



OPEN

Emotions in English language classrooms among Chinese top university students

Meihua Liu¹✉, Xia Wu¹ & Fan Yang²

The role of learner emotions in language learning has long been observed and researched. Of various emotions, foreign language anxiety, enjoyment and boredom have been the most often researched, while research on other emotions like pride and sadness is hardly available in the current literature. Research on emotions in students with special characteristics can be hardly found as well. Hence, this study collected interview data from 26 and survey data from 520 top students in two universities in China to examine their emotions in English language class. Analyses of the data revealed the following major findings: (a) The participants experienced a diversity of emotions in their English language class due to both learner-internal and external reasons, but the most often reported emotions were anxiety, enjoyment and boredom, (b) significant correlations existed among the students' English language classroom anxiety, enjoyment and boredom, (c) English language classroom anxiety and boredom significantly negatively while enjoyment significantly positively predicted the students' English test performance, and (d) English language classroom anxiety debilitated English learning but motivated students to study harder as well; enjoyment facilitated English learning but students might forget much of what had been learned after class; though boredom caused some students to be absent-minded in class, most students would study on their own when feeling bored. These findings further pinpoint the important role and complex nature of learner emotions in second/foreign language learning. Based on these findings, specific suggestions for language teachers and learners are discussed.

Keywords English language classroom anxiety, English language classroom enjoyment, English language classroom boredom

Since early 1970s, learner emotions have been increasing researched in second/foreign language (SL/FL) learning and acquisition^{1–3}. Earlier research predominantly focused on foreign language anxiety (FLA), a negative emotion, and found that FLA largely debilitates second/foreign language (SL/FL) learning^{1,3–6}.

Then, in early 2000s, Fredrickson^{4,7} proposed the 'broaden-and-build' theory, which believes that positive and negative emotions co-exist and affect SL/FL learning yet pull learners in opposite directions: Negative emotions (e.g., anxiety, boredom, anger, and shame) may impede while positive emotions (e.g., joy, interest, pride, and love) can help language learning. Along with the spread of this theory, positive psychology was introduced into second language acquisition in early 2000s⁶. Since then, positive emotions, foreign language enjoyment (FLE) in particular, began to gain increasingly more attention in recent decades^{8–12}. Research shows that FLE is conducive to SL/FL learning and is generally negatively correlated to FLA, as shown in Botes et al.'s² meta analysis of 56 empirical studies on FLA and FLE. Meanwhile, foreign language classroom boredom (FLCB), another negative emotion, came to become a focus of research as well^{13–16}, which reveals that FLCB negatively affects learners' classroom engagement and learning outcomes.

Along with FLA, FLE and FLCB, other positive emotions like happiness and peace of mind have also gradually drawn researchers' attention^{17,18}. Though research on other emotions have been growing in recent years, the number is still small. Meanwhile, research on emotions in learners with special characteristics such as high-performing, low-performing or minority students is hardly available who may display different patterns of emotional states and responses¹⁹. It is important to know what emotions they experience when learning a SL/FL, what causes the emotions and how the emotions affect their SL/FL learning to better understand the underlying working mechanisms of emotions in SL/FL learning. Hence, the present research aimed to examine emotions in English language classrooms in Chinese university students of Top-Notch Basic Disciplines Training Program,

¹Department of Foreign Languages and Literatures, Tsinghua University, Beijing 100084, China. ²Academic Affairs Office, Tsinghua University, Beijing 100084, China. ✉email: liumeihua@mail.tsinghua.edu.cn

which has been authorized by China's Ministry of Education to only about 15 top universities in China since 2009. Only few exceptionally outstanding high school graduates could be admitted to the Program to be trained to be future leading talents in basic disciplines like mathematics, physics, philosophy and computer technology. These students generally enjoy more and better learning resources than other students of the same university, including English learning resources. For example, they are more likely to attend classes, lectures and research projects involving well-known experts in diverse areas and participants with different cultural and linguistic backgrounds. Nevertheless, little research has been done on these students in relation to second language acquisition since 2009, which further justifies the present research.

Literature review

Since 1970s, foreign language anxiety (FLA) has been widely researched in a multitude of SL/FL contexts^{3,12,20–23}. Then, influenced by positive psychology^{4,7}, other learner emotions began to capture researchers' attention^{8,9,16,24–26}. According to Fredrickson's⁴ 'broaden-and-build' theory, positive and negative emotions co-exist yet affect SL/FL learning in opposite ways. Negative emotions (e.g., anxiety, boredom, anger, and shame) narrow learners' thought-action repertoire and thus impede language learning, while positive emotions (e.g., joy, interest, pride, and love) can offset negative emotions' effects and broaden learners' momentary thought-action repertoires and hence facilitate their language learning⁷. Among these learner emotions, FLA, foreign language enjoyment (FLE) and foreign language classroom boredom (FLCB) are the three most researched emotions, with some research on other emotions like grit, subjective happiness and peace of mind, as reviewed below.

Foreign language anxiety

The most commonly studied learner emotion in second language learning is probably FLA, which is the subjective feeling of tension, apprehension, nervousness, and worry associated with an arousal of the automatic nervous system related to SL/FL learning^{3,27}. FLA is often measured by the Foreign Language Classroom Anxiety Scale (FLCAS), a 33-item five-point Likert scale, developed by Horwitz and her colleagues³ and later shortened to have 8 items²⁰. The scale has been widely utilized or adapted in empirical research in diverse SL/FL contexts^{12,20–22}. Meanwhile, interviews, observations, diaries and other instruments have been utilized as well in FLA research^{4,12,22}. These studies show that anxiety exists in many learners in different aspects of SL/FL learning (i.e., listening, speaking, reading and writing)^{1,5,28,29} and can be caused by various linguistic, educational, psychological, cultural and personality factors^{3,12,22,29–31}. Researchers also identify a range of contributors to learners' FLA, including low English proficiency, lack of practice, personality, fear of making mistakes, lack of confidence, unpleasant experiences, lack of skills, learning activities, peer pressure, little/no preparation, task difficulty and classroom environment. In subsequent studies^{10,12,19,22,29,30,32}.

For example, Liu²² investigated FLA of three classes of Chinese first-year university students enrolled in the English Listening and Speaking course in a prestigious university in China through survey, observations, reflective journals and interview. She found that the participants experienced moderate to high anxiety in English language class, which was supported by many subsequent studies^{5,31,33}. Li and Han⁵ surveyed 348 Chinese undergraduate non-English majors and found a moderate to high FLA level in the respondents (mean = 2.42–3.20). Liu³¹ (mean = 1.72–3.14) and Liu and Hong²⁵ (mean = 2.16–3.20) reported a low to high FLCA (foreign language classroom anxiety) level, and a similar finding was revealed in Hong Kong young learners in Tsang and Dewaele³³ (mean = 2.90). Nevertheless, Jiang and Dewaele³⁰ reported high FLCA (mean = 3.14) in Chinese university students. In addition to further confirming the dynamic nature of FLA, these findings indicate that learners' feelings of anxiety change as their SL/FL learning contexts vary.

Concurrently, research reveals that FLA is generally negatively correlated with students' language learning outcomes measured by language proficiency tests, course examinations or self-ratings in different aspects of a SL/FL, including speaking, listening, reading, writing and interpreting^{5,10,12,28,29,31,34}. For instance, Liu and Jackson²³ collected survey data from 547 Chinese university English learners and found that the students' FLA was significantly negatively correlated with their self-reported English proficiency. This finding was further confirmed by Botes et al.'s¹ meta analysis of 67 empirical studies on foreign language classroom anxiety and academic achievement.

Meanwhile, the potentially facilitating effect of anxiety on test performance was noted by Alpert and Haber³⁵ who differentiated between facilitating and debilitating anxiety. This facilitating effect of anxiety on SL/FL learning has also been noted in qualitative studies^{4,36,37}. Bailey⁴ examined the diaries she kept while studying French as a foreign language in an American college. She found that she felt very uncomfortable and extremely anxious about the French class during the first few weeks. The anxiety even caused her to withdraw from her study for a while but also drove her to work harder at some other time. Journal and interview data in Liu's³⁶ study of Chinese university EFL learners indicated that anxiety motivated the students to study harder and perform better, which was supported by Liu's³¹ and Liu and Hong's²⁵ study of Chinese middle school students. In Liu and Xiangming's³⁷ longitudinal study of anxiety in Chinese postgraduate EFL (English as a foreign language) learners, FLCA was significantly negatively correlated with speaking test performance and overall test performance at both time points, facilitating anxiety was significantly positively related to writing test performance at time point 1 and speaking test performance at time point 2. Facilitating anxiety was also a positive predictor for writing test performance at time point 1 and speaking test performance at time point 2, though different FLCA dimensions negatively predicted the students' performance in speaking, listening, reading and writing tests at both time points respectively.

As such, though FLA has been researched in students with varying backgrounds, differences in levels and effects of FLA exist when learners are different. Moreover, little such research on students with special

characteristics can be found¹⁹. This motivates the present research which aimed to examine emotions in English language classrooms in Chinese top university students who are outstandingly talented in respective areas.

Foreign language enjoyment

The pioneer and leading researcher on FLE is Dewaele^{10,11,13,20,34,38}, who defined enjoyment as “a positive state where challenges and skills to meet them are aligned well. Enjoyment is indicative of a state in which psychological needs are being met”¹⁰. Experiencing enjoyment involves “having a chance to complete a task, concentration, clear goals, and immediate feedback”¹⁰. FLE concerns learners’ efforts to meet learning challenges and broaden their knowledge and proficiency in the foreign language class³⁹. It occurs when learners find appropriate responses to their psychological needs in the classroom⁴⁰. It is thus believed that enjoyment can lead to persistent determination and enthusiastic engagement in educational tasks. To measure FLE, Dewaele and MacIntyre¹⁰ developed a 21-item Foreign Language Enjoyment Scale, which was later shortened to have 9 items and cover three dimensions—teacher appreciation, personal enjoyment and social enjoyment⁴¹.

Dewaele’s work has spurred an array of research on FLE^{8,9,25,42,43}, which shows that learners often have a high level of FLE, that FLE and FLA are negatively related to each other, and that FLE helps SL/FL learning. For example, Jiang and Dewaele’s³⁰ mixed method study of 564 Chinese undergraduate EFL learners revealed high FLE (mean = 3.94) in the participants, which was supported by Zhao and Wang’s¹⁹ study of 783 minority middle and high school students in western China (mean = 4.05). A lower but still high FLE level was reported in Hong Kong young learners in Tsang & Dewaele³³ (mean = 3.58) and Chinese university non-English majors in Li and Han⁵ (mean = 3.58–3.59). A moderate to high FLE level was found in Chinese middle school students in Liu and Hong²⁵ (mean = 2.89–3.44).

Meanwhile, a negative correlation has been consistently reported between FLE and FLCA in studies^{5,10,19,21,25,42}, which was further confirmed by Botes et al.’s² meta analysis of 56 empirical studies. For example, Dewaele et al.⁹ investigated how FLE, FLCA and boredom (FLCB) were related to each other and how they jointly affected learners’ foreign language achievement. The researchers collected survey data from 332 learners studying different foreign languages in the world, which revealed negative associations between FLE and FLCA and FLCB. Moreover, Botes et al.’s² meta analysis revealed a moderate positive correlation between FLE and academic achievement and between FLE and self-perceived achievement. This finding is supported by subsequent research^{12,19,33,34,42}, some of which even found that FLE positively predicted SL/FL achievement. Dewaele et al.’s³⁸ longitudinal study of 360 English learners in a Kuwaiti university revealed that high FLE could act as a buoy for sagging motivation. As indicated by these studies, differences in FLE levels also exist as learner populations are different. Furthermore, more research is needed to examine the effects of FLE on SL/FL learning. These justify further research on FLE in students with varying backgrounds.

Foreign language classroom boredom and other emotions

As an unpleasant emotional or psychological state, associated with low physical arousal and cognitive stimulation, as well as specific time perceptions and action tendencies⁴⁴, boredom exists in all educational settings, negatively affects individual behavior, engagement, cognition, interest, curiosity, motivation, and debilitates individual learning outcomes^{16,45}. To measure boredom in foreign language class, Kruk and Zawodniak²⁴ developed the Boredom in Practical English Language Classes Questionnaire (BPELC). Kruk and Zawodniak⁴⁶ collected both quantitative and qualitative data from 30 Polish university English majors to investigate the difference in experiencing boredom between the L2 and L3 classroom. They found that the main causes for boredom included insufficient teacher engagement, repeated use of the same teaching tools, uninteresting topics, and a lack of meaning in learning. The study revealed no significant difference in boredom between the L2 and L3 classroom. Kruk¹⁴ used session logs, observations and reading session plans to investigate changes in the experience of boredom in 18 s-year Polish high school students in the English language classroom during reading sessions. Findings revealed that the participants reported different levels of boredom during the course. Causes for the changes in boredom included inactivity, difficulty levels of tasks, the teacher’s choice and use of language materials, instruction and/or individual learner characteristics. Zawodniak and Kruk⁴⁷ collected quantitative data from three students who reported to be at three different boredom levels. They found that the boredom reported by the participants changed within and across lessons and attributed the changes mainly to language activities and organization of the lessons. Coşkun and Yüksel⁴⁵ administered the adapted BPELC to 680 Turkish high school EFL students in different grades. The study uncovered a medium level of boredom in the students and found that the most common causes for boredom were the monotonous nature of the English lessons and students’ dissatisfaction with the lessons.

Dissatisfied with the BPELC, Li et al.¹⁶ developed the 32-item Foreign Language Learning Boredom Scale (FLLBS), which covers 7 dimensions, including Foreign Language Classroom Boredom (FLCB). The FLCB scale was then applied in subsequent research^{5,8,9,28,33,34}, which shows that students generally reported a low to moderate level of FLCB. Li and Han⁵ reported a low FLCB level (mean = 2.42–2.62) in Chinese university students, which was consistent in Li and Wei²⁸ (mean = 2.49). An even lower FLCB level of 1.90 was reported in Tsang and Dewaele³³ and Zhao and Wang¹⁹ (mean = 1.94). In addition, both Li and Han⁵ and Dewaele et al.^{9,10} found that learners in in-person classes experienced significantly less FLCB than their peers in online classes. Meanwhile, a negative correlation between FLCB and SL/FL achievement was reported^{19,28,34}. For example, Zhao and Wang’s¹⁹ study showed that FLE positively but FLCB negatively predicted the students’ English achievement.

Though the FLLBS has been used in some studies^{8,9,28}, it needs to be validated in more empirical research. And its subsection-FLCB scale was employed in the current research.

Research on emotions (e.g., happiness, peace mind and grit) other than anxiety, enjoyment and boredom in SL/FL learning is rather limited^{17,18,26,48}. For example, Barrios & Acosta-Manzano¹⁷ collected quantitative data

from 594 Spanish adult foreign language learners aged 16 to 72 to investigate the relation between FLE and subjective happiness (SH). They found that the participants with higher scores on FLE had higher scores on SH. Zhou et al.¹⁸ conducted several studies to present the construct of foreign language peace of mind (FLPOM) and found it to be a stronger predictor of Chinese learners' self-perceived foreign language proficiency than FLE.

Relations among foreign language anxiety, enjoyment, boredom and L2 achievement

The studies reviewed above generally reveal close associations among FLA, FLE and FLCB^{5,8,9,12,19,28}. For example, Li and Han's⁵ investigation of 348 Chinese undergraduate non-English majors revealed a small to medium negative correlation between FLE and FLA, a small to medium positive correlation between FLA and FLCB and a medium to high negative correlation between FLE and FLCB. Zhao and Wang¹⁹ found that FLE were significantly negatively correlated with FLCB.

Meanwhile, the three emotions have been found to be closely related to and even predict SL/FL achievement to varying degrees^{2,19,28,29,36,49}. FLA and FLCB are negatively while FLE is positively related to the latter, as reviewed above. For example, Dewaele et al.⁹ found that FLCA had a negative effect on foreign language achievement. Dewaele et al.³⁴ employed structural equation modeling and latent dominance analysis on 502 Moroccan EFL learners to examine the predictive effects of FLCA, FLE and FLCB on their FL performance. The results revealed that FLCA had the strongest (negative) effect on English test scores, followed by FLCB (negative) and FLE (positive effect) respectively. Li and Wei²⁸ collected questionnaire and achievement data from 954 learners at four different time points (T1–T4). Two major findings were: (a) Anxiety, enjoyment and boredom at T1 predicted English achievement at T2 and T3 independently, while only enjoyment predicted achievement at T4, and (b) When combined, enjoyment was the strongest and most enduring predictor across T2–T4, followed by anxiety predicting achievement at T2–T3 negatively, while boredom completely lost its predictive power across T2–T4. Li and Han⁵ found that when working alone, FLE positively while FLCB and FLA negatively predicted students' English test scores and perceived achievement. Yet, when working together, FLA was the only predictor for English test scores while FLE and FLCB predicted perceived achievement. Li et al.⁴⁹ revealed mixed findings about the relations between FLCA, FLE and English achievement in Chinese high school students in different achievement groups.

Concurrently, as revealed by qualitative data, FLA debilitates SL/FL learning but can also drive learners to study harder and perform better^{25,36}; FLE helps learners more concentrate and better process the target language in class^{10,30}; FLA, FLE and FLCB are caused by various factors and interact to affect SL/FL learning in complex ways.

Research questions

Learner emotions pervade in educational settings. Although research on learner emotions has been growing furiously in recent years, FLA, FLE and FLCB are still the foci of examination while other emotions remain under-researched. And differences in the levels of FLA, FLE and FLCB and their roles in SL/FL learning do exist when the contexts are different though the general patterns seem to be similar, as reviewed above. The differences may also be due to the specific characteristics different learner populations possess. Moreover, studies on emotions of learners with special characteristics such as high- and low-performing students are hardly available. Hence, the present mixed-method research sought to examine English language classroom emotions in Chinese university students of the Top-Notch Program, an under-researched population in relation to second language acquisition. To achieve this purpose, the following questions were formulated:

- (1) What emotions do the students experience in English language class? What causes such emotions?
- (2) How are English language classroom anxiety, enjoyment and boredom related to one another?
- (3) How do English language classroom anxiety, enjoyment and boredom affect the students' English performance?

Research design

Participants

Prior to the survey study, 26 (12 female and 14 male) students of the Top-Notch Program from one of the two prestigious state-owned universities in Beijing under study voluntarily agreed to be interviewed. They were from classes of Economics and Management (EM) (4), Physics (7), Philosophy (4), Computer Science (5), and World Literatures and Cultures (WLC) (6). Of these interviewees, 15 were first-year, 5 s-year, 4 third-year, and 2 fourth-year students. They reported average range of 10–18 years in learning English, an average range of 0.5–5 h spent in learning English per day, and an average range of 4–7 in self-rated overall English proficiency on a scale of 1–10.

To largely represent this special population, random sampling was adopted for the large-scale survey. A link of the questionnaires used in this study was created on wenjuanxing—a data collection platform in China, which was sent to all targeted students in the universities. This sampling resulted in 520 (406 male and 114 female) participants with an average age of 19.84 (SD = 1.226) and an age range of 18–23. They had learned English for an average of 12.43 (SD = 2.59) years, reported using English for an average of 1.73 (SD = 0.905) hours per day, and scored 5.93 out of 10 in self-rated overall English proficiency. They were from the nine different classes of the Top-Notch Program, including mathematics, physics, chemistry, computer science, mechanics and philosophy. They were from different years of study: First-year (163/31.3%), second-year (118/22.7%), third-year (187/36) and fourth-year (52/10%).

Instruments

To better understand English classroom emotions in Chinese top university students, the convergent parallel mixed methods design⁵⁰ was employed to collect data in this research.

Semi-structured interview

Semi-structured interview was to elicit students' inner perceptions of and feelings about their English language class. With reference to Liu^{31,36}, leading interview questions were developed, with example questions being 'what do you think of your English language class?', 'how do you feel in your English language class? please explain with details', and 'do you believe you can learn English well?'.

English language classroom anxiety scale

The 8-item English Language Classroom Anxiety Scale (ELCAS) (Cronbach alpha (α) = 0.921) was adapted from the short form of Foreign Language Classroom Anxiety Scale in Botes et al.²⁰. To better suit the research, expressions "foreign language" was changed to be "English" and "other students" to be "my classmates". Sample items were 'Even if I am well prepared for my English class, I feel anxious about it' and 'I get nervous and confused when I am speaking English in class'.

English classroom enjoyment scale

The 9-item English Classroom Enjoyment Scale (ECES) (α = 0.879) was adapted from the short form Foreign Language Enjoyment Scale in Botes et al.⁴¹. To better suit the present study, the expression "foreign language" was replaced by "English". Meanwhile, as discussed in Botes et al.⁴¹, ECES had three dimensions, with each dimension having three items: Teacher Appreciation Subscale (TAS) (α = 0.943), Personal Enjoyment Subscale (PES) (α = 0.785) and Social Enjoyment Subscale (SES) (α = 0.784). Example items were 'We form a tight group in the English language class' and 'I am proud of my accomplishments in English'.

English language classroom boredom scale

The 8-item Foreign Language Classroom Boredom in¹⁶ was used as the English Language Classroom Boredom Scale (ELCBS) (α = 0.948) to measure students' feeling of boredom in English language class in the present study. Example items were 'The English class bores me' and 'I start yawning in English class because I'm so bored'.

All the scale items were placed on a 7-point Likert scale, ranging from 'strongly disagree' to 'strongly agree'. The higher the score, the greater anxiety/enjoyment/boredom in English language class (The two ELCAS items reflective of low/little anxiety were reverse-coded).

Demographic questionnaire

The Demographic Questionnaire had 8 items, aiming to collect such information about the participants as age, gender, university, class of the Program, year of study, length of time in learning English, average time spent in using English per day, and self-rated overall English proficiency.

English performance

The students' scores in a standard test that they took in the past two weeks were collected as an indicator of their English performance.

Skewness and kurtosis values reported in Table 1 show that all the scales and test scores had a normal distribution in the present study. Meanwhile, as presented in Table 1, the participants scored 5.50 on TAS, 4.72 on PES, 4.15 on SES, 4.79 on ECES, 3.97 (SD = 1.39) on ELCAS, and 3.195 on ELCBS, below or above the scale midpoint 4. This meant that the participants had high teacher appreciation, personal, social and overall enjoyment, were moderately anxious and experienced low boredom in their English language class.

In addition, Table 1 shows that the participants scored 83.54 (SD = 8.30) in English tests, indicating that the participants were intermediate to advanced learners of English.

	Mean	SD	Skewness	Kurtosis
TAS	5.50	1.13	-0.707	0.658
PES	4.72	1.19	-0.606	0.765
SES	4.15	1.26	-0.182	0.247
ECES	4.79	0.99	-0.449	1.06
ELCAS	3.97	1.39	0.077	-0.409
ELCBS	3.195	1.27	0.486	0.118
Test scores	83.54	8.30	-0.810	0.673

Table 1. Means and Standard Deviations of the Scales (N = 520). ELCAS English Language Classroom Anxiety Scale, TAS Teacher Appreciation Subscale, PES Personal Enjoyment Subscale, SES Social Enjoyment Subscale, ECES English Classroom Enjoyment Scale, ELCBS English Language Classroom Boredom Scale.

Data collection procedure and analysis

After the study was approved by the Science and Technology Ethic Committee (Humanities, Social Sciences and Engineering) (No.: TUH-04-2024-41) of the writers' institution, it was conducted in weeks 6–9 of a 16-week term in 2022. First, an invitation letter and a consent form were randomly sent to 50 students of the Top-Notch Program in one university under study, which yielded 26 positive responses for semi-structured interview. Semi-structured interviews were subsequently done one-to-one in the researchers' office in Chinese in weeks 6–7, which were recorded and lasted about 40 min per se. Then, a link of the 8-item ELCAS, the 9-item ECES, the 8-item ELCBS, and a 7-item Demographic Questionnaire, which were translated into Chinese, back-translated and double-checked, was sent to all students of the Top-Notch Program of the two universities. The students were informed of the research and could complete the survey in two weeks. All participation was voluntary and a consent form was obtained from each participant. All methods were carried out in accordance with relevant guidelines and regulations. Finally, 520 complete questionnaires were collected.

All interviews were transcribed and double-checked for accuracy, which was then subjected to thematic content analysis⁵¹. To ensure accuracy and reliability, all the interview transcripts were read through two times by the researcher and a research assistant respectively to identify themes, which resulted in an inter-rater reliability of 0.923. Then, axial coding was employed to group themes and build relations among the themes. Example themes were 'perceptions of English language class,' 'feelings in English language class,' 'self-efficacy in English learning,' 'effects of anxiety,' and 'role of English.' A pseudonym was assigned to each interviewee when analyzing and reporting their remarks.

The survey data was analyzed via SPSS 20. Means and standard deviations were computed to reveal levels of English language classroom anxiety, enjoyment and boredom; correlation analyses were run to explore relations among the three measures; and multiple step-wise regression analyses were conducted to examine predictive effects of English language classroom anxiety, enjoyment and boredom on students' English test performance. Meanwhile, Mplus 8.3 was used to run confirmatory factor analysis on ECES.

Results

Findings of interview data

To all interviewees, English, as the international lingua franca, was the instrument for them to become more professional and do better in their respective fields as well as an important skill to understand diverse cultures and perspectives and share ideas in this world. "... In my field, as a student of the Top-Notch Program, I have to read more literature, do more research, and write more papers than others. I write more frequently as well, and I need to be involved in more research activities. English is essential in doing all these." (Rui, male, Physics, first-year). All interviewees remarked that they had the confidence to learn English well, believing that they could do it as long as they were devoted to learning it.

Emotions in English language class

Examination of the interview data showed that most interviewees reported experiencing anxiety, enjoyment, and boredom in their English language classes. Meanwhile, the following emotions were sporadically experienced by one or two of the interviewees: helplessness, being enlightened, being lost, surprise, embarrassment, being empathetical, being disappointed and hurt, and being puzzled. For example, "... There are times that I can't express my ideas in English or I don't know what and how to say in English. I feel very helpless" (Rui, male, Physics, first-year). "... I feel enlightened when I hear or read authentic English that is different from what I have thought. I feel very excited and enlightened" (Ke, female, WLC, first-year).

Enjoyment in English language class

Of the interviewees, Zhang (female, EM, first-year) did not enjoy her English language class in that she was not interested in English. The other 25 interviewees reported enjoying their English language class to diverse degrees, because of internal (e.g., a sense of achievement, making progress, learning interesting things and understanding the teacher, etc.) and external (e.g., liking the class or the teacher and receiving positive feedback, etc.) reasons (see Table 2). For example, "... As we talked more about a topic we were all interested in, we just kept on talking ... we simply forgot we were talking in English, we just exchanged ideas, and became excited and happy" (Chen, female, Philosophy, third-year). "... Joy came from communication, and from the progress I made. I feel that I write better and better, and can follow and react to the teacher though she speaks fast in class. ..." (Hou, male, EM, first-year).

When enjoying the class, 23 interviewees said that they would become more active in class to voice their opinions and interact with the teacher and other students, more attentive and engaged in classroom tasks, more motivated to study English, and take more notes. Qi (female, WLC, first-year) would take notes of what was discussed by others but he himself had never thought of; Yan (male, Computer Science, third-year) would carry over the engagement outside the classroom by searching for more relevant materials. Wang (female, WLC, first-year) would highlight a certain paragraph and try to see whether she could write out a paragraph like that. Unexpectedly, Shuo (male, Physics, first-year) and Zhang (female, EM, first-year) remarked that they did enjoy their English language class but forgot everything except for a few words and expressions after the class.

Anxiety in English language class

Of 26 interviewees, 10 reported not feeling anxious in English language class, because (a) Both the teacher and peers were helpful and tolerant, (b) The lessons were at the right difficulty level, (c) They were confident in their ability to learn English well, (d) It was sure that someone at the university did better and thus it was not necessary

Category	FLE	FLCA	FLCB
Frequency of 'yes'	25	16	18
Source	Internal	Feel happy to share ideas with others in class (2) Learn interesting things (2) Have a sense of achievement (1) Make progress (1) Can follow the teacher (1)	Cannot follow the teacher (3) Fear speaking (2) Cannot use English fluently (1) Worry about poor performance (1) Be not prepared (1) Have social phobia (1) Pronunciation is not standard (1) Fear becoming the center of attention (1)
	External	Teacher is good, humorous, and/or talented (2) Like the class (1) Receive positive feedback (2) The classroom atmosphere is good (1)	Peers perform better (3) Teacher is rather strict, demanding and not encouraging (2) Peer competition (1) Class is difficult (1)
			Be not interested (5) Cannot understand the teacher (3) Have not adapted to the teacher's teaching style (1)
			The teaching focus is on tests (1) What is taught is easy (1) The whole class is quiet (1) Teacher talks a lot (1)

Table 2. Causes for FLCA, FLE and FLCB (source: interview, $N=26$).

to feel anxious, (e) Their English was good, (f) They were willing to speak English in class, g) the teacher was encouraging, and (h) They could follow the teacher.

The other 16 interviewees reported feeling anxious to varying degrees in their English language class, because of internal (e.g., being unable to use English fluently, fear of speaking, worry about poor performance, etc.) and external (e.g., teacher's strictness, difficult class, peer pressure and peer competition, etc.) reasons (see Table 2). For example, "... My deskmate highlighted different parts of the reading materials and took lots of notes. It seemed that he has learned well about it, but I haven't. This makes me anxious" (Xiang, male, Physics, second-year). "... Because if I make a mistake, it's definitely embarrassing. Others will think I didn't speak well. Then it is a burden. ..." (Yi, female, Philosophy, second-year).

When feeling anxious, 13 interviewees reported that they would learn English harder to eliminate the anxiety by collecting more materials, reviewing, asking other students for help, and doing more listening, reading, speaking and writing, 3 would try to avoid speaking or pray not to be called by the teacher, 2 would translate ideas in Chinese into English and then read out the script, and 1 would withdraw from the class. As Ran (female, Computer Science, first-year) said, "... If I feel anxious in class, like I can't understand clearly what the teacher is saying, I take pictures of the ppt slides. Then after class, I ask other students for help. Or I make a mark there and then try to follow the teacher on other points".

Boredom in English language class

Of the interviewees, 18 reported feeling bored to varying degrees in their English language class, because such internal (e.g., being unable to understand the teacher and no interest, etc.) and external (e.g., focus on tests, the content being easy, abstract or theoretical, and the teacher talking a lot, etc.) (see Table 2). For example, "... In this week's class, the content was not familiar to me and was not related to the modern society. Without relevant background knowledge, I didn't understand much. Then I felt somehow bored" (Xuan, female, WLC, third-year). When feeling bored, the interviewees would review notes and lectures, work on assignments, do some writing or reading, do something irrelevant to the class, or simply play on mobile phones. Ge (male, WLC, first-year), Lu (male, Computer Science, second-year) and Wei (male, Physics, first-year) would become absent-minded while pretending to be attentive.

The other 8 interviewees did not feel bored in their English language class, because (a) They were often attentive in class, (b) They were busy with tasks and activities, and (c) What was taught was meaningful, interesting and/or challenging. "... If you are attentive in class, you can't feel bored" (Rui, male, Physics, first-year). "... We have no time to feel bored. In my class, the teacher speaks little, and we students work together most of the time. We often speak out different views and share various interesting experiences" (Chen, female, Philosophy, third-year).

Findings of survey data

Correlations among the measures and English performance

As shown in Table 3, ECES and its subscales were all significantly positively related to one another ($r=0.409-0.874$, $p=0.000$) but negatively to ELCBS ($r=-0.276$ to -0.513 , $p=0.000$), with a medium to large effect size, indicating that a respondent with greater teacher appreciation/personal/social/overall enjoyment tended to feel less bored in their English language class. Of ECES scales, TAS was significantly positively related to ELCAS ($r=0.121$, $p=0.006$) and PES ($r=-0.237$, $p=0.000$) was significantly negatively related to the latter. This meant that the more a respondent appreciated the teacher, the more anxious he/she was in English language class. Meanwhile, ELCAS and ELCBS were significantly positively related ($r=0.123$, $p=0.005$), indicating that the more anxious respondent tended to feel more bored in English language class.

Moreover, all ECES scales except for TAS were significantly positively related to students' test scores ($r=0.216-0.368$, $p=0.000$); ELCAS ($r=-0.395$, $p=0.000$) and ELCBS ($r=-0.280$, $p=0.000$) were significantly inversely correlated with the latter. These findings suggested that a respondent with greater classroom enjoyment

	PES	SES	ECES	ELCAS	ELCBS	Test scores
TAS	0.589*	0.409**	0.793*	0.121**	-0.276**	0.025
PES	1	0.581*	0.874**	-0.237*	-0.513*	0.368**
SES		1	0.814**	-0.078	-0.394**	0.216**
ECES			1	-0.08	-0.479*	0.250**
ELCAS				1	0.123*	-0.395**
ELCBS					1	-0.280**

Table 3. Correlations among the Measures ($N=520$). $**=p \leq 0.01$; $*=p \leq 0.05$; coefficient of determination: small = $r \leq 0.1$; medium = $r=0.3$; large = $r \geq 0.5$ ⁵².

tended to perform better in the English test while a respondent with greater classroom anxiety or boredom tended to perform worse in the test.

Predictive effects of English language classroom enjoyment, anxiety and boredom on students' English performance
 Prior to regression analysis, a confirmatory factor analysis was done on ECES, the only multi-dimensional scale used in the current research, which well supported the scale ($X^2=74.701$, $df=24$, $p=0.000$; CFI = 0.969 > 0.9, TLI = 0.954 > 0.9, SRMR = 0.054 < 0.08). Then, step-wise multiple regression analysis was run to examine the predictive effects of emotions on test performance, with test scores as the dependent variable and ELCAS, ECES scales and ELCBS as independent variables. The analysis yielded four models, as summarized in Table 4, which shows that ELCAS, PES, TAS and ELCBS were good predictors for students' English performance, accounting for 15.6, 8, 2 and 1% of the total variance respectively. Of the predictors, PES ($\beta=0.348$, $t=6.217$, $f^2=0.30$) was positive but ELCAS ($\beta=-0.277$, $t=-6.712$, $f^2=0.18$), TAS ($\beta=-0.178$, $t=-3.592$, $f^2=0.34$) and ELCBS ($\beta=-0.117$, $t=-2.65$, $f^2=0.35$) were negative, all having a large effect size.

Discussion

Emotions experienced in English language class

Interview data showed that the interviewees generally experienced anxiety, enjoyment and boredom in their English language classes, with other emotions sporadically reported: helplessness, being enlightened, being lost, surprise, embarrassment, being empathetical, disappointment and hurt, and being puzzled. This finding shows that learners may experience various emotions in SL/FL classrooms, as discussed in the broaden-and-build theory^{4,7}.

Enjoyment in English language class

This study found that 25 interviewees reported experiencing enjoyment in their English language class to varying degrees because of learner-internal (e.g., they made progress, learned new things and liked to communicate with others) and external (e.g., the teacher was good and the classroom atmosphere was good) reasons. These findings were generally consistent with those in similar studies^{8,9,25,30,43}. The reported high percentage might be attributed to two reasons: (a) As students of the Top-Notch Program, the interviewees had high self-efficacy in English learning and enjoyed good English learning resources, (b) the courses offered to students of the Top-Notch Program were carefully designed and challenging. This, however, needs to be further researched.

Anxiety in English language class

Interview data also revealed that 10 out of 26 interviewees did not feel anxious in their English language class mainly because of a good and helpful classroom environment (e.g., the teacher and peers were helpful and encouraging), appropriate input (e.g., they could follow the teacher), and their own willingness to and confidence in learning English well. This was partially in line with the strategies reported by students to make them less anxious in foreign language class in other studies^{22,25}. The other 16 interviewees did experience anxiety to varying degrees. The reasons were diverse, including linguistic (e.g., not-standard pronunciation), incomprehensible input (e.g., could not understand what was said), psychological (e.g., fear of speaking in front of the class), peer

	Test performance				
	β	t	p	VIF	Cohen's f^2
ELCAS 0.156	-0.277	-6.712**	0.000	1.191	0.18
PES 0.233	0.348	6.217**	0.000	2.193	0.30
TAS 0.251	-0.178	-3.592**	0.000	1.722	0.34
ELCBS 0.260	-0.117	-2.65**	0.008	1.359	0.35

Table 4. Multiple regression coefficients and significance of predictors for English Performance ($N=520$). $**=p \leq 0.01$; $*=p \leq 0.05$. Effect size of Cohen's f^2 : small = $f^2 \leq 0.02$; medium = $f^2=0.15$; large = $f^2 \geq 0.35$ ⁵².

pressure (e.g., peers knew more), unfamiliarity with the topic (e.g., the teacher talked about unfamiliar content knowledge), lack of preparation and teacher factors (e.g., the teacher was rather strict and demanding). These causes could also be grouped into learner-internal and external categories and were largely consistent with those reported in other relevant studies^{4,12,22,30,32}. Nevertheless, such reasons as past experiences, lack of confidence, lack of practice and task difficulty were not reported in the current study, which was probably because all the participants used to be top and outstanding students in their home middle schools. They had been hard-working and confident. Yet, after becoming a member of top-notch students, they realized that other students were equally or even more outstanding, which explained why most of their anxiety-provoking causes concerned with peer pressure, peer competition and their own use of English and psychological state.

Boredom in English language class

This study revealed that of 26 interviewees, 8 interviewees did not feel bored in their English language class, because (a) They were attentive in class, (b) They were busy with tasks and activities, and (3) What was taught was meaningful, interesting and/or challenging. The other 18 reported feeling bored to different degrees in their English language class, because (a) The teaching was exam-oriented, (b) What was taught was easy, incomprehensible, abstract or theoretical, (c) The class was quiet, and (d) The teacher dominated the class. The causes were generally related to the teacher's choice and use of language materials and classroom activities, largely conforming to those in similar studies on boredom^{14,45,46}. Thus, to engage students in classroom teaching and learning, it is important for teachers to carefully prepare comprehensible yet challenging materials and tasks and give students chance to use the language as much as possible, especially when learners are talented, hard-working and have strong belief in their ability to learn the language well. Yet, since not much research has explored the causes for language classroom boredom, more qualitative studies are needed to better understand this issue.

It should be noted that English classroom anxiety, enjoyment and boredom levels reported by the interviewees exceeded those reported in survey responses presented in Table 1 and other quantitative studies^{10,21,28,42}. This was probably because when interviewed, the interviewees consciously looked over various moments and identified moments of anxiety, enjoyment and boredom in their English language class while students might pay more attention to their general feelings of anxiety, enjoyment and boredom in foreign language class when responding to survey items. Nevertheless, this needs to be verified by more empirical evidence.

Relations among English language classroom enjoyment, anxiety and boredom

Statistical analyses revealed that English language classroom anxiety, enjoyment and boredom were significantly related to one another in the current research. English language classroom anxiety (ELCAS) was significantly positively related to teacher appreciation (TAS) but negatively to personal enjoyment (PES). This finding was partially consistent with that in the existing studies^{9,12,19,34,49}. The significantly positive relationship between ELCAS and TAS might be because the teacher was challenging and demanding, which was appreciated by the students yet provoked anxiety in them as well, as reported by the interviewees. ELCAS was also significantly positively related to English language classroom boredom (ELCBS) while ECES scales were all significantly negatively correlated with the latter, as found in Dewaele et al.⁹, Zhao and Wang¹⁹ and Li and Wei²⁸. This clearly indicates that if students enjoy the class they feel less bored or anxious.

These findings reveal the close relationships among learner emotions in English language class, suggesting a necessity to adopt appropriate strategies to enhance students' enjoyment and reduce their anxiety and boredom in class. This can be done by creating a supportive and harmonious classroom atmosphere, setting challenging yet achievable short-term and long-term goals, selecting proper input, assigning and scaffolding tasks and activities, and so on^{10,12,29,31}.

Effects of English language classroom enjoyment, anxiety and boredom on students' English performance

Statistical analyses showed that ELCAS and ELCBS were significantly negatively but ECES scales (except for TAS) were significantly positively related to the students' test scores. Regression analysis indicated that PES (Personal Enjoyment Scale) significantly positively while ELCAS (English Language Classroom Anxiety Scale), TAS (Teacher Appreciation Scale) and ELCBS (English Language Classroom Boredom Scale) significantly inversely predicted students' English test performance. These findings generally support those in other relevant studies^{5,9,28,29,42,45,48}.

Meanwhile, interview data revealed that anxiety caused 3 interviewees to avoid speaking English, 1 to withdraw from the class and 2 to read from the scripts translated from Chinese into English. As found in many studies in other contexts^{1,5,22,29,33}, anxiety is detrimental to the learning of a SL/FL. Surprisingly, anxiety motivated the other 18 interviewees to work harder: They would search for more materials, seek help, review and do more practice. Though anxiety was reported to be facilitating in some earlier studies^{4,25,31}, anxiety seemed to be a stronger motivator in the current study, which might be because the interviewees, as outstanding students, had a strong belief in their own ability to learn English well and had the courage to confront and overcome challenges. This finding further indicates that anxiety, if used appropriately, can enhance students' motivation to study the SL/FL, which deserves further research.

Concurrently, the interviewees reported that enjoyment would motivate them to become more active, attentive and engaged in class, and to study English harder both in and outside the classroom, further supporting the finding that FLE positively affects SL/FL learning^{9,10,12,30,33,40}. Nevertheless, it should be noted that some interviewees only remembered some words and expressions from their English language class. This indicates that the teacher had better inform students of the objectives of the course as well as of each lesson and why different activities are organized in class so that students can attend to both meanings and forms of the content.

Meanwhile, boredom, as reported by the interviewees, would cause them to become absent-minded or play with their phones but might not affect their learning of English because many of them would still study on their own (e.g., reviewing notes and lectures, working on assignments, or practicing reading or writing). Since not much research on language classroom boredom is available, more research is needed to confirm these findings.

When working together, these emotions interacted and the effects of certain emotion might be neutralized by other emotions, as reported in earlier studies^{5,28,34}. All these findings clearly reflect the complexity of English language classroom anxiety, enjoyment and boredom in SL/FL learning, as discussed in Dewaele et al.³⁴. While lending support for the roles of positive and negative emotions discussed in the broaden-and-build theory^{4,7}, these findings imply that negative emotions may also broaden learners' thought-action repertoire to a certain extent rather than simply narrow it, motivate learners to become more proactive and then contribute to language learning as well. Likewise, positive emotions do not necessarily lead to good learning results. Nevertheless, due to the complex nature of emotions, whether they work so only in specific learner populations or learning contexts (e.g., the high-performing students of the Top-Notch Program in the present study) remains a question, which calls for more research with triangulated data on learners with varying backgrounds to better understand the underlying mechanisms of the emotions. Consequently, when adopting coping strategies to reduce negative emotions and boost positive emotions, instructors had better be careful in clarifying course and lesson objectives, designing appropriately challenging tasks and activities and setting challenging yet achievable goals^{10,21}.

Conclusion

The present study revealed the following major findings on emotions in Chinese top university students: (1) The participants experienced a diversity of emotions in their English language class, but the most frequently experienced emotions were anxiety, enjoyment and boredom due to both learner-internal and external reasons, (2) the survey participants reported a moderate level of anxiety, a relatively high level of enjoyment, and a low level of boredom in their English language class, (3) the students' English language classroom anxiety, enjoyment and boredom were generally significantly related to one another, (4) English language classroom anxiety and boredom significantly negatively while enjoyment significantly positively predicted the students' English test performance, and (5) English language classroom anxiety served as both a debilitator and a facilitator; enjoyment served mainly as a facilitator; boredom might cause some students to be absent-minded or play with phones, most students would study on their own when feeling bored.

These findings further pinpoint the important roles of learner emotions in SL/FL learning. Thus, it is beneficial for instructors to boost learners' confidence (e.g., by giving more positive feedback and encouraging students (more) often), maintain a harmonious and democratic classroom atmosphere, take into consideration the capability and capacity of individual students when selecting teaching materials and designing classroom activities, build a sound student-teacher relationship (e.g., by being friendly and supportive), engage students in different tasks to use the language, and make good use of technology in the classroom to keep students occupied in different ways. Meanwhile, these findings not only further highlight the complexity of learner emotions in SL/FL class but call us to be discrete about learner emotions, as found in Dewaele et al.^{8,9}. For example, anxiety may be a good motivator for students, especially those who have great self-efficacy in their ability to learn a SL/FL well; enjoyment may indicate that a class is good and interesting but students may not remember anything after the class. Hence, though teachers should not be too strict as discussed in Jiang and Dewaele³⁰, teachers should set high demands for high-performing and confident students to drive them to work harder. While organizing various classroom activities to enhance students' interest and motivation, teachers need to clarify the objectives of each class and guide students through classroom activities to ensure that they know what they are expected to do and what they have achieved.

Leaners should be aware of the existence of different emotions associated with SL/FL learning, be rational about them, and learn to regulate them (e.g., by breathing deeply, sharing with peers, and focusing on learning goals and objectives, etc.). After having experienced an emotion, they had better examine the emotion introspectively to better understand its causes and impacts on their SL/FL learning. This is crucial for students to take coping strategies accordingly, especially when the causes are more learner-related. It is also helpful if they can adapt themselves to the teacher's way of teaching, focus on the content and make good use of the resources (e.g., their own high self-efficacy and learning ability, and the learning environment, etc.) available to them. This mixed-method study investigated emotions in English language class in Chinese university students of the Top-Notch Program, a group of outstandingly talented students whose learning of SLs/FLs has seldom been explored. Because of this, the findings need to be confirmed in similar research and carefully considered when they are generalized to other learner populations.

Ethics approval and consent to participate

The research was approved by Tsinghua University Science and Technology Ethics Committee (Humanities, Social Sciences and Engineering). We confirm that all methods were carried out in accordance with relevant guidelines and regulations. All the participants were informed of the research and a consent form was obtained from each participant.

Data availability

Data shall be available upon request to M.L.

Received: 6 January 2024; Accepted: 17 July 2024
Published online: 29 August 2024

References

- Botes, E., Dewaele, J.-M. & Greiff, S. The foreign language classroom anxiety scale and academic achievement: An overview of the prevailing literature and a meta-analysis. *J. Psychol. Lang. Learn.* **2**, 26–56 (2020).
- Botes, E., Dewaele, J. M. & Greiff, S. Taking stock: A meta-analysis of the effects of foreign language enjoyment. *Stud. Second Lang. Learn. Teach. (SSLT)* **12**(2), 205–232. <https://doi.org/10.14746/sslrt.2022.12.2.3> (2022).
- Horwitz, E. K., Horwitz, M. B. & Cope, J. A. Foreign language classroom anxiety. *Mod. Lang. J.* **70**(2), 125–132. <https://doi.org/10.1111/j.1540-4781.1986.tb05256.x> (1986).
- Fredrickson, B. L. The value of positive emotions. *Am. Sci.* **91**(4), 330–335. <https://doi.org/10.1511/2003.26.865> (2003).
- Bailey, K. M. Competitiveness and Anxiety in Adult Second Language Learning: Looking at and Through the Dairy Studies. In *Classroom Oriented Research in Second Language Acquisition* (eds Seliger, H. W. & Long, M. H.) 67–103 (Newbury House Publishers Inc, 1983).
- Li, C. & Han, Y. The predictive effects of foreign language anxiety, enjoyment, and boredom on learning outcomes in online English classrooms. *Modern Foreign Lang.* **45**(2), 207–219 (2022).
- MacIntyre, P. D. & Gregersen, T. Emotions that facilitate language learning: The positive-broadening power of the imagination. *Stud. Second Lang. Learn. Teach.* **2**, 193–213 (2012).
- Fredrickson, B. The broaden-and-build theory of positive emotions. *Philos. Trans. R. Soc. B-Biol. Sci.* **359**(1449), 1367–1377 (2004).
- Dewaele, J. M., Albakistani, A. & Ahmed, I. K. Is flow possible in the emergency remote teaching foreign language classroom?. *Educ. Sci.* **12**(7), 444. <https://doi.org/10.3390/educsci12070444> (2022).
- Dewaele, J. M., Albakistani, A. & Ahmed, I. K. Levels of foreign language enjoyment, anxiety and boredom in emergency remote teaching and in-in person classes. *Lang. Learn. J.* **52**(1), 117–130. <https://doi.org/10.1080/09571736.2022.2110607> (2024).
- Dewaele, J. M. & MacIntyre, P. D. The two faces of Janus? Anxiety and enjoyment in the foreign language classroom. *Stud. Second Lang. Learn. Teach.* **4**, 237–274. <https://doi.org/10.14746/sslrt.2014.4.2.5> (2014).
- Dewaele, J.-M., Witney, J., Saito, K. & Dewaele, L. Foreign language enjoyment and anxiety in the FL classroom: The effect of teacher and learner variables. *Lang. Teach. Res.* **22**(6), 676–697. <https://doi.org/10.1177/1362168817692161> (2017).
- Xu, Y. & Liu, M. Relations among and predictive effects of interpreting classroom anxiety, enjoyment and self-efficacy on Chinese interpreting majors' self-rated interpreting competence. *Educ. Sci.* **13**, 436. <https://doi.org/10.3390/educsci13050436> (2023).
- Dewaele, J. M. & Li, C. Teacher enthusiasm and students' social-behavioral learning engagement: The mediating role of student enjoyment and boredom in Chinese EFL classes. *Lang. Teach. Res.* **25**(6), 922–945. <https://doi.org/10.1177/13621688211014538> (2021).
- Kruk, M. Investigating the experience of boredom during reading sessions in the foreign language classroom. *J. Lang. Educ.* **7**(3), 89–103. <https://doi.org/10.17323/jle.2021.12339> (2021).
- Kruk, M., Pawlak, M., Shirvan, E., Taherian, T. & Yazdamehr, E. A longitudinal study of foreign language enjoyment and boredom: A latent growth curve modeling. *Lang. Teach. Res.* <https://doi.org/10.1177/13621688221082303> (2022).
- Li, C., Dewaele, J.-M. & Hu, Y. Foreign language learning boredom: Conceptualization and measurement. *Appl. Linguist. Rev.* **14**(2), 223–249. <https://doi.org/10.1515/applirev-2020-0124> (2023).
- Barrios, E. & Acosta-Manzano, I. Foreign language enjoyment and subjective happiness in Spanish adult learners. *J. Lang. Educ.* **8**(2), 66–79. <https://doi.org/10.17323/jle.2022.13506> (2022).
- Zhou, L., Dewaele, J.-M., Lochtman, K. & Xi, Y. Foreign language peace of mind: A positive emotion drawn from the Chinese EFL learning context. *Appl. Linguist. Rev.* **15**(5), 1385–1410. <https://doi.org/10.1515/applirev-2021-0080> (2023).
- Zhao, X. & Wang, D. The role of enjoyment and boredom in shaping English language achievement among ethnic minority learners. *J. Multiling. Multicult. Dev.* <https://doi.org/10.1080/01434632.2023.2194872> (2023).
- Botes, E., van der Westhuizen, L., Dewaele, J.-M., MacIntyre, P. & Greiff, S. Validating the short-form foreign language classroom anxiety scale. *Appl. Linguist.* **43**(5), 1006–1033. <https://doi.org/10.1093/applin/amac018> (2022).
- Dewaele, J. M. & Dewaele, L. Are foreign language learners' enjoyment and anxiety specific to the teacher? An investigation into the dynamics of learners' classroom emotions. *Stud. Second Lang. Learn. Teach.* **10**(1), 45–65. <https://doi.org/10.14746/sslrt.2020.10.1.3> (2020).
- Liu, M. Anxiety in Chinese EFL students at different proficiency levels. *System* **34**(3), 301–316. <https://doi.org/10.1016/j.system.2006.04.004> (2006).
- Liu, M. & Jackson, J. An exploration of Chinese EFL learners' unwillingness to communicate and foreign language anxiety. *Modern Lang. J.* **92**(1), 71–86. <https://doi.org/10.1111/j.1540-4781.2008.00687.x> (2008).
- Kruk, M. & Zawodniak, J. Nuda a praktyczna nauka je Rzyka angielskiego [Boredom and practical learning of English]. *Neofilolog* **49**(1), 115–131 (2017).
- Liu, M. & Hong, M. English language classroom anxiety and enjoyment in Chinese young learners. *Sage Open* **11**(4), 215824402110475. <https://doi.org/10.1177/21582440211047550> (2021).
- Pan, Z. L2 grit and foreign language enjoyment: Arguments in light of control-value theory and its methodological compatibility. *Lang. Related Res.* **13**(5), 325–357. <https://doi.org/10.52547/LRR.13.5.12> (2022).
- MacIntyre, P. D. & Gardner, R. C. Anxiety and second language learning: Toward a theoretical clarification. *Lang. Learn.* **39**(2), 251–275. <https://doi.org/10.1111/j.1467-1770.1989.tb0423.x> (1989).
- Li, C. & Wei, L. Anxiety, enjoyment, and boredom in language learning amongst junior secondary students in rural China: How do they contribute to L2 achievement?. *Stud. Second Lang. Acquis.* **45**, 93–108. <https://doi.org/10.1017/S0272263122000031> (2023).
- Liu, M. Bilingual/Multilingual learners' willingness-to communicate in and anxiety on speaking Chinese and their associations with self-rated proficiency in Chinese. *Int. J. Bilingual Educ. Bilingualism* **21**(1), 54–69. <https://doi.org/10.1080/13670050.2015.1127889> (2018).
- Jiang, Y. & Dewaele, J. M. How unique is the foreign language classroom enjoyment and anxiety of Chinese EFL learners?. *System* **82**, 13–25. <https://doi.org/10.1016/j.system.2019.02.017> (2019).
- Liu, M. Understanding Chinese middle school students' anxiety in English speaking class. *J. Asia TEFL* **15**(3), 721–734. <https://doi.org/10.18823/asiatefl.2018.15.3.721> (2018).
- Resnik, P., Dewaele, J. M. & Knechtelsdorfer, E. Differences in the intensity and the nature of foreign language anxiety in in-person and online EFL classes during the pandemic: A mixed-methods study. *TESOL Quarter.* **57**(2), 618–642. <https://doi.org/10.1002/tesq.3177> (2023).
- Tsang, A. & Dewaele, J. The relationships between young FL learners' classroom emotions (anxiety, boredom, & enjoyment), engagement, and FL proficiency. *Appl. Linguist. Rev.* <https://doi.org/10.1515/applirev-2022-0077> (2023).
- Dewaele, J. M., Botes, E. & Meftah, R. A three-body problem: The effects of foreign language anxiety, enjoyment, and boredom on academic achievement. *Ann. Rev. Appl. Linguist.* **43**, 7–22. <https://doi.org/10.1017/S0267190523000016> (2023).
- Alpert, R. & Haber, R. N. Anxiety in academic achievement situations. *J. Abnormal Soc. Psychol.* **61**, 207–215. <https://doi.org/10.1037/h0045464> (1960).
- Liu, M. Changes, causes and consequences of FLCA: A cohort study with Chinese university EFL learners. *Eur. J. Appl. Linguist. TEFL* **5**(2), 101–120 (2016).
- Liu, M. & Xiangming, L. Changes in and effects of anxiety on English test performance in Chinese postgraduate EFL classrooms. *Educ. Res. Int.* **2019**, 1–11. <https://doi.org/10.1155/2019/7213925> (2019).

39. Dewaele, J.-M., Saito, K. & Halimi, F. How foreign language enjoyment acts as a buoy for sagging motivation: A longitudinal investigation. *Appl. Linguist.* **44**(1), 22–45. <https://doi.org/10.1093/applin/amac033> (2023).
40. MacIntyre, P. D. So Far So Good: An Overview of Positive Psychology and its Contributions to SLA. In *Positive Psychology Perspectives on Foreign Language Learning and Teaching* (eds Gabryś-Barker, D. & Gałajda, D.) 3–20 (Springer International Publishing, 2016). https://doi.org/10.1007/978-3-319-32954-3_1.
41. Botes, E., Dewaele, J.-M. & Greiff, S. The power to improve: Effects of multilingualism and perceived proficiency on enjoyment and anxiety in foreign language learning. *Eur. J. Appl. Linguist.* **8**, 1–28. <https://doi.org/10.1515/eujal-2020-0003> (2020).
42. Botes, E., Dewaele, J. M. & Greiff, S. The development and validation of the short form of the Foreign Language Enjoyment Scale. *Modern Lang. J.* **105**(4), 858–876. <https://doi.org/10.1111/modl.12741> (2021).
43. Dong, L. & Liu, M. Effects of foreign language enjoyment on foreign language test performance: A moderated mediation model. *Modern Foreign Lang.* **45**(2), 195–206 (2022).
44. Li, C. A positive psychology perspective on Chinese EFL students' trait emotional intelligence, foreign language enjoyment and EFL learning achievement. *J. Multiling. Multicult. Dev.* **41**(3), 246–263. <https://doi.org/10.1080/01434632.2019.1614187> (2020).
45. Goetz, T. & Hall, N. C. Academic Boredom. In *Educational Psychology Handbook Series International handbook of emotions in education* (eds Pekrun, R. L. & Linnenbrink-Garcia, I.) 311–330 (Routledge, 2014).
46. Coşkun, A. & Yüksel, Y. Examining English as a foreign language students' boredom in terms of different variables. *Acuity J. English Lang. Pedag Lit. Culture* **7**(1), 19–36 (2022).
47. Kruk, M. & Zawodniak, J. A comparative study of the experience of boredom in the L2 and L3 classroom. *English Teach. Learn.* **44**, 417–437. <https://doi.org/10.1007/s42321-020-00056-0> (2020).
48. Zawodniak, J. & Kruk, M. Boredom in the English language classroom: An investigation of three language learners. *Konin Lang. Stud. (KSJ)* **7**(2), 197–214. <https://doi.org/10.30438/ksj.2019.7.2.5> (2019).
49. Dewaele, J.-M., Meftah, R. & Zhou, L. Why do Moroccan English foreign language learners experience more Peace of Mind (外语平和心态) than Chinese EFL learners and how does it affect their performance?. *Int. J. Appl. Positive Psychol.* <https://doi.org/10.1007/s41042-023-00141-2> (2024).
50. Li, C., Dewaele, J.-M. & Jiang, G. The complex relationship between classroom emotions and EFL achievement in China. *Appl. Linguist. Rev.* **11**(3), 485–510. <https://doi.org/10.1515/apprev-2018-0043> (2019).
51. Creswell, J. W. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (SAGE Publication, 2014).
52. Richards, L. *Handling Qualitative Data* (Sage, 2009).
53. Cohen, J. *Statistical Power Analysis for the Behavioral Sciences* 2nd edn. (Lawrence Erlbaum Associates, 1988).

Author contributions

The authors contributed equally to this work. M. Liu: Conceptualization, Methodology and Original Draft Preparation. X. Wu: Data Analysis, Writing and Resources. F. Yang: Resources and Proofreading.

Funding

2021 Top-Notch Students of Basic Disciplines Training Program 2.0 Project, Grant No. 20222015.

Competing interests

The authors declare no competing interests.

Additional information

Correspondence and requests for materials should be addressed to M.L.

Reprints and permissions information is available at www.nature.com/reprints.

Publisher's note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.



Open Access This article is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License, which permits any non-commercial use, sharing, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if you modified the licensed material. You do not have permission under this licence to share adapted material derived from this article or parts of it. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by-nc-nd/4.0/>.

© The Author(s) 2024