Predictive Effects of English Classroom Anxiety and Motivation on Chinese Undergraduate EFL Learners' English Achievement

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ABSTRACT

Background: Second language (L2) learning is complex, multifaceted, and greatly influenced by various factors, of which individual factors like anxiety and motivation are important ones. Though anxiety and motivation have been shown to be strongly correlated with each other and interact with other variables to collaboratively affect L2 learning, mixed findings have been revealed, demonstrating the complexity of the interrelationship between L2 anxiety and motivation and their interactive effects on L2 learning.

Purpose: Guided by the self-determination theory, this study aimed to explore the levels of and the relationship between English classroom anxiety and motivation as well as their predictive effects on Chinese undergraduate EFL (English as a foreign language) learners' English achievement.

Method: The participants were 571 Chinese university students who answered an 8-item English Classroom Anxiety Scale, a 35-item English Learning Motivation Scale, and a 5-item Demographic Information Questionnaire. They also reported their scores in tests that they had recently taken and self-rated their overall English proficiency as indicators of their English achievement.

Results: The study revealed the following major findings: (a) the participants had a small to moderate level of English classroom anxiety, and a medium level of intrinsic motivation, extrinsic motivation, personal goals and expectancy/control in English learning, (b) English classroom anxiety was significantly negatively correlated with all motivation scales, (c) English classroom anxiety was not only significantly negatively related to but negatively predicted the students' English achievement, and (d) significantly positive correlations existed between English learning motivation and English achievement. Of different motivation dimensions, intrinsic and extrinsic motivation positively predicted the latter.

Conclusion: The findings of this study further demonstrate the importance of anxiety and motivation in L2 learning and the need to explore anxiety-reduction strategies, increase students' intrinsic and extrinsic motivation, and strengthen their expectancy in L2 teaching and learning, thus contributing to the understanding of foreign language anxiety and L2 motivation and enriching the current literature on the two issues.

KEY WORDS

English classroom anxiety, motivation, English achievement, predictive effect

INTRODUCTION

Given the complexity and multifaceted nature of second language (L2) learning, individual factors significantly influence both the learning process and its outcomes (Dörnyei, 2005). Among these factors, foreign language anxiety (FLA) is a prevalent negative emotion experienced by many L2 learners (e.g., Li, Dewaele & Jiang, 2019; Khalaf, 2016, 2017; Khalaf & Omara, 2022; Piniel & Albert, 2018). Motivation is another crucial determinant, driving learners to actively develop their L2 competence (Dörnyei, 1998; Gardner, 1985). Research consistently demonstrates a strong correlation between anxiety and motivation, with both factors interacting with various other variables to collectively influence L2 learning

outcomes (e.g., Alamer & Alrabai, 2022; Al-Hoorie, 2018; Li & Wei, 2023; Teimouri, Goetze & Plonsky, 2019; Zhang, 2019). Nonetheless, the complexity of the interrelationship between L2 anxiety and motivation is evident through the mixed findings in the literature.

Despite extensive research on L2 anxiety and motivation, the intricate nature of these issues, combined with the diversity of learner populations and learning contexts, necessitates ongoing investigation (e.g., Dörnyei, 2005; Scovel, 1978). Much of the existing research on L2 motivation has been guided by Gardner's (1985; Tremblay & Gardner, 1995) or Dörnyei's (2005, 2009) motivational theories. However, there is a notable gap in research utilizing alternative theoretical frameworks such as the expectancy-value theory and the self-determination theory (e.g., Alamer & Lee, 2019; Eccles & Wigfield, 2020). Furthermore, while many studies confirm the interrelationship between FLA and motivation, the complexity of this relationship—potentially influenced by differing measures of FLA and motivation—highlights the need for further research.

In light of these considerations, this study, guided by the self-determination theory (Deci & Ryan, 1985), aimed to explore the levels and interrelationship of English classroom anxiety and motivation, as well as their predictive effects on English achievement among Chinese university EFL (English as a Foreign Language) learners. The research sought to address the following questions:

(1) What are the levels of the students' English classroom anxiety, motivation, and English achievement?

(2) How do the students' English classroom anxiety and motivation predict their English achievement?

LITERATURE REVIEW

Anxiety in L2 Learning

Anxiety is described as "the subjective feeling of tension, apprehension, nervousness, and worry associated with an arousal of the autonomic nervous system" (Spielberger & Gorsuch, 1983, p. 1). This complex emotion can be categorized into various types, including trait anxiety, state anxiety, and situation-specific anxiety (Horwitz, Horwitz & Cope, 1986; Spielberger, Gorsuch & Lushene, 1970). In the early 1970s, when researchers began focusing on anxiety in the context of second language acquisition, they encountered a range of diverse and sometimes conflicting findings, largely due to the use of different measurement instruments (Scovel, 1978). Consequently, Scovel (1978) emphasized the need for researchers to clearly define the type of anxiety under investigation. Subsequently, a consensus emerged that foreign language anxiety (FLA) is a situation-specific form of anxiety, characterized by "the worry and negative emotion-

al reaction aroused when learning or using a second language" (MacIntyre, 1999, p. 27).

As Horwitz et al. (1986) proposed the notion of foreign language classroom anxiety (FLCA), which is "a distinct complex construct of self-perceptions, beliefs, feelings, and behaviors related to classroom language learning arising from the uniqueness of the language learning process" (p. 128), anxiety has been extensively researched in L2 learning in varying contexts via questionnaires, interviews, observations, diaries and so on (e.g., Botes, Dewaele & Greiff, 2020; Chiang, 2010; Dewaele, Botes & Meftah, 2023; Dong, 2021; Dong, Liu & Yang, 2022; Gregersen, 2020; Horwitz et al., 1986; Li & Wei, 2023; Liu, 2022; MacIntyre & Gardner, 1994; Teimouri et al., 2019; Tsang and Dewaele, 2023; Zhang, 2019). These studies generally reveal that anxiety exists in many L2 learners, that anxiety predominantly negatively affects L2 learning, that different factors cause anxiety in L2 learners, and that FLA changes over time. For example, Botes et al.'s (2020) meta-analysis reported that FLCA was negatively correlated with five types of learners' achievement (i.e., reading-, writing-, listening-, speaking-, and general academic achievement). Dong (2021) meta-analyzed research on Chinese EFL learners' FLA and learning outcomes and found a moderate negative correlation between the two variables. Liu and Xu (2021) examined how foreign language listening anxiety (FLLA) affected Chinese university students' English listening test performance and how proficiency and gender mediated FLLA's effects on English listening test performance. They collected data from two different populations at two universities in China. The study showed that when working alone, FLLA significantly negatively predicted students' English listening test performance, and that when working with proficiency and gender, English proficiency level, gender and FLLAS2 (proficiency in English listening) significantly predicted the latter.

Meanwhile, Strack et al. (2014) suggested that although anxiety is generally debilitating, there are certain people who can be pushed to try harder when facing difficulties and experiencing anxiety. This was confirmed by Bailey's (1983) diary study of anxiety when she was learning French as a foreign language and Liu and Xiangming's (2019) study that anxiety sometimes motivated students to study harder. Evidently, more research is needed to better understand the roles of anxiety in L2 learning.

Motivation in L2 Learning

Motivation is often regarded as a multifactorial trait and has garnered increasing attention since the 1950s (e.g., Gardner, 1985; Dörnyei, 2005, 2009; Yu, Peng & Lowie, 2022). Gardner (1985) introduced a socio-psychological model of L2 motivation, identifying three core components: the effort invested in achieving language learning goals, the desire to accomplish this, and the satisfaction derived from learning the language. The theory further distinguishes between in-

tegrative and instrumental motivation. Integrative motivation refers to the «motivation to learn a second language because of positive feelings towards the community that speaks the language» (Gardner, 1985, p. 82). In contrast, instrumental orientation highlights the practical benefits and values of learning a second language.

Alongside the publication of the self-determination theory on L2 motivation, numerous studies have investigated L2 motivation (e.g., Gardner, 1985; Masgoret & Gardner, 2003; Tremblay & Gardner, 1995). These studies generally demonstrate that motivation significantly benefits L2 learning, that learners are driven to study second and foreign languages by various motives, and that L2 motivation can be influenced by diverse factors. For instance, Masgoret and Gardner (2003) conducted a meta-analysis on L2 motivation, confirming the positive relationship between integrative motivation and L2 achievement. Building on these findings, Tremblay and Gardner (1995) introduced new concepts such as goal, persistence, and attention into the socio-psychological L2 motivation model, leading to the proposal of the socio-educational L2 motivation model.

Dörnyei (2005, 2009) incorporated the concept of self into the motivation construct and proposed the L2 motivational self-system theory (L2MSS), whose core elements are ideal L2 self, ought-to L2 self and L2 experience. The relationship between the three components of L2MSS and L2 achievement has been explored in depth after L2MSS gradually became the "dominant framework" for L2 motivation studies in the recent decade (e.g., Al-Hoorie, 2016, 2018; Li & Zhang, 2021). For example, in Moskovsky et al. (2016), 360 first-year non-English majors at two Saudi universities answered the L2MSS questionnaire and took IELTS reading and writing practice tests. The results showed that the three L2MSS components positively predicted the students' intended learning efforts but were not consistently associated with their performance in IELTS reading and writing tests. Al-Hoorie (2016) collected data from 311 male EFL learners at a Saudi Arabian higher education institution and found that the students' English achievement was negatively correlated with their ought-to L2 self and insignificantly correlated with their ideal L2 self. Li and Zhang (2021) surveyed 198 Tibetan students from two bilingual high schools where Tibetan was the teaching language and Chinese was a required course. The results showed that all three components of the L2MSS either directly or indirectly predicted Tibetan students' intended effort to learn Chinese as a second language, and that the students' ideal L2 self positively but their ought-to L2 self negatively predicted their L2 achievement. Al-Hoorie (2018) meta-analyzed 32 studies of L2MSS which covered 39 samples and 32,078 learners, and found that the three components significantly predicted the students' intended effort and weakly predicted their L2 achievement.

Among the various motivation theories proposed, the self-determination theory (Deci & Ryan, 1985; Urhahne & Wijnia, 2023) has been extensively employed in empirical studies to explain motivation in L2 learning. According to this theory, individuals possess innate self-organizational drives towards psychological growth and require supportive conditions to fulfill three fundamental psychological needs: competence, relatedness, and autonomy. The theory categorizes motivational orientations into three types: intrinsic motivation, extrinsic motivation, and amotivation.

Intrinsic motivation refers to engaging in a behavior out of inherent interest and enjoyment. Extrinsic motivation involves performing a behavior to obtain external rewards or avoid punishment. Amotivation is characterized by a lack of perceived competence, value, or interest (Ryan & Deci, 2017). Compared to external pressure, intrinsic motivation is generally considered the primary driver of lifelong learning behavior (Ryan & Deci, 2017). Research has demonstrated that both intrinsic and extrinsic goals can predict L2 learning outcomes (e.g., Phan et al., 2020; Schmidt, Boraie & Kassabgy, 1996; Wang & Lee, 2019).

Based on these concepts, Schmidt et al. (1996) proposed an L2 motivation model involving nine components, including intrinsic orientation and extrinsic orientation, expectation of success, and so on. They also designed a 50-item motivation questionnaire to measure Arabic students' English learning motivation levels. Factor analyses extracted seven dimensions out of the scale: 5-item Intrinsic Motivation, 15-item Extrinsic Motivation, 5-item Personal Psychological Needs, 9-item Expectations and Locus of Control, 4-item Attitudes, 6-item Anxiety, and 6-item Motivational Strength. Administering this questionnaire and other scales to 152 Vietnamese university students, Phan et al. (2020) found that the participants were mainly extrinsically motivated and thus advised instructors to increase intrinsic motivation by making language learning fun and relevant to students' interests and passions.

Together with the self-determination theory (e.g., Alamer & Almulhim, 2021; Alamer & Lee, 2019), other motivational theories such as the expectancy-value theory (Atkinson, 1957; Dong et al., 2022; Urhahne & Wijnia, 2023) and the control-value theory (Li & Wei, 2023) have been applied to explain L2 motivation and its relationship with L2 achievement in recent years. For example, Nagle (2021) adopted the expectancy-value theory to study the interrelationships among L2 Spanish learners' motivation, persistence, and L2 achievement. The participants were 79 college English-speaking students who enrolled in a Spanish course. They completed a survey on expectancy-value motivation, L2 learning experience and classroom willingness to communicate, and took the course's final examination. The study showed that expectancy of success significantly predicted L2 achievement and that intrinsic value was significantly correlated with the learners' persistence and motivated behavior. In order to explore the interaction of expectancy-value beliefs and academic oral communication (AOC) anxiety

in bilingual Chinese postgraduate students while they were learning academic oral English over a period of a semester, Liu and Dong (2021) collected interview and questionnaire data from 74 Chinese postgraduate learners of English at two time points of the semester. The study showed that one-third to half of the participants experienced AOC anxiety and had a low expectancy of themselves about AOC, and that more than half of them held high attainment, intrinsic value, utility value and cost value of AOC in English.

Although such research has been increasing in recent decades, it remains limited as most motivation studies are guided by Gardner's (1985) L2 motivation model or Dörnyei's L2MSS (2005, 2009). As Dörnyei and Ushioda (2021) suggested, "no theory of motivation is likely to grasp the whole picture" (p. 9). Therefore, more research is necessary to explore L2 motivation from various perspectives and provide a more comprehensive understanding of motivation in L2 learning.

Relations between Foreign Language Anxiety and Motivation

The relationship between FLA and motivation has long been discussed. According to the affective filter theory (Krashen, 1985), if learners are highly motivated and less anxious, the filtering effects will be weaker, thus leading to better learning outcomes. Subsequent research shows that both FLA and motivation interact with each other and various other factors to affect SL/FL learning, or that their relations with SL/FL learning outcomes are moderated by various factors, including age, gender, educational level, motivation, strategy use, and so on (e.g., Dong et al., 2022; Gardner, 1985; Liu & Xu, 2021; Teimouri et al., 2019; Zhang, 2019). For example, Dong et al. (2022) revealed a negative correlation between FLA and L2 motivation; Tahmouresi and Papi (2021) found that Iran university students' L2 writing anxiety positively predicted their writing motivation but negatively predicted their L2 writing achievement. Alamer and Almulhim (2021) found that Saudi EFL university students' controlled motivation positively predicted their general language anxiety. Wu and Lin (2014) found that Taiwanese university students' L2 motivation was negatively correlated with L2 anxiety, while L2 anxiety mediated the association between L2 motivation and L2 performance. Liu and Dong's (2021) longitudinal study indicated that expectancy negatively predicted AOC anxiety at time 1 while expectancy, intrinsic value and cost value powerfully predicted the latter at time 2. Pan and Zhang (2021) focused on 55 Chinese undergraduate English majors and found that their FLA was insignificantly correlated with their ideal L2 self but significantly correlated with their ought-to L2 self and motivated behaviors.

The literature reviewed above shows that foreign language anxiety and motivation are indeed related to each other although findings are not always consistent. This inconsistency might be due to the use of different measures of anxiety and motivation in the studies, which justifies continuous research on the relationship of the two.

METHOD

Participants

Most college students in China are required to take compulsory English language courses during their first and second years, with the option to enroll in advanced English courses during their third and fourth years. To maximize participant recruitment, this research employed random sampling. A link to the questionnaires used in this study was created on Wenjuanxing, a data collection platform in China, and distributed to potential university students in Beijing.

This sampling method resulted in a total of 571 participants (238 males and 333 females) from various universities in Beijing. The participants' ages ranged from 18 to 26 years (M = 20.18, SD = 1.57). Among the respondents, 154 were first-year students, 254 were sophomores, 105 were juniors, and 58 were seniors. Additionally, 279 (48.86%) majored in engineering, 276 (48.34%) studied humanities and social sciences, and 16 (2.80%) pursued natural sciences.

Instruments

The questionnaire used in this study covered four dimensions: demographic information, English achievement, English classroom anxiety, and motivation. Both anxiety and motivation questionnaires were adapted from the existing literature (Gardner, 1985; Schmidt et al., 1996) and were rated on a 5-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, and 5 = strongly agree).

Background Information Questionnaire

The demographic information questionnaire was used to obtain background information, such as age, gender, grade, discipline and the time spent learning English per day.

English achievement

Students' English achievement was measured by their English test scores and self-ratings. The participants were asked to report their scores in the English tests that they had recently taken, which were then standardized on the scale of 1 to 100. They were also asked to self-rate their overall English proficiency on the scale of 1 (very poor) to 10 (native-like).

English Classroom Anxiety Scale

The eight-item English Classroom Anxiety Scale (ECAS) was adapted from the French Classroom Anxiety Scale developed by Gardner (1985), with the expression 'French' be-

ing changed into 'English'. Intending to measure students' anxiety in English classrooms, the ECAS proved to be highly reliable in the present study (Cronbach's alpha a = .77), as did the original scale (Gardner & MacIntyre, 1993). This scale was employed because it was short, unidimensional and fit the purpose of the present research. Moreover, using short-form measures can reduce the time required for survey completion and allow researchers to include more scales in the questionnaire (Heene et al., 2014).

English Learning Motivation Scale

The 35-item English Learning Motivation Scale (a = .86) (ELMS) used in this study was adapted from the Foreign Language Motivation Scale in Schmidt et al. (1996). To better fit the present research, three modifications were made: a) The expression 'Egypt' was changed into 'China', b) a new item "I study English because I want to study abroad" was added to the extrinsic motivation dimension, and c) items concerning attitudes, anxiety and motivational strength were excluded. The final ELMS had 35 items and covered four dimensions: (a) Intrinsic motivation (a = .79) (5 items) (e.g., 'I enjoy learning English very much'), (b) extrinsic motivation (a = .78) (16 items) (e.g., 'English is important to me because it will broaden my view'), (c) personal psychological goals (a = .62) (5 items) (e.g., 'I really want to learn more English than I have done in the past'), and (d) expectancy/control components (a = .57) (9 items) (e.g., 'This English class will definitely help me improve my English').

Data Collection and Analysis

The study was approved by the Research Committee of the Department. Then, all of the questionnaire items were translated into Chinese, back translated into English and double-checked by the researchers, and then distributed to students online accompanied by a consent form in the middle of a semester when different English tests (e.g., course mid-term exam, college English Test bands 4 & 6, TOFEL, IELTS, etc.) were held. All participation was voluntary. Finally, 651 questionnaires were received, of which 571 were valid for further analysis.

SPSS 27.0 was used to remove missing and abnormal data, assess the reliability of the scales, and conduct a series of analyses to answer the research questions, including descriptive statistics, correlation analysis, and multiple stepwise regression analysis.

RESULTS

Levels of English Classroom Anxiety, Motivation and English Achievement

To explore students' levels of English classroom anxiety, motivation and English achievement, means and standard deviations (SD) of the scales were computed. The results are presented in Table 1, which shows that all the measures had a normal distribution. As shown in Table 1, the participants scored 2.89 (SD = .71) on ECAS, below the scale midpoint 3, suggesting that they experienced a low to medium level of English classroom anxiety. Meanwhile, the participants scored 3.10 (SD = .84) on IM, 3.14 (SD = .51) on EM, 3.40 (SD = .66) on PG and 2.98 (SD = .46) on EC, above or around the scale midpoint 3, indicating that the participants generally had a medium level of intrinsic motivation, extrinsic motivation, personal goals, and expectancy/control in English learning.

Table 1 also shows that the participants had a mean test score of 71.91 (SD = 9.91) and a mean of 5.72 (SD = 1.92) in self-rated overall English proficiency, indicating that the respondents were generally intermediate English learners.

Table 1

Means and standard deviations of and correlations between ECAS and ELMS scales (N = 571)

	Mean	SD	skewness	ECAS	IM	EM	PG	EC	STS	SOEP
ECAS	2.89	.71	1.81	1						
IM	3.10	.84	-.119	-.52**	1					
EM	3.14	.51	.014	-.28**	.30**	1				
PG	3.40	.66	-.190	-.28**	.32**	.66**	1			
EC	2.98	.46	.310	-.10*	.11**	.49**	.46**	1		
STS	71.91	9.91	-.094	-.22**	.26**	.08	.15**	-.01	1	
SOEP	5.72	1.92	-.413	-.38**	.43**	.25**	.24**	.06	.41**	1

Note. * = $p \leq .05$; ** = $p \leq .01$; ECAS = English Classroom Anxiety Scale; IM = intrinsic motivation, EM = extrinsic motivation, PG = personal goals, EC = expectancy/control, STS = standardized test scores, SOEP = self-rated overall English proficiency coefficient of determination: small = $r \leq 0.1$; medium = $r = 0.3$; large = $r \geq 0.5$ (Cohen, 1988)

Correlations between English Classroom Anxiety and Motivation

As shown in Table 1, ECAS was significantly negatively correlated with the ELMS scales (r = -.10 ~ .52, p < .05), suggesting that students who were more anxious in English classrooms were generally less motivated to learn English by intrinsic motivation, extrinsic motivation, or personal goals, and had lower expectancy/control of English learning. Moreover, ECAS was significantly negatively correlated with the student's standardized test scores (STS) (r = -.22, p ≤ .01) and self-rated overall English proficiency (SOEP) (r = -.38, p ≤ .01), meaning that a more anxious respondent tended to have lower English achievement.

Meanwhile, IM, EM and PG were generally significantly positively related to STS (r = .15 ~ .26, p ≤ .01) and SOEP (r = .24 ~ .43, p ≤ .01), indicating that a more motivated student tended to have higher English achievement. Surprisingly, EC was not significantly related to STS or SOEP.

Table 1 also reports a significantly positive correlation between STS and SOEP (r = .41, p ≤ .01), suggesting that a respondent who obtained a higher score in the English test self-rated his/her overall English proficiency higher.

Predictive effects of English Classroom Anxiety and Motivation on English Achievement

Multiple stepwise regression analyses were run to investigate the predictive effects of English classroom anxiety and motivation on students' English achievement, with ECAS and ELMS scales as independent variables and STS and SOEP as the dependent variable respectively. The results are reported in Table 2.

As shown in Table 2, regression analyses produced two models for STS, which shows that IM (intrinsic motivation)

and ECAS (English Classroom Anxiety Scale) were powerful predictors for students' standardized test scores (STS). Namely, IM (β = .199, t = 4.227, p = 0.000) positively and ECAS (β = -.118, t = -2.496, p = 0.013) negatively predicted the participants' test performance, with a medium but to the lower end effect size.

Table 2 shows that regression analyses produced three models for SOEP, which shows that IM, ECAS and EM (extrinsic motivation) were powerful predictors for the students' self-rated overall English proficiency (SOEP). Namely, IM (β = .294, t = 6.703, p = 0.000) and EM (β = .106, t = 2.711, p = 0.007) positively while ECAS (β = -.200, t = -4.583, p = 0.000) negatively predicted the participants' self-rated overall English proficiency, with a medium but to the higher end effect size.

DISCUSSION

This study not only showed that the English Classroom Anxiety Scale and the English Learning Motivation Scale were highly reliable but also that they were significantly negatively correlated with each other, as reported in similar studies (e.g., Dong et al., 2022; Pan & Zhang, 2021, Wu et al., 2022). Nevertheless, since some studies revealed mixed findings (e.g., Liu & Dong, 2021; Pan & Zhang, 2021), more research is required to better understand the relation of the two issues and to explore causes that may affect the relation.

Levels of the Students' English Classroom Anxiety, Motivation and English Achievement

Statistical analyses showed that the participants had a small to medium level of English classroom anxiety (mean = 2.89), consistent with the finding in Liu (2022) and Wu et al. (2022) which also targeted Chinese university EFL students and in Tsang and Dewaele's (2023) study of Hong Kong young learners. One possible reason was that Chinese college

Table 2

Multiple regression coefficients and significance of predictors for students' English achievement (N = 571)

Predictors	1. STS				
	β	t	p	VIF	Cohen's f²
IM	.199	4.227**	.000	1.369	.071
ECAS	-.118	-2.496*	.013	1.369	.081
Predictors	2. SOEP				
	β	t	p	VIF	Cohen's f²
IM	.294	6.703**	.000	1.421	.225
ECAS	-.200	-4.583**	.000	1.402	.277
EM	.106	2.711**	.007	1.127	.291

*Notes. * = p ≤ .05; ** = p ≤ .01 effect size of Cohen's f²: small = f² ≤ .02; medium = f² = .15; large = f² ≥ .35 (Cohen, 1988)*

students have become more skilled at learning and using English as they have had increasingly more exposure and access to the language in recent decades. Moreover, as student feedback submitted anonymously at the end of each semester is mandatory and plays an important role in assessing teaching and teacher promotion in Chinese universities, teachers are provided an important source to reflect on their teaching and make adjustments accordingly. Hence, teachers might have realized the influence of anxiety on students' English learning and have implemented various teaching strategies to alleviate it. Nevertheless, a higher level of anxiety (mean = 3.00 ~ 3.40) was found in other studies in similar contexts (e.g., Jiang & Dewaele, 2019; Pan & Zhang, 2021; Su, 2022; Wang & Li, 2022). This might be due to the differences in research settings and populations. For example, both Jiang and Dewaele (2019) and Wang and Li (2022) focused on freshman students at a particular Chinese university; Su (2022) specifically looked at sophomores with intermediate and low levels of English proficiency. In contrast, the participants in this study were intermediate learners of English in different years of study from different universities in Beijing. In a word, various factors may affect anxiety levels experienced by L2 learners (Jiang & Dewaele, 2019). This may also explain the finding that international students in Dewaele and MacIntyre (2014) experienced a low level of anxiety (mean = 2.75). All these justify the necessity of continuous research on foreign language anxiety.

Meanwhile, the study revealed that the participants had a medium level of personal goals (PG), IM (intrinsic motivation), EM (extrinsic motivation), and expectancy/control in English learning (EC) (mean = 2.98~3.40), indicating that the participants were generally (highly) motivated to study English. The findings about IM and EM were similar to those reported in many existing studies (e.g., Schmidt et al., 1996; Zhang, 2019), while not much research on learners' personal goals in L2 learning can be found. Additionally, the respondents' relatively lower expectancy/control was partially consistent with Dong et al.'s (2022) finding that Chinese high school students were "less expectancy-motivated" in English learning (p. 9). This, however, needs to be further researched.

Analyses of standardized test scores and self-ratings indicated that the participants considered themselves intermediate learners of English, as found in Dewaele and Li (2022). This was probably because the students were modest and underestimated their English proficiency, as modesty is often valued in Chinese culture.

Predictive Effects of English Classroom Anxiety and Motivation on English Achievement

Correlation analyses revealed a significantly negative correlation between ECAS and STS and SOPE. Regression analyses showed that ECAS significantly negatively predicted the participants' test scores and self-rated overall English proficiency. These findings suggested that English classroom anxiety was a powerful predictor of students' English achievement. Higher levels of English classroom anxiety might hinder students from performing well in tests and properly rating their own L2 proficiency, further supporting the finding in earlier studies (e.g., Botes et al., 2020; Dewaele et al., 2023; Dong et al., 2022; Li & Wei, 2023; Teimouri et al., 2019; Tsang & Dewaele, 2023; Wu et al., 2022). According to Dörnyei (2005), learners may frequently experience negative emotions like anxiety because of concerns about negative evaluations. FLA thus can impose negative effects at all stages of the L2 learning process, from input to output (MacIntyre & Gardner, 1994). Such unpleasant feelings can make learners uncomfortable with L2 learning and lead to procrastination, lack of confidence, decreased learning efficiency, and even giving up (Liu & Xiangming, 2019). Consequently, research is needed to explore strategies to help learners reduce anxiety in L2 learning (Toyama & Yamazaki, 2021a).

Concurrently, correlation analyses revealed significant positive correlations between ELMS scales and STS and SOEP. Regression analyses showed that intrinsic motivation positively predicted students' STS and SOEP and extrinsic motivation positively predicted SOEP. These findings indicated that motivation was also a powerful predictor of students' English achievement, as found in many existing studies (e.g., Alamer & Lee, 2019; Al-Hoorie, 2018; Dong et al., 2022; Gardner, 1985; Li & Zhang, 2021; Liu & Dong, 2021). These findings also supported the idea that compared with external pressure, intrinsic motivation may be the primary motivation for one's learning behavior throughout life and can predict positive L2 learning outcomes across various educational levels and cultural contexts (Ryan & Deci, 2017). This may be because students who are intrinsically motivated tend to be more persistent in learning.

Though the participants' personal goal was not a significant predictor of their English achievement, it was significantly positively correlated with STS and SOEP. According to goal-related theories, there are various types of motivational goals, such as the mastery goal, performance goal, performance-approach goal and performance-avoidance goal (MacIntyre & Serroul, 2015). A possible explanation for the insignificant predictive effects of goal was that this study only adopted five items to assess the participants' general personal goals in English learning and might fail to reflect the full power of goals in L2 learning.

This study found that expectancy/control was neither significantly correlated with nor predicted the participants' English achievement, different from the finding in Dong et al. (2022). Expectancy is about one's personal beliefs of abilities and effectiveness, the expectations to succeed or fail in per-

forming a task, and the feelings of control over outcomes (Eccles et al., 1983). If students believe that they can control their success and failure in learning, they can expect to gain academic achievement (Findley & Cooper 1983). Generally, the expectancy formed by L2 learners "has important motivational implications, because it also allows us to anticipate and perceive rewards that follow a given behavior" (Tremblay & Gardner, 1995, p. 507). Students with a high expectation of success in finishing certain tasks such as completing a language course are more likely to engage in the task and stick with it longer against difficulties, while learners with lower expectations to succeed are more likely to give up (Pintrich, 1988). As such, the insignificant relation between expectancy/control and English achievement revealed in the present study deserves attention and further research.

Limitations of the Study

This study encountered several limitations. Firstly, the standardized test scores used may not accurately reflect students' English achievement due to variations in test aim, content construct, and difficulty level. For instance, IELTS and TOEFL exams are generally more challenging and comprehensive compared to school course exams. Additionally, self-ratings of L2 proficiency may not be reliable, as students might underestimate their abilities. Future research should employ a standardized test to measure L2 achievement to enhance reliability and validity.

Secondly, the cross-sectional nature of this study did not allow for an examination of how anxiety and motivation evolve over time. Since the effects of anxiety and motivation on L2 learning are dynamic and not static, longitudinal studies are necessary to investigate the ongoing changes in foreign language anxiety, motivation, and their impacts on L2 learning.

Furthermore, this study focused solely on the interaction between anxiety and motivation and their predictive effects on students' English achievement, without considering other potentially influential variables. Future research should explore additional variables such as gender, age, and L2 proficiency to provide a more comprehensive understanding of these interactions. This broader approach will offer deeper insights into the complex relationships affecting L2 learning outcomes.

CONCLUSION

This study uncovered several key findings regarding the levels and relationships between English classroom anxiety and motivation, and their predictive effects on English achievement among Chinese university EFL learners. The results, which were largely anticipated and partially consistent with existing literature, underscore the relevance of using self-determination theory and specific measures to assess L2 anxiety and motivation. Consequently, this study contributes to the broader understanding of foreign language anxiety and L2 motivation, enriching the current literature on these topics.

The findings highlight the dynamic and complex nature of anxiety and motivation, emphasizing their crucial roles in L2 learning and the explanatory power of self-determination theory. Therefore, it is essential to assist students in reducing anxiety and maintaining or increasing their motivation to study a second language. First, teachers should consider employing classroom strategies derived from positive psychology to alleviate students' anxiety and enhance their positive emotions and well-being. Techniques such as promoting positive self-talk and demonstrating empathy can be beneficial. Second, addressing students' psychological needs through immediate and constructive feedback can bolster both intrinsic and extrinsic motivation. Finally, integrating technology and digital leisure activities into teaching can further engage students and support their learning process.

To validate the findings of this study, additional empirical research guided by self-determination theory is necessary. Future investigations should explore the relationships between foreign language anxiety, intrinsic and extrinsic motivation, personal psychological goals, and expectancy/control components in relation to L2 learning. Moreover, research should also focus on developing and testing strategies to reduce learners' anxiety and enhance their motivation to learn a second language.

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DECLARATION OF COMPETING INTEREST

None declared.

AUTHORS' CONTRIBUTION

Meihua Liu: conceptualization; methodology; review and editing.

Tianhao Li: formal analysis; writing original draft; review and editing.

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