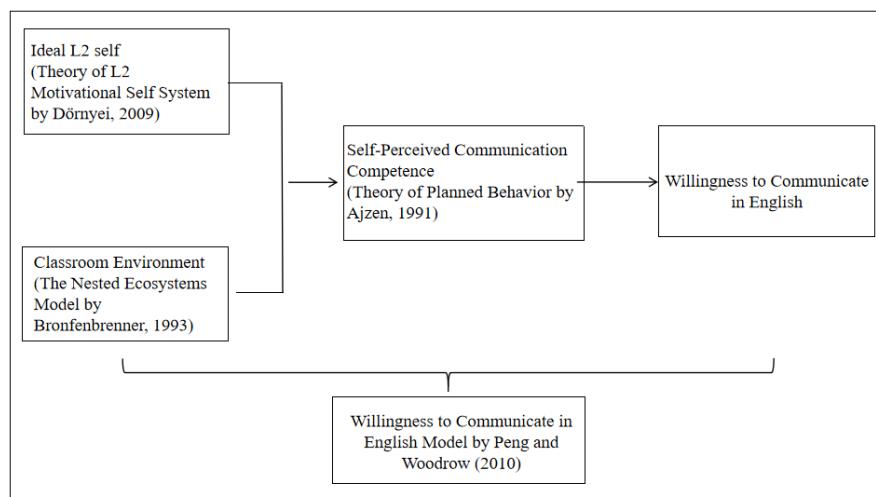
The classroom environment is another important determinant that could influence students' WTC in English within China's educational context (Fatima et al., 2020). Wang et al. (2023) conducted a study investigating the impact of social and environmental factors on students' WTC. Their research covered diverse aspects. Fatima et al. (2020) found that the classroom is the main source for learners to find opportunities to communicate in English and to improve their L2 WTC and L2 communicative competence. Peng (2019) confirmed the role of

classroom environment in WTC. The classroom environment is constructed by teachers and students in verbal and non-verbal interactions. The important role of verbal communication between all parties in creating a classroom environment conducive to WTC cannot be ignored. Peng (2012) argued that participants in Chinese EFL classrooms always seem to have a ready-made impression of the classroom climate, which tends to either promote or undermine their WTC. More importantly, the study argued that individual and environmental factors synergize with each other to contribute to the ups and downs of classroom WTC. Thus, Yin et al. (2020) called for an improved understanding of classroom environments in China concerning their connections to students learning English.

In the English classroom, Chinese students tend to passively listen to lectures and take notes rather than engage in linguistic communication. Peng and Woodrow (2010) suggested that classroom contextual variables can be added to other individual variables to make a more complete model of WTC. SPCC helps language learners be aware of their strengths and weaknesses that promote their language learning processes and their applications during communication with others. In English language learning contexts, SPCC specifically relates to learners' beliefs about their capabilities in using the English language, which could include their WTC in the classroom (Nadeem et al., 2023). Fatima et al. (2020) showed that there is a positive correlation between perceived communicative competence and classroom environment. SPCC refers to learners' perceptions of their communication competence, which is the most immediate antecedent of learners' WTC. Ghasemi et al. (2020) denoted the positive correlation between the ideal L2 self and SPCC. Kazykhankyzy (2019) found that communicative competence was best predicted by the ideal L2 self. The potential mediating role of SPCC should be examined to further understand factors that influence Chinese university students' WTC in English (Shirvan et al., 2019). Peng (2019) has become increasingly interested in the impact of the classroom environment on WTC in English classes, as WTC cannot be fully explained by individual variables, such as L2 competence or learner beliefs (Wang et al., 2019). Tan et al. (2018) investigated international students' WTC in US university classrooms, focusing on the role of a classroom environment. Results revealed that confidence and motivation had a direct impact on WTC, and the classroom environment had an indirect effect on WTC through the mediation of motivation and confidence. WTC research focuses predominantly on language learning classrooms, this study initiates an extended exploration of WTC in language learning as well as general classrooms. Therefore, this study explores the influence of the classroom environment on the WTC of Chinese university students through perceived communicative competence.

WTC in the English model was developed by Peng and Woodrow (2010). It is used to explain how individual and environmental factors can influence WTC. This model showed the influence of the classroom environment on WTC through perceived competence. The model indicates the potential to draw on individual and environmental variables to account for classroom communication. Therefore, based on this model, this study argues that SPCC mediates between the ideal L2 self, classroom environment, and WTC in English among Chinese university students. The L2 MSS framework developed by Dörnyei (2009) is particularly applicable to L2 WTC research. The framework incorporates concepts related to L2 learners' perceptions and views of their current and future selves, which may influence their language learning behaviors. Dörnyei (2009) suggests that the ideal L2 self is a key component of the L2 MSS as it relates to language learners' long-term hopes, ambitions, and aspirations for their future L2 selves. The nested ecosystem model supports the influence of environmental factors on WTC (Bronfenbrenner, 1993). The classroom environment is located in the innermost microsystem of the ecosystem, which is an important environmental factor that can

influence students' communication skills. The nested systems explain that the learners in the classroom, the learners' interactions, and the learners' life which constitute a web of interrelationships that nest inside the teacher-and-student instructional context. The heuristic model of WTC (MacIntyre et al., 1998) organizes influencing variables into six hierarchical layers, ranging from immediate situational factors (e.g., topic, interlocutor) to broader social and individual contexts (e.g., cultural background, and personality traits). Central to this model is the role of SPCC as a key affective cognitive variable that mediates the relationship between individual and environmental factors and WTC. In the context of this study, the model explains how the ideal L2 self (an individual factor) and classroom environment (an environmental factor) influence WTC through SPCC.



Building on the literature review and the theoretical framework, this study formulated four hypotheses to examine the influence of the ideal L2 self and the classroom environment on WTC among Chinese university students. Furthermore, the study investigates the mediating role of SPCC in this relationship. Drawing from the existing theoretical and empirical evidence, the following alternative hypotheses are proposed.

- H_1 : There is a significant influence of the idea L2 self on students' WTC in English.
- H_2 : There is a significant influence of the classroom environment on students' WTC.
- H_3 : SPCC significantly mediates the relationships between the ideal L2 self and Chinese university students' WTC in English
- H_4 : SPCC significantly mediates the relationships between classroom environment and Chinese university students' WTC in English.

3. Methodology

A total of 400 Chinese university students were recruited from five public universities in Shaanxi Province, China, using cluster random sampling techniques (Krejcie & Morgan, 1970). Participation criteria are Chinese university students who are not majoring in English, including first, second, third, and fourth-year university students. Participation in this study was voluntary, and responses were kept anonymous. The sample ($n = 201$ females, $n = 199$ males) comprised students from various courses (arts, education, engineering & science). Data collection was carried out through a questionnaire survey, with 418 questionnaires distributed, of these, 408 were returned and analyzed. After excluding questionnaires with missing information, data from 400 valid questionnaires were analyzed. The questionnaire was made

up of four instruments namely the willingness to communicate scale, ideal L2 self scale, classroom environment scale, and self-perceived communicate competence scale.

This study adopted established five-point Likert-type scales for this study. The reliability and validity of the scales were ensured through expert validation and a pilot study. The willingness to communicate scale developed by Weaver (2005) and Peng and Woodrow (2010) was used to measure university students' WTC in English within a classroom context. The current instrument comprised 19 items. Responses were collected using a 5-point Likert scale, with options ranging from 1 = strongly disagree to 5 = strongly agree. The scale consisted of two subscales: willingness to communicate in meaning-focused activities and willingness to communicate in form-focused activities. The adapted instrument demonstrated high reliability, with a Cronbach's Alpha value of $\alpha = 0.92$. In this study, content validity showed that the scale-level content validity index (S-CVI/UA) was 0.83. The ideal L2 self scale developed by Shi and Fan (2016) was used to measure university students' image of their ideal learning English image inside their English classroom. The current instrument comprised 14 items. Responses were collected using a 5-point Likert scale, with options ranging from 1 = strongly disagree to 5 = strongly agree. The scale consisted of two subscales: ideal L2 communicator and ideal L2 learner. The adapted instrument demonstrated high reliability, with a Cronbach's Alpha value of $\alpha = 0.87$. In this study, content validity showed that the S-CVI/UA was 0.84. The Classroom Environment Scale developed by Peng and Woodrow (2010) was used to measure the university students' perception of their English classroom environment. The current instrument comprised 19 items. Responses were collected using a 5-point Likert scale, with options ranging from 1 = strongly disagree to 5 = strongly agree. The scale consisted of three subscales: teacher support, student cohesiveness, and task orientation. The adapted instrument demonstrated high reliability, with a Cronbach's Alpha value of $\alpha = 0.89$. In this study, content validity showed that the S-CVI/UA was 0.81. The self-perceived communication competence scale developed by McCroskey and McCroskey (1988) and Chen (2020) was used to measure university students' perceptions of their English language skills when interacting with different classmates in the English classroom. The current instrument comprised 7 items. Responses were collected using a 5-point Likert scale, with options ranging from 1 = strongly disagree to 5 = strongly agree. The adapted instrument demonstrated high reliability, with a Cronbach's Alpha value of $\alpha = 0.91$. In this study, content validity showed that the S-CVI/UA was 0.85. Data analysis was conducted using partial least squares structural equation modeling (PLS-SEM), a form of structural equation modeling. PLS-SEM does not impose restrictive requirements on sample size or residual distributions. Its advantages include flexibility with normality assumptions, the ability to yield reliable results with small sample sizes and complex models, and effectiveness in theory testing from a predictive perspective. Additionally, PLS-SEM facilitates robust mediation analysis through bootstrapping (Hair et al., 2019).

4. Results

In evaluating the measurement model, item loadings were assessed according to established guidelines. Hair et al. (2019) recommend that item loadings should be 0.70 or higher to ensure that the construct accounts for more than 50% of the factor variance. Indicators that did not meet this criterion were excluded from the analysis. The internal consistency reliability of the model was assessed using both Cronbach's alpha (CA) and composite reliability (CR). Cronbach's alpha is considered a conservative measure of reliability, while composite reliability offers a more lenient estimate. For satisfactory construct reliability, both CA and CR values should be above 0.70 (Hair et al., 2019). As shown in Table 1, the CA and CR values

exceeded 0.70, indicating robust construct reliability and ensuring the reliability of the measurement model.

Table 1: Results of the Measurement Model

Latent Variables	AVE	CR	CA
SPCC	0.61	0.89	0.89
WTC	0.93	0.94	0.93
Ideal L2 Self	0.53	0.92	0.92
CE	0.51	0.95	0.95

The convergent validity of the model was assessed using the average variance extracted (AVE) value. For satisfactory convergent validity, AVE values for constructs should exceed 0.50 (Hair et al., 2019). As shown in Table 1, the minimum AVE value for the full model was 0.51, confirming the convergent validity of the constructs. In addition, discriminant validity was evaluated using the Fornell-Larcker criterion and the Heterotrait-Monotrait Ratio (HTMT) (Henseler et al., 2017). According to the Fornell-Larcker criterion, the square root of the AVE for each variable should be greater than the correlations between that variable and other variables. Table 2 shows that the square roots of the AVEs (given on the diagonal) are indeed greater than the correlation values, indicating discriminant validity. Additionally, the HTMT ratio assesses discriminant validity by comparing the average correlations between different constructs. An HTMT value below 0.90 indicates adequate discriminant validity (Dirglatmo, 2023). In this study, all HTMT values were below 0.90, thereby confirming discriminant validity according to both the Fornell-Larcker criterion and the HTMT ratio.

Table 2: Discriminant Validity of Construct-Fornell-Larcker Criterion

	Classroom Environment	Ideal L2 Self	SPCC	WTC
Classroom Environment	0.71	0.47	0.44	0.59
Ideal L2 Self	0.44	0.73	0.38	0.59
SPCC	0.42	0.35	0.78	0.61
WTC	0.56	0.55	0.56	0.74

Note. Values bolded on the diagonal are the square root of the AVE value. Values located below the diagonal refer to the correlation between the constructs. The value above the diagonal refers to the HTMT ratio. SPCC=Self-perceived communication competence.

Structural model testing involves several key steps: assessing collinearity among model constructs, examining the significance of path coefficients, performing bootstrapping for path analysis, and evaluating the model's predictive power and quality according to established criteria (Hair et al., 2019). Multicollinearity, which refers to high correlations among variables, can distort the results of the analysis. To assess collinearity, Hair et al. (2019) recommend examining the variance inflation factor (VIF) values of the constructs. Ideal VIF values should be below 5. As shown in Table 3, all VIF values in our study were below 5, indicating that there were no collinearity issues.

Table 3: Collinearity Assessment - Inner VIF Values

Path	VIF
Classroom Environment -> SPCC	1.249
Classroom Environment -> WTC	1.385
Ideal L2 Self -> SPCC	1.249
Ideal L2 Self -> WTC	1.304
SPCC -> WTC	1.269

Path coefficients, t values, and standard errors were calculated to determine whether the relationships were significant. This study performed bootstrapping with 5000 iterations in Smart PLS-4 to estimate the main and mediation effects. In response to hypotheses H_1 and H_2 , the results indicated that both the ideal self ($\beta = 0.30$, $p < 0.001$) and the classroom environment ($\beta = 0.28$, $p < 0.001$) have a direct and positive effect on WTC. The results indicated that H_1 and H_2 were supported. Together, these two factors explained 52.6% of the variance in WTC ($R^2 = 0.526$, $p < 0.01$).

Table 4: Path coefficients of the Structural Model

Direct Effects	Std Beta	Std Error	T statistics	P values	UL	LL
Ideal L2 Self -> WTC	0.30	0.05	5.97	0	0.40	0.20
CE-> WTC	0.28	0.05	5.17	0	0.40	0.18
Indirect Effect						
Ideal L2 Self -> WTC	0.07	0.02	3.24	0	0.03	0.11
CE -> WTC	0.11	0.02	4.43	0	0.06	0.16

Note: LL = Lower limit, UL = Upper limit, the t-values were obtained using the Bias-Corrected and Accelerated (BCa) Bootstrap procedure with 5000 resamples; CE=Classroom environment; WTC= Willingness to communicate.

In response to H_3 and H_4 , the results revealed that SPCC mediates the relationship between the ideal self ($\beta = 0.07$, $p < 0.001$) and WTC, as well as between the classroom environment ($\beta = 0.11$, $p < 0.001$) and WTC. Both H_3 and H_4 were supported. The PLS structural model is shown in Figure 2.

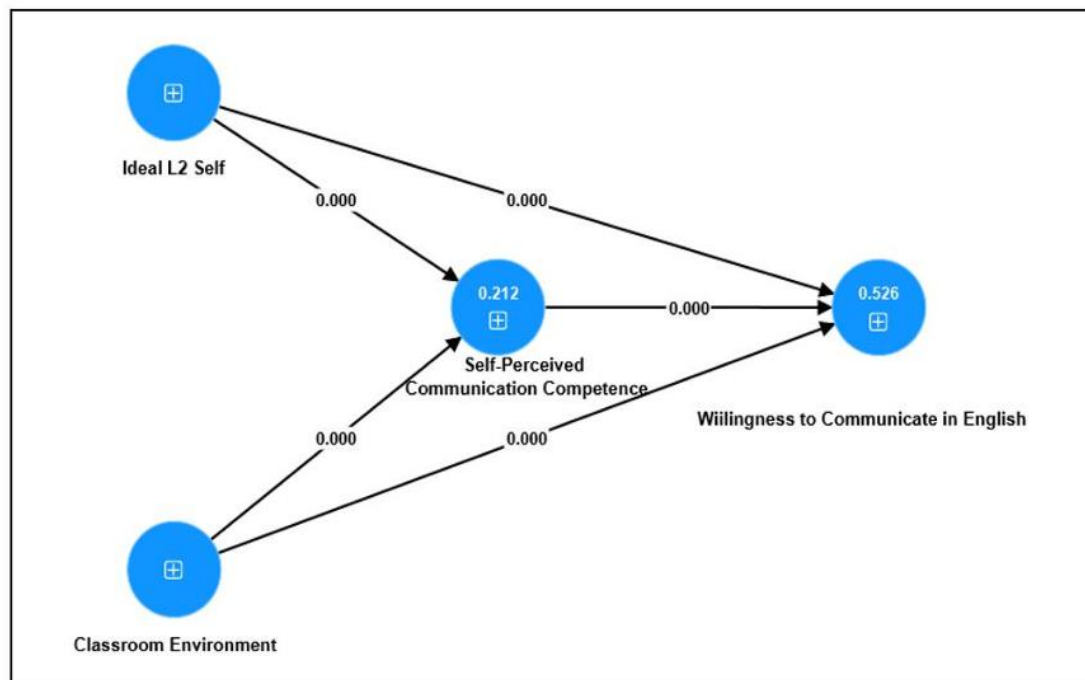


Figure 2: PLS Structural Model

The R^2 values were 0.21 for SPCC and 0.52 for WTC. According to Selya et al. (2012), R^2 values of 0.26 are substantial, 0.13 are considered moderate, and 0.02 is weak. Hence, the model can explain 52.6% of the variance of WTC.

5. Discussion

This study aimed to investigate the determinants of Chinese university students' WTC. It examined the effects of the ideal L2 self and classroom environment on WTC, as well as the moderating role of SPCC in these relationships. The results showed that both ideal L2 self and classroom environment directly and positively predict L2 WTC, which is in line with the findings of recent studies (Lee et al, 2021).

H1 was supported, and there was a significant influence of the idea L2 self on Chinese university students' WTC in English. This implies that the capacity of learners to envision themselves as proficient L2 users encourages them to actively participate in their learning to minimize the gap between their ideal and current L2 selves (Dörnyei, 2009). When learners can clearly and vividly visualize themselves as people studying and living abroad, it will stimulate great enthusiasm and motivation to actively communicate and participate in L2 lessons (Wang et al., 2017). Chinese learning styles and cultural contexts influenced by Confucianism are also relevant to English language learning in other countries, such as Japan, Korea, and many Chinese communities. The ideal L2 self of Chinese and other Asian learners from collectivist cultures is shaped by social expectations and academic success, with English proficiency reflecting personal and social goals. In English language education in China, there are fewer opportunities for individuals to engage in L2 authentic interactions. However, the ideal L2 self helps to compensate for the lack of L2 context (Fathi et al., 2023).

For H2, The classroom environment primarily encompasses interactions between teachers and students, as well as peer-to-peer engagement during instruction. In the context of L2 learning, fostering a supportive and engaging classroom atmosphere becomes essential. A positive and inclusive environment can encourage students to take linguistic risks, increasing their WTC in English. This, in turn, has been shown to improve their performance in language tasks (Kong, 2020). This insight underscores the need for a shift from traditional, teacher-centered models toward a more interaction-focused approach, especially in EFL settings where active engagement is crucial. Encouraging peer collaboration and open communication can make L2 classrooms globally more conducive to language development, breaking down cultural barriers that may hinder students' willingness to speak up. This emphasis on classroom atmosphere highlights an innovative perspective in L2 research, contributing to our understanding of how WTC can be shaped by the learning environment.

For H_3 and H_4 , the results on the significant indirect effect of SPCC imply that students' perception of their communication competence can influence the effect of the ideal L2 self and classroom environment on WTC. The results showed that the ideal L2 self positively predicted SPCC, which in turn significantly and positively affected EFL learners' WTC. SPCC had a mediating role in the relationship between the ideal L2 self and WTC. Given the challenges of L2 settings, students often require greater confidence to overcome language barriers. Their belief in their communicative ability directly influences their willingness to engage in interactions. If students feel capable of expressing their ideas clearly and confidently, they are more likely to participate actively in class discussions or interactions, thereby enhancing their learning outcomes (Ghasemi et al., 2020).

The role of the ideal L2 self in promoting SPCC and consequently WTC resonates with findings of a recent study by Fathi et al. (2023) indicating a positive association between the ideal L2 self and communicative competence. In other words, EFL learners with strong L2 motivational behaviors are more likely to have a degree of SPCC that allows them to initiate L2 interactions.

EFL learners who have an idealized vision of themselves as proficient in English will tend to make further efforts to initiate L2 communication. An idealized L2 self may also enhance learners' linguistic self-efficacy (Piniel, 2013), which in turn facilitates their WTC. Thus, it can be argued that learners' increased imaginings of their self-actualized future selves as proficient speakers of English influence their tendency to engage in L2 interactions with others. As Peng (2019) suggests idealized L2 selves may encourage EFL learners to strive to become highly skilled L2 users when this ambition enhances their perceptions about their self-communicative competence, thus facilitating their L2 WTC. Additionally, the results showed that classroom environment positively predicted SPCC, which in turn significantly and positively affected EFL learners' WTC. SPCC had a mediating role in the relationship between the classroom environment and WTC. Additionally, the findings of a recent study by Kong (2020), which showed a positive correlation between classroom environment and perceived communicative competence, are consistent with the importance of classroom environment in developing SPCC and, by extension, WTC. In other words, students' SPCC may be facilitated by beneficial factors in the classroom, including a strong learning atmosphere among peers, support from the teacher, and the teacher's ability to teach. This in turn promotes students' WTC in English in the classroom (Tamara et al., 2017).

6. Conclusion

This study rejected all four null hypotheses and derived the following three main conclusions, which have significant practical implications for EFL education. First, students' ideal L2 self significantly influences their WTC in English. This suggests that in EFL teaching, educators should focus on helping students construct a positive L2 self-image, such as by setting clear learning goals and providing successful learning models, to enhance students' intrinsic motivation and self-confidence. Second, classroom environmental factors (e.g., teacher-student interaction, peer support, and classroom atmosphere) have a significant impact on students' WTC. This indicates that educators should create an inclusive, risk-encouraging, and feedback-rich learning environment to reduce students' fear of making mistakes, thereby promoting their active participation in classroom discussions. Third, SPCC mediates the relationship between the ideal L2 self, classroom environment, and WTC. This highlights that students' confidence in their language abilities serves as a critical bridge transforming their ideal L2 self and classroom environment into actual communication behaviors. Therefore, EFL teaching should emphasize improving students' practical language skills and enhancing their self-efficacy through positive classroom interactions and feedback mechanisms. These findings provide important practical guidance for EFL education. First, teachers should re-evaluate traditional teaching methods, reduce reliance on rote memorization, and adopt more task-based learning and communicative approaches to develop students' practical language use abilities. Second, schools and educational institutions should strengthen teacher training to help educators master strategies for boosting students' confidence through positive feedback and encouraging language. Additionally, curriculum design should pay greater attention to individual differences among students, offering diverse learning resources and activities to meet their varied needs. In conclusion, the results of this study offer specific directions for improving EFL education, emphasizing the importance of addressing students' psychological, environmental, and cultural contexts in teaching. By implementing these strategies, educators can more effectively enhance students' willingness and ability to communicate in English, thereby promoting overall success in language learning. Future research could further explore how these findings can be applied to EFL learners from different cultural backgrounds to validate their universality and effectiveness.

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