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The effect of foreign language enjoyment on willingness to communicate among Chinese EFL students: conscientiousness as a mediator

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Introduction: An increasing body of research has explored the predictive effect of personality traits and affective factors on EFL learners' willingness to communicate (WTC). However, more is needed to know about how the sub-facets of individual personality traits influence WTC in the classroom context. Therefore, drawing on positive psychology, this study aims to bridge this gap by examining these roles in a mediation model of WTC incorporating FLE and conscientiousness.

Methods: To this end, 244 Chinese EFL undergraduates from two distinct universities participated in an online survey, completing a composite questionnaire of the three constructs. The bootstrapping technique was employed to test the proposed relationships.

Results: The findings indicated a positive correlation between both FLE and conscientiousness with WTC. Additionally, conscientiousness significantly mediated the relationship between FLE and WTC, supporting a partial mediation effect. Also, FLE had a direct influence on conscientiousness. These results may have some notable implications for EFL educators.

Discussion: The adoption of a holistic approach that emphasizes affective factors alongside acknowledging individual differences among learners could enhance students' willingness to communicate in English.

KEYWORDS

willingness to communicate, foreign language enjoyment, conscientiousness, personality traits, English as a foreign language

1 Introduction

Spoken English is a direct manifestation of language aptitude, and it is also a priority for many Chinese EFL students who face communicative difficulties in a non-English environment. Similarly, according to statistics, the speaking component in the IELTS test is one of the most challenging abilities for Chinese EFL learners to improve within a fixed period, often resulting in a specific negative emotion, namely speaking anxiety. Besides, L2 reticence of Chinese students in English learning has been widely observed in classroom settings (Sang and Hiver, 2021), and the reasons for their reticence varied across different communicative contexts (Zhong, 2013), highlighting the need for more support and attention for these language learners. These phenomena have prompted significant research into oral English communicative competence and spoken performance. Following this, the willingness to communicate (WTC) of L2 learners has become a topic in L2 academic research, defined as "a readiness to enter into discourse at a particular time with a specific

person or persons, using an L2” by MacIntyre et al. (1998, p. 547), which is considered the last essential step before actual communicative behavior. Given the paramount role of WTC in the development of spoken ability, numerous studies have indicated the relationships between WTC and a variety of cognitive and non-cognitive factors (see the literature review). Empirical findings suggest that students with a higher level of WTC tend to achieve better performance in oral English and vice versa. Therefore, it is crucial to explore the antecedents of WTC, and the current study aligns with this focus by examining the predictive role of foreign language enjoyment (FLE) and Conscientiousness on WTC.

Drawing on positive psychology (PP) in recent decades, positive emotions have been found to have a profound and beneficial impact on the language learning process (Dewaele and Dewaele, 2018). Before this, researchers had focused more on negative affective factors, such as foreign language classroom anxiety (FLCA), stress, and burnout, among others. Consequently, FLE, the primary positive emotion in second language acquisition, has been defined as “a positive disposition toward the foreign language learning process, peers, and teachers” (Botes et al., 2020, p. 282). Following the seminal work by Dewaele and MacIntyre (2014), a growing body of research has confirmed that learners who find EFL more enjoyable are more likely to perform better in the learning process (see the literature review). Despite previous findings suggesting a positive relationship between WTC and FLE, based on the theoretical framework that FLE is one of the affective factors that may influence WTC (MacIntyre et al., 1998; see Figure 1), few studies have tested the indirect effect of FLE on WTC. In other words, the potential mediating role of Conscientiousness between FLE and WTC should be further explored.

Another variable, Conscientiousness, is worth investigating in the correlation between WTC and FLE due to a greater focus on individual differences among learners (Xu and Zheng, 2022), representing a research shift from teacher-orientation to student-orientation. As one of the five

basic personality traits, Conscientiousness consists of a range of characteristic qualities, such as competence, order, dutifulness, achievement striving, self-discipline, and deliberation (Costa et al., 1991). These qualities have aroused an increasing interest in the educational field, and there is substantial empirical evidence that Conscientiousness directly or indirectly affects learners’ achievement (see the literature review). Moreover, this personality trait is also one of the fundamental variables in the heuristic model of variables influencing WTC (see Figure 1). However, few studies have deeply investigated the influence of specific facets of this trait on WTC and its interplay with the emotional variable. Therefore, a focused study is needed to confirm the relationship between Conscientiousness and WTC alongside the affective factor FLE.

Although previous studies have revealed a variety of factors that may influence WTC, few have incorporated a specific personality trait, FLE, and WTC into a mediation model. This study aims to deepen the understanding of these factors that impact WTC in the context of the English classroom in China. For this purpose, the PROCESS macro, as a powerful analytic tool, has been used to test the role of these variables in predicting WTC.

2 Literature review

2.1 Willingness to communicate

The concept of WTC was originally from an actual communicative predisposition behavior of first or native-language speakers labeled as unwillingness to communicate, mainly based on personality traits and affective variables (e.g., Burgoon, 1976). After that, McCroskey and Baer (1985) reframed this personality-based construct as WTC, which was fairly consistent across distinct contexts and receivers. To extend the trait-like conceptualization focused on L2 communication,

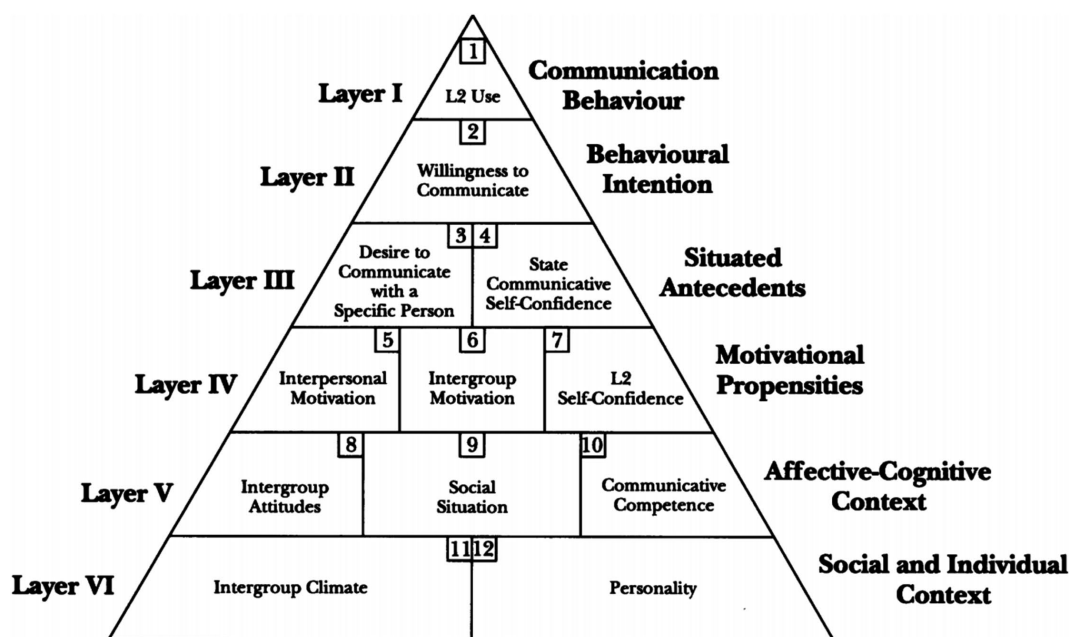


FIGURE 1 The heuristic model of variables influencing WTC (MacIntyre et al., 1998).

MacIntyre et al. (1998) defined WTC as “a readiness to enter into discourse at a particular time with a specific person or persons, using a second language” (p. 547), which clarified the multi-manifested feature of L2 WTC, as compared to WTC in L1. This concept considers factors that can affect WTC, encompassing both situation-specific and enduring influences, which has been tested by numerous studies (e.g., Guo et al., 2023; Peng and Woodrow, 2010). As shown in the pyramid-shape structure (Figure 1) schematized by MacIntyre et al. (1998), there are six layers in top-down order from the most transient communication behavior layer to the most stable social and individual layer, the combinations of which converge on a specific moment in time to affect the language learner’s decision making and intention of communicating in L2 or not (MacIntyre et al., 2020). However, in addition to the long-term factors, such as personality traits and intergroup climate, as shown in the bottom layer, the fluctuation of WTC in various settings has been captured and established by many researchers (e.g., Kang, 2005; Pawlak et al., 2016), which turned to a recent shift in the last decades focusing more on the dynamic nature of WTC and its situational variables (e.g., Dewaele and Pavelescu, 2019; MacIntyre, 2020; MacIntyre and Legatto, 2011; Nematizadeh and Wood, 2021), indicating that the complexity of WTC is both dynamic and relatively stable.

Given the important role of WTC in communication skills, many researchers have revealed the direct and indirect influences on WTC, including language learning emotions (Pavelescu, 2023), L2 self (Fathi et al., 2023; Lee and Lee, 2020), feedback (Alavi et al., 2021), self-efficacy (Guo et al., 2023), individual differences, such as gender, major and age (Cheng and Xu, 2022), and foreign language anxiety (Barabadi et al., 2022). Among these, Alrabai’s (2022) study in language classrooms highlighted that motivation and anxiety were the most significant direct predictors of WTC, suggesting that situational factors play a crucial role in WTC to varying extents. Despite the growing body of studies on WTC, some questions remain unanswered, particularly about the East Asian EFL learners, who were found by a collection of researchers to be more reticent within the classroom context (Cao, 2011; King and Harumi, 2020; Shao and Gao, 2016). For instance, with a focus on English classes in southern China, Peng (2020) employed the Dynamic Systems Theory (DST) to explore the relationship between Chinese EFL students’ WTC and silence in the classroom. The findings from this study revealed that students spoke English primarily within the confines of pair or group interactions, rarely initiating class-wide discussions. Moreover, a frequent inclination toward silence was observed, attributed to a spectrum of psychological factors, such as being capable but unwilling to speak or unprepared to do so. Consequently, this underscores the imperative to explore this situation-specific construct and its other antecedents in the heuristic pyramid model to bolster students’ predisposition toward verbal engagement and motivate them to break their silence.

2.2 Foreign language enjoyment

Psychology has always significantly influenced second or foreign language learning process particularly concerning negative or aversive emotions, such as foreign language anxiety, boredom, distress, and burnout, among others (Xu et al., 2022). However, an increasing number of SLA researchers have started to concentrate on positive emotions, including joy, interest, contentment, and love, which may

“broaden an individual’s momentary thought-action repertoire, the consequences of which in turn *build* that individual’s personal resources” (Fredrickson, 2004, p. 1367). These positive emotions are one of the three research areas in positive psychology based on the Broaden-and-Build Theory developed by Fredrickson (2001). Although foreign language anxiety is the most widespread negative emotion in the realm of SLA affective studies (Gkonou et al., 2017) and should not be altered by other topics, many language researchers hold that positive-broadening emotions of learners in language learning processes would be a vital additional perspective in SLA research (MacIntyre and Mercer, 2014). Thus, the number of studies on such emotions has considerably surged as they may be beneficial to facilitating L2 learning as well as promoting language learners’ well-being (Li et al., 2018).

Studies on FLE have received increasing attention in the field of L2 learning in the past two decades (Li et al., 2024). The recent definition of FLE is “a broad, overarching positive psycho-emotional variable that is designed to encapsulate a positive disposition toward the FL learning process, peers, and teachers” (Botes et al., 2020, p. 282). In sync with descriptions of positive emotions (Csikszentmihalyi and Csikszentmihalyi, 1990; Fredrickson, 2001; MacIntyre and Gregersen, 2012), the construct of FLE is two-dimensional, encompassing the social dimension, which manifests as the language learners’ satisfaction drawn from a positive FL classroom atmosphere collectively fostered by teachers and students, and the private dimension about the learners’ internal sense of accomplishment and pride in the face of challenging (Dewaele and MacIntyre, 2016).

Copious studies have been conducted to examine the relationship between FLE and a range of factors, including motivation (Dewaele et al., 2023), direct or indirect effects on learners’ foreign language performance or academic achievement (Liu et al., 2024), affective variables, such as FLA, emotion regulation (Dewaele and Saito, 2024; Zhang et al., 2021), and factors pertaining to the teacher as the most key source of FLE (Dewaele and MacIntyre, 2019). Proietti Ergün and Ersöz Demirdağ (2022) reported that Subjective Well-Being (SWB) was the strongest predictor of FLE, followed by Perceived Stress (PS) with a small but significant effect, and implied that the overall circumstances of the students’ life influence the classroom dynamics. In line with most of the preceding investigations, Tsang and Dewaele (2023) examined the effects of three FL emotions, FLE, FLCA, and boredom, on the learners’ engagement and skill-specific proficiency within the context of EFL class. Finally, they found that FLE was the leading predictor of engagement and language proficiency. These findings are consistent with the seminal study by Dewaele and MacIntyre (2014), who revealed that FLE as an independent notion, interplaying with FLA instead of the opposition of it, has a direct significant influence on learners’ achievement and concluded that “experiencing enjoyment and playfulness in language might be an especially facilitating experience for language learners” (Dewaele and MacIntyre, 2014, p. 261), which highlights the critical role of this construct in EFL acquisition process and academic research.

2.3 Conscientiousness

Conscientiousness is a personality trait based on the Five Factor Model (FFM), representing the characteristic qualities of competence,

order, dutifulness, achievement striving, self-discipline, and deliberation, with both proactive and inhibitive aspects (Costa et al., 1991). The multifaceted conceptualization of Conscientiousness allows scholars to focus on the facet as required by research purposes (Roberts et al., 2014; Spielmann et al., 2022). Additionally, it is posited that specific facets are more predictive of educational performance than the broad Big Five traits (Stewart et al., 2022). Due to its recognition as a significantly robust indicator of high levels of academic accomplishments (McAbee and Oswald, 2013), this trait has drawn the attention of educational researchers, including those in the field of SLA.

In light of the effect of Conscientiousness as a personality trait in educational settings, many scholars have investigated this variable to explore its role in facilitating learning, along with the affective variables. For instance, Botes et al. (2023) measured the relationships between personality, FLE, FLA, and boredom using a series of increasingly restrictive statistical models among 246 adult foreign language learners and demonstrated that Conscientiousness played a moderating role in large statistically significant correlations in those three emotion factors. Conscientiousness has also been identified as a potent predictor of examination results, as reported by Minnigh et al. (2024), who proposed a structural equation between grit, conscientiousness, SAT scores, and GPAs, concluding that grit does not substantially enhance the prediction of academic performance, compared with Conscientiousness. Similarly, Friedrich and Schütz (2023) tested whether Conscientiousness compensates for intelligence or enhances the effect of intelligence on performance in a large sample of 3,775 German students and found that there existed a more vital link between intelligence and grades if students are conscientious. Overall, these findings and inferences regarding Conscientiousness have shown significant correlations with emotional variables and their increased effects on academic achievement. Nevertheless, there is a dearth of studies that integrate affective factors and Conscientiousness into learners' WTC, with most researchers placing more emphasis on the effects of other four personality traits, including Extraversion, Openness to Experience, and Neuroticism (Piechurska-Kuciel, 2018). Thus, it becomes necessary to explore the role of Conscientiousness in the SLA context with clarity and profundity.

2.4 Relationships between FLE, conscientiousness, and WTC

Given that students with greater enjoyment of learning are inclined to be more willing to communicate within the classroom context (Khajavy et al., 2018), many empirical studies have investigated the relationship between FLE and WTC, finding that FLE has a positive impact on WTC (see reviews by Botes et al., 2022; Cao, 2022). Consistent with these studies, Lee (2020) demonstrated that FLE significantly predicted WTC, along with the perseverance of effort, as one facet of grit. Similarly, the research of Lee et al. (2021) revealed that, in contrast to L2 anxiety, L2 enjoyment served a more significant and positively direct role in WTC among Korean secondary and tertiary students. In a similar vein, Yu and Ma (2024) not only reported the direct impact of FLE on WTC among a substantial sample of 2,426 Chinese undergraduate students but also investigated the mediating effects of FLE on WTC through three distinct pathways involving general language proficiency and grit. In summary, many

researchers have validated that FLE may have a notably positive relationship with WTC.

However, scant studies established the importance of Conscientiousness on L2 WTC, while some researchers examined the predictability of other personality traits on WTC. For instance, an earlier study conducted by Oz (2014) examined the relationship between Big Five personality traits and WTC, and the results showed that Extraversion, Agreeableness, and Openness to Experience significantly predicted the WTC. In line with it partially, Khany and Nejad (2016) and Fatima et al. (2020) found that higher openness to experience and Extraversion predicted higher WTC. In contrast to previous findings, Conscientiousness was found to be positively correlated with WTC in several studies (Katić and Šafran, 2019; Karadağ and Kaya, 2019; Zhang et al., 2023). This aligns with the argument that students who are more conscientious and better organized may show a more positive attitude toward learning a second or foreign language (Krashen, 1981; Lalonde and Gardner, 1984; MacIntyre and Charos, 2016). Considering the significance of this trait in L2 learning, the divergent results underscore the necessity for further evidence to examine the relationship between Conscientiousness and WTC across various contexts.

Regarding FLE and Conscientiousness, very few researchers have examined the relationship between these two variables. In the study conducted by (Dewaele and MacIntyre, 2019), significant correlations were found between FLE and four personality traits, namely Cultural Empathy, Social Initiative, Open-mindedness, and Emotional Stability, to varying degrees ranging from low to medium. Although these facets do not completely align with the ones in the FFM, the result highlights the important role of personality traits on foreign language learning emotions, and further investigation may be necessary to support the relationship between these two factors.

Therefore, given the theoretical underpinnings of the constructs and the existing empirical findings previously reviewed, this study hypothesized a mediating model of WTC in the link between FLE and Conscientiousness in the classroom context. Along with the path directions, the proposed model was depicted in Figure 2. The subsequent hypotheses were suggested as follows based on the preceding rationale:

Hypothesis 1: FLE positively predicts WTC.

Hypothesis 2: Conscientiousness positively predicts WTC.

Hypothesis 3: FLE positively predicts Conscientiousness.

Hypothesis 4: FLE has a positive influence on WTC through the mediating role of Conscientiousness.

3 Methodology

3.1 Participants

Employing a convenience sampling approach, this study enrolled 244 first-year to second-year Chinese EFL undergraduate students to explore their WTC, FLE, and Conscientiousness. Of these participants, 180 (74%) were female, and 64 (26%) were male; 176 (72%) were freshmen, and 68 (28%) were sophomores; 140 (57%) were from

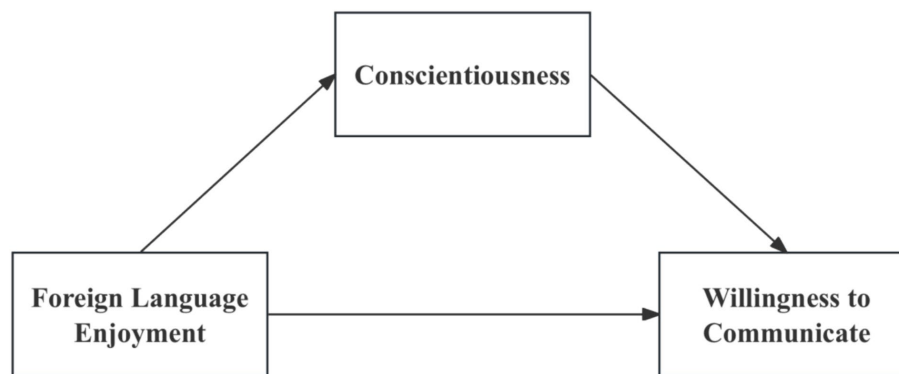


FIGURE 2
The hypothesized model of WTC.

South China Agricultural University in Guangzhou, and 104 (43%) were from Guangdong Ocean University (Yangjiang Campus) in Yangjiang. Undergraduate students from two different stages were targeted to capture both WTC and affective feelings to varying degrees. Along with the fact that South China Agricultural University is recognized as a key university compared with Guangdong Ocean University (Yangjiang Campus), this study also aimed to ensure sample diversity and avoid the potential common method bias that could arise from distributing questionnaires to a specific university.

3.2 Instruments

The data were collected by a three-construct composite questionnaire, along with a demographic information section. Since the survey was conducted in a Chinese EFL context, the questionnaire, originally developed in English, was translated into Chinese. This translated version of the three-construct composite questionnaire underwent three rounds of review and revision by both authors and an associate professor with a Ph.D. in applied linguistics, focusing on enhancing the clarity and adaptability of the items for Chinese EFL undergraduate students. The three scales are as follows.

3.2.1 WTC in English scale

A 10-item scale from Peng and Woodrow (2010), initially developed by Weaver (2005), was used to measure students' WTC in English. This scale comprises two dimensions: WTC in meaning-focused and form-focused activities. Each item was evaluated on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). A higher score on this scale suggests that the student is more willing to communicate in English.

3.2.2 Foreign language enjoyment scale

The students' FLE in learning English was gauged by a 10-item scale (Jiang and Dewaele, 2019), originally from Dewaele and MacIntyre (2014). This scale encompasses the social and private enjoyment of learners in the classroom. The participants rated each statement on a scale of 1, representing "strongly disagree," to 5, representing "strongly agree." A higher score reflects a higher level of enjoyment in learning English.

3.2.3 Conscientiousness scale

Conscientiousness was tapped using six items from the sub-scales of IPIP-NEO-60 scale (Maples-Keller et al., 2017), which is a representation of 300-item IPIP-NEO (Goldberg et al., 2006) from the International Personality Item Pool, measuring five personality traits: Neuroticism, Extraversion, Openness to experience, Agreeableness, and Conscientiousness. The 6-item scale assesses facets of the participants' Conscientiousness, including Orderliness, Achievement Striving, and Cautiousness. A higher score indicates that the respondent is more conscientious.

3.3 Procedure for data collection

Data collection was conducted in May 2024, and it took 21 days to gather all the data. The questionnaire was distributed online via Wenjuanxing¹ an online survey platform with the assistance of two instructors from two universities. Before distribution, all students were informed that participation in the survey was voluntary and were asked to read a separate consent form to ensure that they were fully well-informed about the confidentiality and anonymity of their responses. All questionnaire items were set to the mandatory fill-in mode; thus, this research had no missing data.

3.4 Data analysis

This study employed SPSS 29.0, along with the accompanying PROCESS macro version 4.1, to analyze the data. In the first phase, descriptive statistics for all latent constructs were calculated to present an overview of the dataset, including distribution, mean, and standard deviation. Then, the exploratory factor analysis (EFA), with principal component factoring (PCF) analysis and varimax rotation, was conducted to assess the internal structure of each scale. Following this, the convergent and discriminant validity of the variables was verified using the indices of Composite Reliability (CR), Average

¹ <https://www.wjx.cn>

Variance Extracted (AVE), and the square roots of AVE, which further ensured that all prerequisites for subsequent analyses were met (Hair et al., 2019). To this end, four hypotheses were tested using the PROCESS macro with the Bootstrapping technique, one of the most effective and recently developed programs in testing mediation (Lan et al., 2023; Hayes, 2022). This method, yielding bias-corrected 95% confidence intervals, was used to examine the significance of mediation effects by generating 5,000 Bootstrap samples (Hayes, 2022).

4 Results

4.1 Descriptive analysis

The skewness (ranging from -0.395 to 0.275) and kurtosis (ranging from -0.603 to 0.657) of all 26 items were computed in the descriptive analysis. For all latent constructs, skewness values lower than ± 2 and kurtosis values lower than ± 7 suggested the normal distribution of the gathered data in this study (Finney and DiStefano, 2006).

4.2 Reliability and validity of the research instruments

At the beginning, the Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity was performed to ensure that the data were appropriate to the EFA. Bartlett's test of sphericity for all three constructs was significant ($p < 0.001$), and the KMO values ranged from 0.593 to 0.867 , indicating the suitability of the data for conducting the EFA to assess the dimensional structure. Given the benchmark that items with eigenvalues greater than 1 and standardized factor loadings above 0.60 were retained (Hair et al., 2019), 22 items were selected from the original composite questionnaire.

Next, as can be seen from Table 1, two dimensions were extracted, and item 5 was eliminated due to its low factor loading. The nine remaining items, with no cross-loading greater than 0.40 , explained 73.22% of the total variance, which aligned well with the initial dimensions of the WTC scale. The first factor represented students' WTC in meaning-focused activities within the classroom context (Cronbach's $\alpha = 0.86$), while the second factor reflected the students' WTC in English pertained to form-focused activities (Cronbach's $\alpha = 0.94$).

After that, as shown in Table 2, the EFA yielded a two-dimensional structure for the scale of FLE, which accounted for 63.88% of the total variance. Item 4 and 7 were removed due to their cross-loadings exceeding 0.40 , while item 6 was eliminated as a result of its low factor loading. The first factor reflected the students' private enjoyment of English lessons (Cronbach's $\alpha = 0.75$), and the second factor represented their social enjoyment from interactions with classmates and the English teacher (Cronbach's $\alpha = 0.77$).

Then, Table 3 illustrates that a three-factor structure was produced by the EFA for the Conscientiousness scale, accounting for 77.63% of the total variance, which was consistently in line with the initial design of the scale's dimensions. The three facets explained Conscientiousness from distant perspectives, including orderliness (Cronbach's $\alpha = 0.62$),

TABLE 1 Dimensions in the WTC scale.

Items	Factors	
	WMA	WFA
<i>I am willing to ...</i>		
WTC2: give a short self-introduction without notes in English to the class	0.838	
WTC1: do a role-play standing in front of the class in English (e.g., ordering food in a restaurant)	0.825	
WTC4: translate a spoken utterance from Chinese into English in my group	0.777	
WTC3: give a short speech in English to the class about my hometown with notes	0.729	
WTC6: do a role-play in English at my desk, with my peer (e.g., ordering food in a restaurant)	0.722	
WTC8: ask my group mates in English the meaning of the word I do not know		0.926
WTC9: ask my group mates in English how to pronounce a word in English		0.922
WTC10: ask my peer sitting next to me in English how to say an English phrase to express the thoughts in my mind		0.877
WTC7: ask my peer sitting next to me in English the meaning of an English word		0.852
Cronbach's alpha	0.86	0.94

WTC, willingness to communicate; WMA, WTC in English in meaning-focused activities; WFA, WTC in English in form-focused activities.

achievement striving (Cronbach's $\alpha = 0.61$), and cautiousness (Cronbach's $\alpha = 0.70$).

Based on the results from the EFA presented in Tables 1–3, the standardized factor loadings and the internal consistency of the items for the WTC, FLE, and Conscientiousness scales all met the acceptable or recommended criterion (Hair et al., 2019). Consequently, the convergent and discriminant validity of the research instruments were evaluated.

As reported in Table 4, the findings indicated solid convergent validity of all constructs, with composite reliability (CR) exceeding

TABLE 2 Dimensions in the FLE scale.

Items	Factors	
	PE	SE
FLE3: I performed well in this term's English Listening and Speaking class	0.826	
FLE2: I enjoy this term's English Listening and Speaking class	0.791	
FLE1: I do not get bored	0.756	
FLE9: There is a good atmosphere		0.838
FLE10: We laugh a lot in class		0.784
FLE5: It is a positive environment		0.681
FLE8: My peers in the English Listening and Speaking class are nice		0.656
Cronbach's alpha	0.75	0.77

FLE, foreign language enjoyment; SE, social enjoyment; PE, private enjoyment.

0.70 and average variance extracted (AVE) exceeding 0.50. Additionally, the square roots of the AVE for each variable (see the numerals on the diagonals in Table 4) were greater than their corresponding Pearson correlation coefficients, thus fulfilling the criterion for discriminant validity (Hair et al., 2019).

Furthermore, the correlations among the variables were computed (see Table 4), revealing that all the constructs were significantly inter-correlated. Specifically, the results indicated that students' WTC was positively correlated with their FLE ($r=0.521, p<0.01$) and Conscientiousness ($r=0.301, p<0.01$). In the same vein, FLE was also positively correlated with Conscientiousness ($r=0.337, p<0.01$).

4.3 The results of the research hypotheses

After confirming that all prerequisites were fit for the following analyses, the PROCESS macro with the Bootstrapping technique was employed to test all the hypotheses put forward previously. First, as can be seen in Table 5, the results confirmed Hypothesis 3. The path leading from FLE to Conscientiousness was statistically significant ($\beta=0.354, p<0.001$). This result indicated that the variable FLE was positively correlated with Conscientiousness, thereby supporting Hypothesis 3.

Following this, the path from FLE to WTC ($\beta=0.603, p<0.001$) and the path from Conscientiousness to WTC ($\beta=0.171, p<0.05$) were also examined to be statistically significant, substantiating Hypothesis 1 and Hypothesis 2. These findings verified the positive predictability of both FLE and Conscientiousness on WTC.

In addition, based on the rule that a mediation effect was considered significant if zero did not straddle between the lower and upper bounds (Hayes, 2022), the indirect effect in the nexus $FLE \rightarrow C \rightarrow WTC$ was statistically significant ($\beta=0.061, 95\% \text{ Boot CI}=0.011 \text{ to } 0.123$), indicating that Conscientiousness mediated the

TABLE 3 Dimensions in the conscientiousness scale.

Items	Factors		
	OR	AS	CA
C1: Like to tidy up	0.868		
*C2: Leave a mess in my room	0.793		
C3: Work hard		0.847	
C4: Set high standards for myself and others		0.829	
*C6: Act without thinking			0.898
*C5: Make rash decisions			0.878
Cronbach's alpha	0.62	0.61	0.70

C, conscientiousness; OR, orderliness; AS, achievement striving; CA, cautiousness; items with an asterisk (*) are reverse coded.

relationship between FLE and WTC (see Figure 3). This finding provided empirical evidence validating Hypothesis 4. As the direct effect of FLE on WTC was also significant ($\beta=0.603, p<0.001$), it could be concluded that the mediation effect was partial (see Little et al., 2007, p. 210).

5 Discussion

The current study shed light on the associations among FLE, Conscientiousness, and WTC in an EFL context in China. The Bootstrapping method was employed to verify the mediation effect within the three-variable model and to confirm the initial four hypotheses. Regarding Hypothesis 1, a significantly positive link was found between FLE and WTC. This is in line with the findings of a substantial body of research, including studies by Lee et al. (2021), Cao (2022), and Zhang et al. (2024), which found FLE an important positive emotion affecting WTC. EFL students who experience a higher level of enjoyment are more inclined to engage in English language communication (Lan et al., 2023). As a non-cognitive factor, the positive role of FLE in the context of the classroom has been acknowledged by a growing body of studies in academic literature (see reviews by Botes et al., 2022; Dewaele et al., 2023). This also supports the argument by Dewaele and MacIntyre (2014) that enjoyment might be the emotional key to unlocking the language learning potential of foreign language learners. In other words, FLE could potentially be the pivotal element that helps learners move the last step forward before actual communication to communicate.

Then, Conscientiousness was revealed to be a direct and positive predictor of WTC, thus supporting Hypothesis 2. This suggests that L2 learners who possess a more conscientious personality trait are more likely to engage in communicative interactions with their peers and the English teacher. This result partially echoes the findings of the existing studies (e.g., Zhang et al., 2023), confirming the significantly positive relationship between Conscientiousness and WTC, but it contradicts the findings of Oz (2014). According to the multilayered pyramid model (MacIntyre et al., 1998), personality traits are not

TABLE 4 Convergent and discriminant validity of the constructs.

Variable	Convergent validity		Discriminant validity			Descriptive statistics		
	CR	AVE	WTC	FLE	C	Mean	SD	N
WTC	0.953	0.694	0.833			3.24	0.686	240
FLE	0.907	0.584	0.521**	0.764		3.34	0.539	240
C	0.941	0.727	0.301**	0.337**	0.853	3.37	0.566	240

WTC, willingness to communicate; FLE, foreign language enjoyment; C, conscientiousness; SD, standard deviation; the numerals on the diagonals are square roots of the AVE; the off-diagonal elements are Pearson correlation coefficients of the constructs; ** $p < 0.01$. Bold value mean the PROCESS macro version 4.1 with the Bootstrapping technique (Hayes, 2022) was used for the analysis.

TABLE 5 Results of mediation.

Items	Parametric estimation				95% Bootstrap	
	B	SE	t	p	LLCI	ULCI
Y=C						
Constant	2.192	0.217	10.109	0.000	1.765	2.620
X=FLE	0.354	0.064	5.521	0.000	0.228	0.480
R ²	0.114***					
Y=WTC						
Constant	0.649	0.282	2.301	0.022	0.093	1.205
M=C	0.171	0.071	2.431	0.016	0.033	0.310
X=FLE	0.603	0.074	8.142	0.000	0.457	0.749
R ²	0.289***					
Direct effect of X on Y						
FLE → WTC	0.603	0.074	8.142	0.000	0.457	0.749
Indirect effect of X on Y						
FLE → C → WTC	Effect	Boot SE	Boot LLCI	Boot ULCI		
	0.061	0.029	0.011	0.123		

Model = 4; N = 240; Bootstrapping samples = 5,000; B = unstandardized regression coefficient; SE, standard error; LLCI, lower limit confidence intervals; ULCI, upper limit confidence interval; WTC, willingness to communicate; FLE, foreign language enjoyment; C, conscientiousness; *** $p < 0.001$.

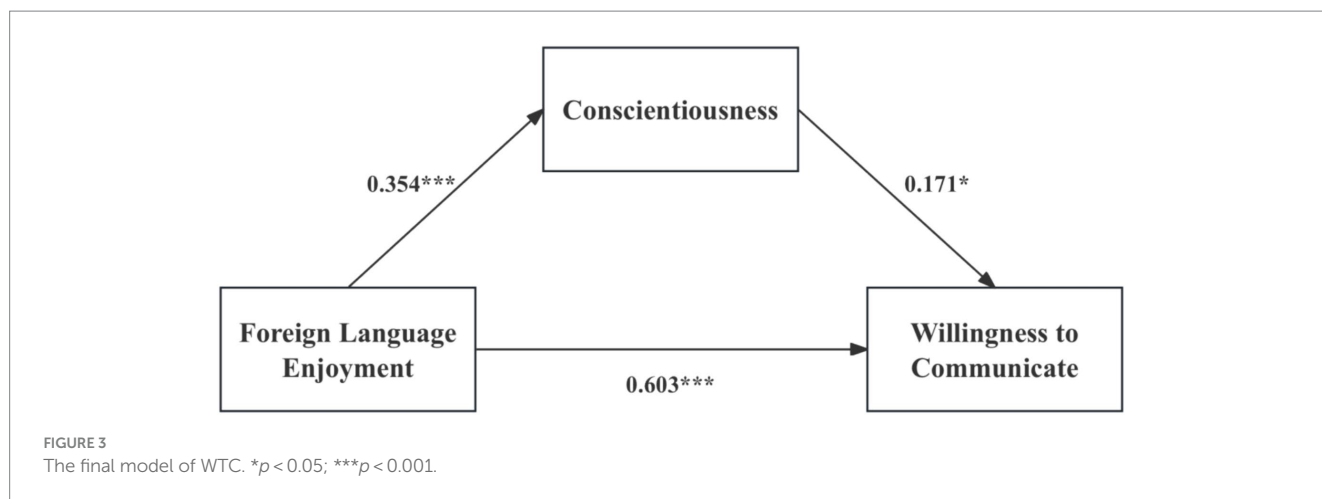
regarded as absolute determinants of WTC, yet it should be noted that Conscientiousness, along with its sub-facets like Orderliness, Achievement Striving, and Cautiousness, may promote a more positive attitude toward language learning opportunities, potentially enhancing their readiness to engage in L2 communication (Krashen, 1981).

Concerning Hypothesis 3, FLE was indicated to positively predict Conscientiousness, indicating that students who have a higher level of enjoyment in learning a foreign language are more likely to show greater levels of Conscientiousness. While there are scant studies that have delved into this specific relationship, this present finding is partially in agreement with the main arguments of some studies pertaining to the connection between positive emotions and personality traits (e.g., Dewaele and MacIntyre, 2014). However, these studies tend to emphasize the one-sided influence of learners' personality traits on their emotions, such as FLE and FLCA, regardless of the reciprocal influence of emotions on personality traits. This finding also contributes empirical evidence to the Broaden-and-Build Theory developed by Fredrickson (2001). Based on this theory, we can argue that EFL learners who are more enjoyable in the classroom settings, are more likely to be positively influenced in the development of Conscientiousness as a valuable personality trait.

In addition, FLE affected WTC indirectly through the mediating role of Conscientiousness (FLE → C → WTC), supporting Hypothesis 4. This is in line with the theoretical perspective that positive emotions play a role in shaping behavior and personal development (Fredrickson, 2004). As WTC was considered a key variable in enhancing foreign language oral proficiency, we might argue that L2 learners inclined to enjoy the English learning process from both private and social perspectives are likely to develop a more conscientious attitude toward English courses and be more willing to proactively initiate interactions with others in English. Furthermore, the conceptual framework of WTC might explain the results of this study (see Figure 1), which indicates that FLE, as an affective variable in the fifth layer, and Conscientiousness, as a personality trait in the sixth layer, affected WTC in an inter-correlated way.

6 Conclusion and implications

The present study examined the positive predictability of FLE and Conscientiousness on WTC in the mediation English language learning model. The findings indicated that Conscientiousness mediated the link between FLE and WTC, which could



be elucidated from three perspectives. First, FLE has a significantly positive influence on Conscientiousness. Second, Conscientiousness was a positive predictor of WTC. Third, FLE also has a direct impact on WTC. Taken together, these results highlighted the critical role of the dynamic interplay of non-cognitive factors, including positive emotions and personality traits, in fostering the willingness to communicate among Chinese EFL learners. These findings not only enriched the existing literature on the relationship among these variables but also provided notable implications for EFL educators. To regard the key predictive effect of FLE in affecting WTC directly, L2 educators are suggestive of concentrating on fostering a playful and delightful classroom environment to stimulate students' willingness to engage in English communication (Fredrickson, 2001). From the social perspective, as part of the two-factor structure of FLE, teachers are recommended to make group work engaging for learners by developing intriguing activities and strategically assigning group members based on their preferences or individual differences. This can enhance EFL participants' enjoyment of interactions with classmates, which in turn increases their WTC. In addition, strengthening the teacher-student relationship through a range of supportive feedback (Rosiek and Beghetto, 2009), such as teacher-written feedback and online peer feedback, might also encourage students to proactively seek assistance from the English teacher and peers using the English language when they face difficulties.

At the individual level, learners' FLE and WTC are primarily related to the relevance of lesson topics. Therefore, curriculum developers can incorporate more practical and current topics into the English learning curriculum. This can be achieved by blending traditional textbooks with online learning resources (Yu et al., 2022) and enhanced through computer-assisted techniques, like QR code scanning for additional information. Following Dewaele and Saito (2024), educators should also focus on students' attitudes toward foreign language learning, guiding them to recognize the usefulness of English as a global *lingua franca* (Wang et al., 2024). This said, students might naturally acquire English in a more relaxed and pleasurable environment, which can lead to a gradual increase in their willingness to get involved in spoken English tasks. This finding contributes to the empirical evidence of positive psychology in education, underlining the pivotal role of emotional factors in second language acquisition (Tsang and Dewaele, 2023).

Regarding the indirect impact of FLE on WTC in English through the mediator of Conscientiousness, teachers are recommended to leverage students' conscientious traits by immersing them in a stress-free and low-anxiety English learning atmosphere to increase their WTC. Accordingly, English language curricula ought to be designed to aid learners in establishing explicit, attainable goals alongside the cultivation of a systematic, regular, and self-regulated learning schedule to improve their English-spoken proficiency. This recommendation aligns with the viewpoint that students whose level of conscientiousness is low may particularly need assistance from their teachers (Przybył and Pawlak, 2023). Furthermore, it should also be noted that additional investigations incorporating the non-cognitive attitude variable are required to explore how Conscientiousness shapes specific behaviors and attitudes toward English learning, ultimately affecting students' WTC.

It is acknowledged that this study also suffers from some limitations. Firstly, the complexity and multifaceted nature of personality traits cannot be fully measured by a single self-report scale, thus potentially undermining the reliability of the gathered data. Consequently, subsequent studies employing a mixed method might be needed to provide a more comprehensive understanding of conscientious behavior and the underlying mechanisms related to personality traits, FLE, and WTC. Secondly, the current study was cross-sectional, failing to assess the long-term stability of the mediation effect. Longitudinal studies are therefore recommended to examine the influence of the relatively stable personality traits (Caspi et al., 2005) on the fluctuations of WTC. In addition, convenience sampling, a nonprobability or nonrandom sampling technique, was used in the study, and only Chinese EFL students in the first and second years were included. While this nonprobability sampling is useful, especially when randomization is impossible, such as in large populations (Etikan et al., 2016), the results may not fully capture the characteristics of EFL learners in China. Thus, future studies might consider a more diverse and representative sample across various academic levels and cultural settings to enhance the generalization of the findings.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. Written informed consent from the [patients/participants OR patients/participants legal guardian/next of kin] was not required to participate in this study in accordance with the national legislation and the institutional requirements.

Author contributions

JZ: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Software, Validation, Visualization, Writing – original draft, Writing – review & editing. KG: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Resources, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. YF: Data curation, Formal analysis, Investigation, Writing – original draft. ZL: Data curation, Formal analysis, Investigation, Writing – original draft.

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