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Classroom environment and willingness to communicate in English: The mediating role of emotions experienced by university students in China¹

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Abstract

The present study examines the direct and indirect relationships between classroom environment (CE), L2 (second/foreign language) learner emotions (i.e. enjoyment, anxiety and boredom), and their willingness to communicate (WTC) in classes for English as a foreign language (EFL). Participants were 2,268 university students in China. Pearson correlation analyses showed significant correlations between CE, L2 emotions, and WTC, with effect sizes ranging from small to large. In addition, the three L2 emotions were found to mediate the relationship between CE and WTC in parallel, with enjoyment having the largest mediating effect, followed by anxiety and boredom. The findings offer insights into how to improve students' WTC in an L2.

Keywords: anxiety, boredom, classroom environment, foreign language enjoyment, willingness to communicate

Introduction

It is the nightmare of every foreign language (FL) teacher: a meticulously prepared lesson, including various tasks and topics that are part of the curriculum, delivered with enthusiasm, meets a wall of silence and apparent indifference on the

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part of students. The teacher might feel like a pilot of a jetliner attempting to take off, with full throttle, the engines straining, seeing the twinkling red lights marking the end of the runway approaching rapidly, and worrying that the speed is still below the 250 kilometres per hour needed to clear the runway. This metaphor only goes so far. The teacher may feel a rising sense of panic that things are not going according to plan, but in contrast with the pilot, nobody risks dying for remaining earthbound. The teacher has tricks up his or her sleeve that can boost the classroom atmosphere and lift the class to a state of flow² (Dewaele & MacIntyre, 2021). Rather than becoming increasingly desperate about the lack of response and crashing in the hedge of trees at the end of the runway, the teacher can abruptly decide to take a different route, switching tasks, using humour, telling an interesting anecdote, enquiring about the students' recent extra-curricular activities, their views on sports victories and defeats of the local team, their plans for future holidays. In other words, quick-thinking teachers can turn the situation around. Just as the pilot uses a throttle and yoke to take off, the teacher uses his/her tongue and heart to boost students' enjoyment, to flush out their boredom, control their anxiety and create a classroom environment where everybody will want to participate.

Teachers and researchers know intuitively that how students feel in the classroom contributes to the classroom environment (CE), which, in turn, affects students' emotions and, ultimately, their willingness to communicate (WTC). What is not clearly known is to what extent students' emotions actually mediate the relationship between CE and WTC. This is the goal of the present quantitative study on a large sample of Chinese English as a foreign language (EFL) learners.

Literature review

Willingness to communicate (WTC)

Although, initially, research into WTC concerned first language (L1) communication (McCroskey & Baer, 1985; McCroskey & Richmond, 1987), it quickly became the focus of attention of a growing number of SLA researchers. Soon it was found that an individual's willingness to engage in communication in the target language (TL) was not "a simple manifestation of WTC in the L1" (MacIntyre, Clément, Dörnyei, & Noels, 1998, p. 546). It was suggested that a range of individual and situational variables had an impact on students' readiness to start and/or engage in L2 communication (MacIntyre et al., 1998). For example, MacIntyre and Charos (1996) showed that the rate of second language (L2) communication may be the outcome of motivation and WTC, as well as perceived competence and language anxiety. L2 WTC was defined as the "readiness to enter into discourse at a particular time with a specific person or persons, using an L2" (MacIntyre et al., 1998, p. 547) and it was visualized in the form of a pyramid model which consists of six layers encompassing

² Csíkszentmihályi (1990) described flow as follows: "Concentration is so intense that there is no attention left over to think about anything irrelevant, or to worry about problems. Self-consciousness disappears, and the sense of time becomes distorted. An activity that produces such experiences is so gratifying that people are willing to do it for its own sake, with little concern for what they will get out of it, even when it is difficult, or dangerous" (p. 71).

a set of linguistic, psychological and social factors. This model indicates that “L2 WTC is a composite variable influenced by the joint effect of variables both internal and external to individual learners” (Peng & Woodrow, 2010, p. 835).

Numerous empirical investigations have been carried out to explore variables included in the model created by MacIntyre et al. (1998) and other variables affecting WTC in various language learning contexts (e.g., self-perceived communicative competence, personality, age, sex, attitudes, learning environments). For example, studies conducted by Yashima (2002), Peng (2007), Khajavy et al. (2016), or Piechurska-Kuciel (2011) uncovered a relationship between self-perceived communicative competence and L2 WTC, revealing that language learners’ positive perception of their L2 competence translates into heightened L2 WTC. The studies conducted, for example, by Liu and Park (2012) and Wu and Lin (2014) showed a link between motivation and WTC, indicating that more motivated language learners tended to be more willing to communicate in L2. MacIntyre and Charos (1996) showed that extraverted individuals more frequently communicated in the TL and those learners who were more pleasant and agreeable tended to have more satisfying encounters with TL speakers. Yashima (2002) observed that learners with higher international posture appeared to be both more motivated to study English, more willing to communicate in the language and their higher WTC generated more frequent communication in the TL. Donovan and MacIntyre (2005) investigated age and sex differences in WTC, communication apprehension and self-perceived communication competence among students from different types of school (i.e., junior high, high and university). Among other things, the obtained results revealed that junior high school males were less willing to communicate than females and male students at the university level reported lower communication apprehension and higher self-perceived competence than their female counterparts. Cao and Philp (2006) as well as Mystkowska-Wiertelak and Pawlak (2017) showed that a number of variables such as group size, familiarity with interlocutors and topics under discussion, interlocutor involvement in the conversation, cultural background or classroom atmosphere can have an influence on language learners WTC during L2 lessons. In addition, language tasks, content and context as well as the use of new technologies were reported as affecting language learners’ desire to communicate in the TL (e.g., Compton, 2007; Kruk, 2021a, 2021b; Weaver, 2007). More recently researchers have started to focus on the role of positive as well as negative emotions in the classroom environment. Since the role of these factors is the focus of the present study, they are discussed in more detail in the following sections.

Classroom environment (CE)

CE is defined as “the atmosphere, ambience, tone, or climate that pervades the particular educational setting” (Dorman et al., 2006). It has been recognized as a significant predictor for learning success (Fraser, 1998, 1998; Jennings & Greenberg, 2009). It is central to the learning process, affecting the way the class is going and the way students think, feel and behave in the class (Li, Huang, & Li, 2021). Fraser et al. (1986) argued that a class with a positive CE is characterized by “student cohesiveness, teacher support, self-involvement, investigation, task orientation,

cooperation and equity” (Li et al., 2021, p. 3). In a sample of 579 university students in China studying English as their foreign language (FL), Peng and Woodrow (2010) identified *Teacher Support*, *Student Cohesiveness*, and *Task Orientation* as three dimensions of CE. Similarly, Harvey et al. (2012) argued that a class with a positive CE features a friendly, caring, encouraging, and supportive teacher, cooperative and cohesive students, mutual respect and congenial bonds between teachers and students, interactive, and engaging tasks with competitiveness at a manageable level. This suggests that the teacher, the learner and the task are three core constituent elements of CE (Li et al., 2021).

Enjoyment and anxiety

The concept of Foreign Language Enjoyment (FLE) was explicitly introduced into SLA research in Dewaele and MacIntyre (2014) to establish its relationship with Foreign Language Classroom Anxiety (FLCA). They defined FLE by comparing it to the more superficial and ephemeral concept of pleasure: FLE is “a complex emotion, capturing interacting dimensions of challenge and perceived ability that reflect the human drive for success in the face of difficult tasks (...) enjoyments occur when people not only meet their needs, but exceed them to accomplish something new or even unexpected; on the other hand, pleasure is a simpler feeling that something likable is happening” (Dewaele & MacIntyre, 2016, pp. 216-217). They developed a new FLE scale consisting of 21 items with 5-point Likert scales that probed the personal and social dimensions of FLE and they added an 8-item FLCA scale extracted from Horwitz et al.’s (1986) 33-item FLCAS which reflected physical symptoms of anxiety, nervousness, and lack of confidence. Horwitz et al. (1986) defined FLCA as “a distinct complex of self-perceptions, beliefs, feelings and behaviours related to classroom learning arising from the uniqueness of the language learning process” (p. 128). Dewaele and MacIntyre (2014) collected both quantitative and qualitative data from 1,746 FL learners with very different language profiles through an online questionnaire. It allowed them to establish that FLE and FLCA were moderately negatively correlated. In other words, they are not like the two faces of Janus but in fact represent fundamentally independent dimensions. Low levels of FLCA do not guarantee high levels of FLE and vice versa. The authors found that higher levels of FLE and lower levels of FLCA were linked to higher levels of multilingualism, confidence in the FL, proficiency, older age, and being Western rather than Asian. Female participants reported both more FLE and FLCA than male participants but the effect size was small. Participants’ descriptions of episodes of intense enjoyment in their FL class highlighted the social dimension of FLE, namely good relations with peers and teachers through humour, praise and encouragement combined with mutual trust and respect. Participants typically mentioned classroom activities that gave them a degree of autonomy.

Dewaele and MacIntyre (2019) followed up their early study with a research design that included participants’ personality traits as well as independent variables linked to the teacher and qualitative data about both an enjoyable and an anxiety-provoking episode in the FL class. Participants were 750 FL learners from around the world who filled out an online questionnaire. The study focused on the role of learner-internal variables like in the previous study but also learner-external

variables in FLE and FLCA. Teacher-related variables emerged as the strongest predictors of FLE together with Cultural Empathy, while Neuroticism was the strongest predictor of FLCA and teacher-related variables had no effect. The findings of multiple regression analyses were confirmed by statistical analysis of the coded qualitative data. Source(s) of FLE were significantly linked to the teacher while sources of FLCA were more strongly linked to the self, confirming previous research (Dewaele, Witney, Saito, & Dewaele 2018; Dewaele, Magdalena Franco, & Saito, 2019; Jiang & Dewaele, 2019; Li et al., 2018).

Boredom

Boredom is a prevalent emotion across school settings (Goetz & Hall, 2014). Researchers found that students felt bored during 32% to 58% of the instruction time at different educational levels (e.g., Larson & Richards, 1991; Nett et al., 2011; Pekrun et al., 2010). In an L2 context in Chinese universities, Li et al. (2021) found that 610 out of 659 (92.6%) participants reported experiencing boredom in relation to learning English. Interestingly, despite the prevalence of boredom in educational settings, relevant research in L2 settings is still in infancy (Li & Dewaele, 2020; Li, 2021; Pawlak et al. 2020a; Pawlak et al., 2020b). Some researchers adopted a predominantly qualitative approach with relatively small sample sizes (e.g., Kruk, 2022; Zawodniak & Kruk, 2019; Pawlak et al., 2020a; Pawlak et al., 2020b; Pawlak et al., 2020c; Pawlak et al., 2020d) and others adopted a quantitative or mixed methods approach (Dewaele & Li, 2020; Li, 2021; Li & Dewaele, 2020; Li et al., 2021; Li & Wei, 2022).

Boredom is an unpleasant psychological state characterized by a sense of emptiness, physical inactivity, lack of achievement goal, purpose and motivation (Zawodniak et al., 2017). Li et al. (2021) described FL learning boredom as a negative activity-related achievement emotion with a low arousal based on interview data obtained from 22 students and 11 English teachers, and 659 students' responses to open-ended questions. Specifically, FL learning boredom is an unpleasant emotion linked to negative feelings or symptoms including "lack of interest, restlessness, anxiety, frustration, helplessness, dislike, unpleasant state of passiveness, sadness, impatience, depression, emptiness, guilt, tiredness, feeling of time dragging, sleepiness and dissatisfaction" (Li et al., p. 12). Secondly, it arises from ongoing FL learning tasks or activities which are perceived as under-challenging, over-challenging, monotonous, dull or tedious, and meaningless (Li et al., 2021; Pawlak et al., 2020). Lastly, it involves physical and cognitive inactivity, lack of goal in learning, unwillingness to engage in the learning environment, disengagement or withdrawal from tasks or activities at hand.

Associations between emotions and WTC

Emotion has long been regarded as one of the central determinants of CE (Harvey et al., 2012). The established CE is closely linked to the emotional tone set for classroom activities and relationships (Hamre & Pianta, 2007). Positive CE is accompanied by positive feelings, including boosted interest, enjoyment, comfort, and relaxation, as well as heightened motivation in learning and more voluntary participation in the learning environment. In contrast, negative CE is characterized by negative feelings including anxiety, nervousness, anger, boredom, discomfort, confusion, and aggression, as well as inattention, disengagement, or academic withdrawal (Dorman & Fraser, 2009; Hamre & Pianta, 2007; Harvey et al., 2012;

Reyes et al., 2012).

In the field of SLA, several researchers have started to examine the links between CE and L2 emotions. Khajavy et al. (2018), for example, investigated relationships between CE, enjoyment, and anxiety of 1,528 Iranian EFL learners at secondary level. The results showed that positive CE was linked to higher levels of student enjoyment and lower levels of anxiety. In other words, participants who perceived the environment of their English classes as more positive tended to enjoy more, feel less anxious and be more willing to communicate in English in class. In another study, Xia and Xu (2018), based on questionnaire data obtained from 783 English majors in China, revealed that CE negatively predicted negative emotions (i.e., guilty, anxiety, frustration, boredom, and helplessness). More recently, Li et al. (2021) revealed in two sub-studies (i.e., 1,718 senior high school students and 1,295 students in China) that CE predicted enjoyment and anxiety positively and negatively, respectively. The authors argued that positive feelings arise in positive psychosocial CE, while negative feelings are evoked in response to negative, especially threatening, risky, daunting or harsh learning environment, leading to learners' withdrawal from interactions in the classroom.

The role of language learners' emotions in shaping WTC, and especially the role of FLCA has been thoroughly investigated (e.g., Clément, Baker, & MacIntyre, 2003; Compton, 2004; Hashimoto, 2002; MacIntyre, Baker, Clément, & Donovan, 2003; Peng & Woodrow, 2010; Yashima, 2002). High FLCA and low levels of perceived communicative competence were found to be strong negative predictors of WTC whereas positive emotions constitute positive predictors. For example, the study conducted by Khajavy, MacIntyre, and Barabadi (2018) demonstrated that in a positive classroom environment, students experience less FLCA and more FLE, with the effect that they are more eager to use the FL. Dewaele and Dewaele (2018) compared the decision to speak up in the FL to a jump in the pool from a great height, with anxiety about the impact and the risk of coming up without swimwear. The authors found that among 189 British FL learners FLCA was a strong (negative) predictor of WTC while FLE was a slightly weaker positive predictor. A similar finding emerged in Dewaele (2019), where FLCA was the strongest negative predictor of WTC among 210 Spanish EFL learners and where FLE and frequency of English use by the teacher were weaker positive predictors.

The retrodictive multiple case study carried out by Dewaele and Pavelescu (2021) showed that FLE and FLCA were linked to WTC in dynamic, idiosyncratic ways which evolved from the first contact with the FL into the present use of the FL both inside and outside of the classroom. Classroom observations and interviews revealed that FLE, FLCA and WTC were not only interacting in complex ways and were linked to learners' personality but were also shaped by specific activities during class, by seating arrangements in the room and by the behaviour of teacher and peers. Finally, Kruk (2021b) sought to capture the associations between WTC, boredom and language anxiety (along with motivation) in the virtual world Second Life. The results suggested that these variables interacted dynamically and unpredictably. It was found, for example, that although a higher/lower level of WTC (and motivation) translated into a lower/higher level of experiencing boredom and language anxiety, these relationships were not the norm and some deviations from this trend were also observed.

What emerges from the literature review is that no classroom emotion exists in a vacuum, various positive and negative emotions co-exist in an on-going complex

tug of war over different timescales. What is more, such positive and negative emotions are closely related to different aspects of classroom environment, which only adds to the complexity of such relationships. This complexity dictates that researchers can at best perceive a small part of much bigger dynamic picture. The high degree of interactions between emotional, psychological, linguistic and behavioural variables also means that it is equally difficult to pinpoint causality as a particular emotion may affect and be itself affected by other emotions and aspects of CE. This emotion might simultaneously be at the basis of a particular behaviour which may either reinforce, reshape or disrupt this emotion. The same multi-directionality applies to WTC whose levels are bound to hinge on different academic emotions and their combinations, different elements of classroom environment, and complex interactions between these. While previous research has shed some light on the role of some components of CE as well as some positive and negative emotions in shaping L2 WTC, no study conducted to date has explored the combined effect of these factors through mediation analysis. Such an investigation may enhance our understanding of the effect pathways or nomological networks involving these variables.

Research questions

In view of the above considerations, the present study was designed to address the following two research questions:

RQ1: What are the relationships between classroom environment, three classroom emotions (i.e., enjoyment, anxiety, and boredom), and willingness to communicate?

RQ2: Do the three emotions co-mediate the relationship between classroom environment and willingness to communicate?

Methodology

Participants

Convenience sampling was adopted in this study. The first author contacted her colleagues at different universities in China and asked them to recruit their students as participants of the current project. Fifty-eight English teachers from ten universities of non-English majors agreed to aid and forwarded the online questionnaire to their students during a class break. The universities included top-ranking ones as well as those with relatively lower rankings. Online consent was obtained individually at the very beginning of the questionnaire survey. The participants were informed of the nature and purpose of the study, the anonymity, approximate completion time, their right to refuse to participate as well as to withdraw from the questionnaire survey. A total of 2,268 students completed the questionnaire survey. There were 1,424 freshmen (62.77%), 673 sophomores (29.67%), 12 juniors (0.53%), 8 seniors (0.36%), and 151 individuals who failed to provide such information (6.67%). They came from over 40 sub-disciplines of humanities, social sciences, and natural science. The detailed background information is presented in Table 1.

Table 1. Participants' background information ($N = 2,268$)

University	Location in China	No.	Percent	Male	Female	Other	Mean Age	SD
A	Beijing (North)	57	2.5	5	52	/	18.82	1.86
B	Zhuhai (South)	25	1.1	8	14	3	18.87	.88
C	Beijing (North)	1	.0	/	1	/	21	/
D	Chengde (North)	35	1.5	7	28	/	18.68	.87
E	Longyan (South)	510	22.5	115	366	29	19.44	1.13
F	Beijing (North)	28	1.2	21	6	1	18.77	.96
G	Taiyuan (North)	210	9.3	47	155	8	18.89	.84
H	Beijing (North)	23	1.0	4	18	1	19.35	.76
I	Beijing (North)	503	22.2	158	325	20	18.13	.68
J	Wuhan (Center)	876	38.6	222	602	52	18.70	.89
Tot.	/	2268	100.0	587	1563	118	18.72	.95

Data-collection instrument

The variables under investigation were measured using a composite questionnaire. All the items were in Chinese to allow for full understanding. A PhD student in applied linguistics translated the scales, which were further checked by two scholars in applied linguistics and educational psychology. Disagreement, comments, and suggestions were all addressed by the first author. All the items were responded to on a 7-point Likert scale ranging from “1 (completely disagree)” to “7 (completely agree).” The questionnaire included scales tapping into the constructs investigated in the present study, that is CE, FLE, FLCA, boredom, and WTC.

Classroom environment

The adapted version of *What Is Happening In This Class (WIHIC) Questionnaire* (Peng & Woodrow, 2010) was used to measure CE. The adapted version consists of 13 items taken from the WIHIC (Fraser et al., 1986) and reformulated to fit the L2 context. They measure the following three factors: 1) *Teacher Support*, 2) *Student Cohesiveness*, and 3) *Task Orientation*. The adapted version has been validated in a sample of 579 EFL students in China at tertiary level, showing high reliability (Cronbach’s alpha = .88). The reliability of the scale in the current sample is presented in Table 2. In the current study, the short form also showed excellent construct validity ($\chi^2(60) = 385.890$; CFI = .971; TLI = .963; SRMR = .030; RMSEA = .066) as well as reliability (see Table 2).

Foreign Language Enjoyment

The *Chinese version of Foreign Language Enjoyment Scale (CFLES)* (Li et al., 2018) was adopted to assess the enjoyment participants experienced in relation to their English learning. The CFLES is a modified version of the *Foreign Language Enjoyment Scale* (Dewaele & MacIntyre, 2014). It consists of 11 items measuring three sub-dimensions: *FLE-Private*, *FLE-Teacher* and *FLE-Atmosphere*. It has been validated in a sample of 1,718 Chinese EFL students at secondary level, showing satisfactory psychometric properties including reliability (Cronbach’s alpha = .83) and construct validity ($\chi^2(41) = 72.975$; CFI = 0.975; TLI = 0.967; SRMR = 0.034; RMSEA = 0.041) (Li et al., 2018). The CFLES has also been used with EFL learners in China at tertiary level, showing equally high reliability (see e.g., Li et al., 2021; Cronbach’s alpha = .87, $N = 1,295$). In the current study, the CFLES also showed excellent construct validity ($\chi^2(41) = 633.157$; CFI = .964; TLI = .952; SRMR = .047; RMSEA = .041) as well as reliability (see Table 2).

Anxiety and boredom

Both anxiety and boredom of participants were measured using three items each, taken from the *Achievement Emotions Questionnaire* (AEQ) (Pekrun et al., 2011). The AEQ was originally developed in general educational psychology, showing readiness to be applied and validated in other specific subjects. The six items were extracted from the AEQ and reformulated to fit into the current EFL context. Example items for anxiety and boredom are: a) “I feel panicky when writing an [English] exam;” b) “I get bored in [English] classes.”

Willingness to communicate

Peng and Woodrow’s (2010) scale measuring WTC in English was adopted in the present study. It consists of 10 items adapted from the scale of Weaver’s (2005). Validated among a sample of 579 university students in China, the scale showed high reliability ($\alpha = .88$). In the current study, the shortened WTC scale showed acceptable construct validity ($\chi^2(29) = 544.763$; CFI = .977; TLI = .965; SRMR = .046; RMSEA = .089) as well as reliability (see Table 2).

Data analysis

Preliminary analyses involved computing descriptive analyses as well as running normality tests. The results are presented in Table 2. In order to answer RQ1, Pearson correlation analyses were conducted using SPSS 19.0. To address RQ2, we performed a series of multiple regression analyses and mediation analyses using PROCESS SPSS 19.0, following the steps described by Hayes (2013). Specifically, multiple regressions involved the following four steps: 1) CE and student WTC were entered as independent and dependent variables separately; 2-3) CE was entered as the independent variable for the dependent variables of enjoyment, anxiety and boredom, respectively; 4) CE, enjoyment, anxiety and boredom were all entered as co-predictors for WTC. We then used PROCESS v2.16.3 (Model 4) to further investigate the relationship of these variables collectively, calculate the mediating effect, compare the specific mediating effects of enjoyment, anxiety, and boredom, and obtain confidence intervals using bootstrap.

Table 2. Descriptive statistics ($N = 2,268$)

Variable	Possible Range	Min.	Max.	<i>M</i>	<i>SD</i>	Skewness	<i>SE</i>	Kurtosis	<i>SE</i>	α
CE	13-91	13	91	72.68	12.764	-.499	.051	-.081	.103	.930
FLE	11-77	11	77	55.17	11.016	-.250	.051	.234	.103	.879
anxiety	3-21	3	21	11.00	4.333	.151	.051	-.506	.103	.774
boredom	3-21	3	21	8.85	3.954	.523	.051	.154	.103	.800
WTC	10-70	10	70	46.16	14.318	-.152	.051	-.481	.103	.940

Results

Correlation analysis

As shown in Table 3, CE was found to be positively related to FLE and WTC, with a medium-to-large effect size ($r = .684, p < .001$) and small-to-medium effect size respectively ($r = .498, p < .001$), according to the benchmarks proposed by Plonsky

and Oswald (2014). In contrast, CE was found to be negatively related to both anxiety and boredom, with a small effect size ($r = -.138, p < .001$) and a small-to-medium effect size ($r = -.369, p < .001$) respectively. In terms of the relationships between emotions and WTC, FLE was found to be positively related to WTC, with a medium-to-large effect size ($r = .571, p < .001$). At the same time, both anxiety and boredom were found to be negatively related to WTC, both with a small-to-medium effect size ($r = -.226, p < .001$; $r = -.271, p < .001$, respectively). Finally, in terms of the relationships between the three emotions, FLE was found to be negatively related to anxiety and boredom, with a small-to-medium effect size ($r = -.209, p < .001$; $r = -.424, p < .001$ respectively). Anxiety was found to be positively related to boredom ($r = .507, p < .001$).

Table 3. The relationships between CE, FLE, anxiety, boredom, and WTC

Variable	1	2	3	4	5
1. CE	—				
2. FLE	.684***	—			
3. Anxiety	-.138***	-.209***	—		
4. Boredom	-.369***	-.424***	.507***	—	
5. WTC	.498***	.571***	-.226***	-.271***	—

Note: $N = 2,268$; *** $p < .001$

The co-mediating effect of three emotions on the relationship between CE and WTC

The results of the multiple regressions are displayed in Table 4. The most striking findings are the following: 1) students' perceived CE predicted their WTC positively and significantly ($\beta = .498, p < .001$); 2) students' perceived CE predicted the three emotions (FLE, anxiety and boredom) significantly ($\beta_1 = .684, p < .001$; $\beta_2 = -.138, p < .001$; $\beta_3 = -.369, p < .001$); 3) in the presence of students' perceived CE, FLE, anxiety and boredom in the same model, the three emotions predicted participants' WTC significantly ($\beta_1 = .421, p < .001$; $\beta_2 = -.136, p < .001$; $\beta_3 = .054, p < .05$), and the predictive effect of perceived CE on their WTC remained significant ($\beta = .211, p < .001$).

Table 4 Regression results for mediator model ($N = 2,268$)

Regression equations		Fit index			Coefficient			95.0% Confidence interval for B		Collinearity statistics	
Predictor	Outcome	R	R ²	F	β	B	t	Lower bound	Upper bound	Tolerance	VIF
CE	WTC	.498	.248	747.248***	.498	.559	27.336***	.519	.599	1.000	1.000
	FLE	.684	.467	1988.192***	.684	.590	44.589***	.564	.616	1.000	1.000
	Anxiety	.138	.019	44.118***	-.138	-.047	-6.642***	-.061	-.033	1.000	1.000
	Boredom	.369	.136	356.951***	-.369	-.114	-18.893***	-.126	-.102	1.000	1.000
CE	WTC				.211	.237	9.088***	.186	.288	.522	1.915
FLE		.601	.362	320.696***	.421	.548	17.703**	.487	.608	.498	2.009
Anxiety					-.136	-.449	-6.958**	-.576	-.323	.739	1.353
Boredom					.054	.197	2.558*	.046	.348	.625	1.599

Note. B are Unstandardized Coefficients, β are standardized coefficients. Teacher enthusiasm = students' perceived teacher enthusiasm. * $p < .05$; ** $p < .01$; *** $p < .001$

According to above-mentioned conditions of mediation (Hayes, 2013), these results indicate that the parallel multiple mediator model we proposed is an excellent

fit of the data ($R^2 = .362$, $F(4, 2268) = 320.696$, $p < .001$): FLE, anxiety and boredom collectively mediated the effect of students' perceived CE on their WTC. In other words, perceived CE influenced student WTC either directly or indirectly by influencing three emotions first. The parallel mediator model is summarized as Figure 1.

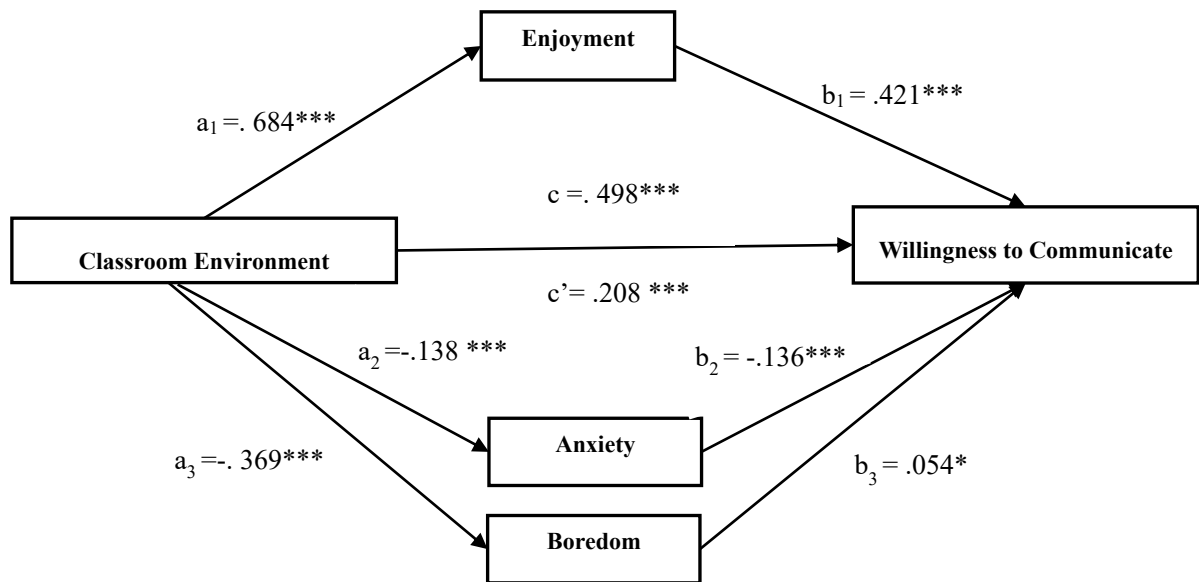


Figure 1. The statistical diagram of Parallel Multiple Mediation

Total mediating effect size and comparison between the mediating effects of FLE, anxiety and boredom were provided in the PROCESS output and are presented in Table 5. As can be seen from the data, the 95% confidence intervals do not straddle zero, so we can conclude with 95% confidence that FLE, anxiety and boredom mediated the effect of perceived CE on student WTC in parallel, and the total mediating effect size was .29, taking up 57.59% of the total effect of perceived CE on student WTC. The mediating effect of perceived CE on student WTC was exerted through three mediators, namely, FLE, anxiety and boredom, with the effect sizes being .29, .02 and -.02 respectively. The 95% confidence intervals indicated that all of them reached a significant level. Besides, C1, C2, and C3 provided in the PROCESS output indicated that the indirect effect through enjoyment was significantly stronger than those through anxiety and boredom, taking up 57.84%, 3.77% and -4.02% of the total mediating effect respectively.

Table 5 Analysis of the mediation model

Pathway	Indirect effect size	SE	BCa 95% CI	Indirect/total effect
Total indirect effect	.29	.02	[-.2469, .3243]	57.59%
CE → FLE → WTC	.29	.02	[-.2483, .3261]	57.84%
CE → anxiety → WTC	.02	.01	[.0113, .0285]	3.77%
CE → boredom → WTC	-.02	.01	[-.0373, -.0025]	-4.02%
C1 (FLE – FLCA)	.30	.02	[-.2544, .3471]	
C2 (FLE – boredom)	.35	.03	[-.2942, .3954]	
C3 (FLCA – boredom)	.04	.01	[.0191, .0689]	

Note: All coefficients except C1, C2, C3 are completely standardized coefficients.

Discussion

Relationships between CE, FLE, anxiety, boredom, and WTC

Correlational analyses identified relationships among the variables under investigation. In the first place, CE proved to be positively associated with both FLE and WTC, with the effect size being medium-to-large in the former case and small-to-medium in the latter. By contrast, the relationship with anxiety and boredom turned out to be negative, and more variability was accounted for in the latter case. Such results hardly come as a surprise as they corroborate the findings of previous research, both in the field of educational psychology and L2 learning, which have shown that the support coming from the teacher, cooperation between learners and the inclusion of engaging tasks (cf. Peng & Woodrow, 2010) either emanate from or ensure positive emotions while at the same time being hindered by or generating negative feelings that inevitably accompany the L2 learning process (cf. Harvey et al. 2012; Khajavy et al., 2018; Li et al., 2021; Reyes et al., 2012). The finding that students who were happy with the CE reported higher levels of FLE and were also more willing to speak also confirms previous research (Dewaele, 2019; Dewaele & Dewaele, 2018). It is worth noting that the negative effect of anxiety is in fact superseded by that of boredom. It would thus seem that the feelings of a sense of emptiness, frustration, lack of clearly identifiable goals, dissatisfaction with classroom activities, or insufficient or excessive challenge (Li et al, 2021; Pawlak et al, 2020; Zawodniak et al, 2017), together with the somewhat inevitable decrease in engagement (Mercer & Dörnyei, 2020), are more likely to be accompanied by negative evaluations of different facets of CE than the sheer experience of anxiety and its physical symptoms. In other words, high levels of boredom are more likely to undermine the overall classroom climate than anxiety. One reason could be that it might simply be easier to switch to tasks and activities that are likely to reduce anxiety (e.g., a reading task, the comfort of interacting with a regular desk mate), whereas combating boredom poses a much greater challenge as it can be potentially triggered by any topic, task or even the specific phase of the lesson. Obviously, the relationship is reciprocal because while boredom (and anxiety) can have a negative impact on CE, a poor classroom atmosphere can heighten the likelihood of simultaneous occurrence of these two negative emotions.

When it comes to the relationship between the three emotions in question and WTC, FLE proved to be positively related to WTC, with a medium-to-large effect

size, accounting for about 33% of the variance. Both anxiety and boredom were negatively correlated to WTC, with the strength of the relationship being small-to-medium and quite similar in both cases, explaining about 5%-7% of the variance. These findings partly corroborate the results of previous studies in that greater enjoyment strengthens WTC whereas heightened anxiety weakens it (e.g., Khajavy et al. 2018). However, in this case, in contrast to the results of Dewaele and Dewaele (2018) as well as Dewaele (2019), it was FLE that emerged as the strongest positive predictor of WTC, rather than the negative effects of anxiety. This only goes to show the immense complexity of the relationships among the three constructs, which, as shown by more situated studies (e.g., Dewaele & Pavelescu, 2021; Kruk, 2021b), interact in intricate ways in response to various combinations of learner characteristics as well as contextual factors. It also suggests that causality is multidirectional, with CE, FLE, anxiety and boredom being connected in a complex feedback loop, where all variables are influencing each other and being influenced by them in return as the lesson progresses.

Finally, when we look at the relationships between the three academic emotions as such, FLE was negatively related to both anxiety and boredom, while these two were found to be positively correlated with each other, with small to medium effect sizes in all cases. Three important caveats are in order at this point, though. First, somewhat similar to what was observed for CE, boredom was a much stronger negative predictor than FLCA, explaining more than four times as much variance in enjoyment (ca. 18% vs. ca. 4%). This would suggest that boredom is much more lethal than anxiety for WTC in the classroom. While teachers should try to do everything in their power to lower overall anxiety levels, they should also make their classes safe and exciting, so that even anxious learners are drawn into the interactions. Further research is needed to find out whether highly anxious learners will engage in a speaking activity if they find it interesting and enjoyable enough. Although boredom may also be reflective of individual predispositions such as general boredom proneness (cf. Pawlak, 2020), it is irrevocably connected with the nature of the learning activities, the topics they cover and the ways in which they are performed. Shaking off boredom requires the teacher to notice when learners' eyelids are drooping and introduce a new activity to energize the classroom and get every student buzzing again. It also requires a more fundamental, long-term change in the design and conduct of classes. Avoiding routine and introducing new, unexpected activities is the equivalent of chasing out the dusty cobwebs by opening the windows and allowing fresh air to enter the classroom. Second, it could be argued that enjoyment and boredom are closer to being opposite ends of the same emotion dimension than enjoyment and anxiety (Dewaele & MacIntyre, 2014, 2019). Indeed, enjoyment is associated with engagement and boredom with disengagement. They are nonetheless distinct academic emotions, not least because the former seems to be more amenable to teacher intervention than the latter. Third, while anxiety and boredom share almost 26% of the variance, they are definitely distinct dimensions, mainly because the former implies higher arousal than the latter and is much more strongly connected to learner-internal factors (e.g., personality, e.g., Dewaele & McIntyre, 2019; Magdalena Franco, & Saito, 2019; Jiang & Dewaele, 2019; Li et al., 2018). To put it differently, both of these negative emotions are likely to negatively impact the performance of

classroom tasks, CE and WTC, which explain the overlap, but their roots are probably different.

Co-mediation of FLE, anxiety and boredom in the relationship between CE and WTC

The analysis revealed that although CE has a direct, positive and significant influence on learners' WTC, explaining about 25% of the variance, this impact was co-mediated by the three academic emotions investigated in the presents study, that is, FLE, anxiety and boredom. More specifically, regression analysis demonstrated that CE significantly predicted the occurrence of these three emotions, with this influence being positive and in fact the largest in the case of FLE, with about 47% of the variance being explained. In contrast, it was negative for both anxiety and boredom, but its predictive power was considerably stronger in the latter case (2% vs. 14% of the variance being explained, respectively), which is largely consistent with the results of correlational analysis. Once again, it seems that boredom is much more closely connected with what is going on during the lesson in terms of what the teacher does, how other learners behave, and what tasks are implemented and how, than anxiety, thus also coming a little closer to representing the flip side of engagement (Dewaele & MacIntyre, 2014, 2019). At the same time, when the three emotions were included in the model, the predictive effect of CE on WTC was still significant, but the parallel mediating effects of these emotions became evident. Mediation analysis revealed that FLE, anxiety and boredom accounted of 57.59% of the total mediating effect of CE on WTC. Perhaps not very surprisingly in light of correlational analyses, it was enjoyment that explained by far the most of this influence, reaching 57.84%, with the effect size of 29. Although the effects of anxiety and boredom were also significant, they can be described as modest in this context. It points to the fact that learners' WTC hinges on creating a positive atmosphere in which all the constitutive elements of CE, these related to the teacher, other students as well as learning tasks, complement each other in generating a high level of enjoyment (cf. Dewaele & MacIntyre, 2014, 2019). This finding differs somewhat from Dewaele and Dewaele (2018) and Dewaele (2019) where anxiety was found to be a stronger (negative) predictor of WTC than FLE. An intriguing question concerns what constitutes the remaining 42% of CE which have an effect on the level of students' WTC. One could think here, for example, of teacher preparation for a particular class, the attitudes and behaviour of other students but also access to requisite linguistics resources (e.g., lexis), as dictated by the requirements of the task (e.g., Dewaele & Pavelescu, 2021; MacIntyre & Legatto; 2011; Pawlak & Mystkowska-Wiertelak, 2015). Obviously, there is a wide range of other more or less enduring factors discussed by MacIntyre et al. (1998), which might determine the response to CE and prevalence of some emotions at the expense of others but cannot really be changed by what transpires in the classroom.

Implications and limitations

Given the importance of speaking in L2 learning (see e.g., Kim, 2017), for which high levels of WTC represent the indispensable intermediary step, the results of the present study are of immediate relevance to practitioners. In the first place, it is clear that different aspects of CE play a crucial role in shaping learners' readiness to speak but they also contribute to the emergence of negative and positive emotions which in turn co-mediate the intensity of WTC. For this reason, it is essential for teachers to pay

attention to CE by providing learners with constant support, building positive relationships among students and carefully choosing a good variety of activities in L2 lessons. Importantly, all those elements are multi-dimensional and interdependent. For example, teacher support can be linked not only to individualizing instruction as much as possible but also to building cohesiveness by experimenting with different types of student groups, discussing with learners the types of tasks that could be the most beneficial but also planning such tasks by introducing necessary vocabulary. Teachers should also keep in mind to introduce an element of surprise in their classes, to keep everybody alert. It could be a short song, or poem, or funny scene from YouTube, or an unusual activity like acting out a disagreement or writing a love letter to a well-known figure. As smiles appear on learners' faces, their WTC will soar. Enjoyment will trump the lingering effects of anxiety or boredom. In other words, by improving the classroom climate, teachers can boost confidence and encourage students to rise to the challenge posed by classroom tasks. Students who enjoy themselves will want to join in the interactions. However, this focuses on boosting the positive should distract teachers from anxiety and boredom lurking beneath the surface. A fun activity can cease to be fun when it goes on for too long, anxiety can spike if an activity becomes overly challenging, or if a peer makes a snide comment. Thus, it is of vital importance for teachers to be on the constant look-out for potential causes and symptoms of anxiety and boredom in an attempt to minimizing their deleterious effects. They keep their finger on the pulse of the CE, making sure it remains within lower and upper limits.

The present study is not without limitations. First, it is a prime example of a macro-perspective where data collected from a large sample is subject to advanced statistical procedures in order to identify general patterns. Although such a perspective certainly has merit, it must be kept in mind that emotions enter into intricate and unique interactions with contextual factors as well as with each other. Only a micro-perspective can allow greater understanding of the genesis of these processes in one specific context. Second, the study only relied on quantitative data collected in a cross-sectional design, which limits the scope and types of insights that can be gleaned about the relationships of CE, emotions and WTC. Further research could add interviews, narratives or classroom observations in order to gain a more detailed picture of such relationships and their potential causes. Third, as signalled above, WTC levels also emanate from more enduring variables than just the nature of CE and the emotions it evokes, and these factors were not investigated in this study. Fourth, the findings are reflective of a very specific context, that is, university students learning English in China. It would surely be insightful to see whether the results hold in other national settings, lower educational levels (e.g., elementary or secondary school) or other foreign languages. Lastly, there were only three items measuring boredom and anxiety, respectively, extracted from the AEQ, which was originally developed and validated in general education. It is thus suggested to adopt L2-specific measurements in future research to better capture the nature and complexities of L2 learning contexts. Recommended measures are the *Foreign Language Classroom Anxiety Scale* (FLCAS, Horwitz et al., 1986), the *Short-form Foreign Language*

Classroom Anxiety Scale (S-FLCAS, Botes et al., 2022), the *Boredom in Practical English Classes* (BPELC, Pawlak et al., 2020c), and the *Foreign Language Learning Boredom Scale* (FLLBS, Li et al., 2021), all of which were originally developed and validated in the L2 learning contexts.

Conclusion

In the introduction, we compared the teacher faced with rows of sullen, silent, unwilling students with the pilot of a jetliner desperate to take off, and yet not quite reaching the speed needed for the wings to generate sufficient lift to allow the plane to rise in the air. We acknowledged that teacher failure is not as costly as pilot error. We also pointed out that teachers who are in command of their classroom can use strategies to create a positive atmosphere that can lift the students out of their torpor into active participation.

Teachers occupy a central node in a dynamic system. They can judge the emotional temperature in the room and the temperature of every individual in it. The current study on a very large sample of Chinese EFL students showed that there is no single variable, nor a standard recipe, to make students speak. Rather, a complex combination of classroom environment as well as teachers' efforts aimed at increasing students' enjoyment, eliminating their boredom and managing their anxiety can be expected to contribute to increased WTC. It is extremely likely that a positive feedback loop exists, where the initial CE that affects students' emotions – which then shape their WTC – is boosted by the many voices of enthusiastic peers. To the casual observer or the trainee teacher this process may appear to be magic; to the experienced teacher it is the result of invisible hard work in the classroom drawing on finely honed psychological and pedagogical skills.

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