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How does anxiety influence language performance? From the perspectives of foreign language classroom anxiety and cognitive test anxiety

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Abstract

This study examined the relationships between students' foreign language classroom anxiety and cognitive test anxiety and their College English Test Band 4 (CET-4) performance. A questionnaire was distributed to 921 Chinese university students to understand the nature and degree of the examined relationships. Follow-up interviews with 12 students were used to shed further light on uncovering mechanisms of relationships found in the survey. Results revealed three factors of anxiety, explaining 43. 14% of the total variance examined in the quesionnaire items. Means, standard deviations, the internal consistency for each factor, and zero-order correlations among the three factors were calculated. Correlation and multiple regression of the anxiety factors and test scores were then conducted. Results confirmed that cognitive test anxiety factor was a significant negative predictor of language achievement. Interview results did not fully support the relationships found in the survey. Most students did not perceive themselves to be very anxious in their university settings, either in classrooms or in testing situations. However, they did express their anxiety toward English speaking skills in the classroom. The differential perspectives of anxiety revealed from both analyses indicate that a better understanding of language classroom anxiety and cognitive test anxiety can help students and teachers optimize their foreign langauge learning and teaching practices.

Keywords: Language classroom anxiety, Cognitive test anxiety, CET-4, Test confidence, Factor analysis, Language skill-specific anxieties, Test taking strategies, Academic anxiety

Introduction

Trait anxiety, situational anxiety, and state anxiety are generally recognized as three categories of anxiety, which vary from stability to transient incidences of anxiety arousal. Research demonstrates that elements that trigger anxiety differ across language processes and language skills. Anxiety can disrupt complex learning, test-taking, and effective thinking (Covington et al. 1986; Gregersen et al. 2014).

Our current knowledge of language and test anxiety benefits from an understanding of the relationship between anxiety and culture in language education. Cultural influences, such as teacher/student stereotypes and expectations regarding the nature of classroom

interaction, differ widely between cultures. Lim (Lim HY: Effects of task values, attributions, and cultural constructs on foreign language use anxiety among international teaching assistants, unpublished) found that learners from Asia (particularly Chinese and Korean learners) had a higher level of anxiety around foreign language use than those from North American or Europe. Scholarly traditions in Chinese culture may also have shaped or influenced the learning of English as a foreign language in China. Examples of these traditions are the emphasis on rote memorization, the central role of textbooks and grammar, the influence of Confucian doctrines, and the perception of teachers and parents as authority figures, all of which are potential causes of culture-specific anxiety (Yan X: An examination of foreign language classroom anxiety: Its sources and effects in a college English program in China, unpublished).

The importance of understanding and incorporating contextual factors in examining test anxiety are emphasized in cross-cultural research (Bodas, 2005). Cultural differences are claimed to exist because socialization practices and parental expectations can differ between cultures. These factors may put excessive pressure on students to achieve. Different high-stakes testing systems might also generate high levels of test anxiety (Cheng et al. 2014; Crocker et al. 1988).

Understanding anxiety, as one of the pervasive psychological emotions, is a prerequisite to providing the necessary support to anxious second/foreign language learners (Zheng 2008). An understanding of language anxiety within different contexts provides a rationale for a careful investigation of English learners in China. This study examines the nature of anxiety (both in the foreign language classroom and testing situations) and its relationship to language test performance by using a mixed-methods approach. The purpose of the study was to better understand the nature and effect of anxiety in the context of high-takes testing for Chinese university students learning English as a foreign language.

Literature review

Foreign language classroom anxiety

Anxiety in the context of the foreign language classroom is a form of anxiety that is usually aroused by a certain type of situation (e.g., speaking a foreign language). In a broader research context, MacIntyre (1998) observed that language anxiety is a form of situational anxiety, and emphasized that research on the topic should employ measures of anxiety experienced in specific second language (L2) contexts, e.g., in classroom settings. He conceived of language anxiety as 'the worry and negative emotional reaction aroused when learning or using a second language' (p. 27). Horwitz (1986) also recognized that situation-specific anxiety triggered by learning or using a foreign language was largely independent of other situation-specific anxieties. They developed a self-report instrument called the Foreign Language Classroom Anxiety Scale (FLCAS), aiming to assess communication apprehension, test anxiety and fear of negative evaluation associated with language anxiety. This instrument, eliciting responses of anxiety specific to foreign language classroom settings, triggered an avalanche of similar studies, demonstrating firmly that language anxiety has a debilitating role in the L2 classroom in different contexts.

Foreign language classroom anxiety is attributable to a variety of causes. Price (1991) maintained that levels of difficulty in some foreign language classes, students' personal perceptions of their own language aptitude, certain

personality variables (e.g., perfectionism or fear of public speaking), and stressful classroom experiences were all possible causes of anxiety. Learners' individual personality traits, such as introversion or extraversion, are associated with anxiety arousal (Brown et al. 2001; Gregersen and Horwitz 2002). Young (1991) identified six potential sources of language anxiety from three areas of arousal: the learner, the teacher, and the instructional practice. He claimed that language anxiety is caused by (1) learners' personal and interpersonal anxiety, (2) learners' beliefs about language learning, (3) instructors' beliefs about language teaching, (4) instructor-learner interactions, (5) classroom procedures, and (6) language testing.

The cognitive component of anxiety was emphasized early in the literature (Eysenck 1979). Eysenck believed that 'worry' and 'emotionality' constituted two categories of anxiety. For him, the 'worry' component includes cognitive manifestations, such as comparing personal performance to that of peers, considering the consequences of failure, low levels of confidence in performance, and excessive worry over evaluation. The emotionality component refers to the concomitant negative feelings caused by physiological functioning, such as increased galvanic skin response and heart rate, dizziness, nausea, and feelings of panic. Eysenck argued that anxious learners were more often engaged in task-irrelevant cognitive processing than their non-anxious counterparts; hence, the task-irrelevant processing activities 'preempt some of the available effort and capability of working memory' (p. 378). In other words, anxious learners may be anxious about their being anxious, thus hampering the capacity of their working memory. To be more specific, anxious learners are usually more easily distracted, and the defense mechanism triggered by anxiety will interfere with the cognition threshold in learning.

Additionally, with more and more emphasis on communication-oriented language competence, MacIntyre (1998) pointed out that there emerges a pressing need to develop anxiety-reduction strategies and programs. A call for the amelioration of language anxiety was also suggested by Young (1994) and Alrabai (2015). Young (1994) claimed that 'unnatural' classroom procedures—the teacher's error-correcting methods, for example—and the way the teacher interacted with the students were aspects that might arouse students' anxiety. Therefore, pedagogical considerations in course planning need to take into account students' emotional states. Elkhafaifi (2005) stated that teachers should provide class structures that ensure that their students' basic need to feel safe is met, and they should also make clear that language learning entails making mistakes, and mistakes are not demonstrations of failure, but a process of learning. Similarly, teachers should avoid turning the language classroom into a testing or competitive environment, but rather, create a supportive space conducive to learning comfortably. Alrabai (2015) further explored the influence of teachers' anxiety-reducing strategies on learners' foreign language anxiety. The findings revealed that teachers' anxiety-reducing strategy intervention led to significantly decreased levels of learners' foreign language anxiety. Kruk's (2018) recent investigation showed that language anxiety changes not only over a longer period (i.e., a semester) but also during a single class and from one language lesson to another.

Cognitive test anxiety

Test anxiety is 'a set of phenomenological, physiological, and behavioral responses that accompany concern about possible negative consequences or failure on an exam or similar evaluative situation' (Pintrich and Schunk 2002, p. 300). In testing situations, it is argued that test anxiety may represent a bias that conceals students' true potential (Meijer 2001). Some researchers have further argued for the 4-construct model: tension, test irrelevant thinking, bodily symptoms, and worry (e.g., Sarason 1984); or worry, emotionality, interference, and lack of confidence (e.g., Stober 2004). Disagreement among these researchers arises as to how each component of test anxiety impacts test performance.

The effects of test anxiety have been reported in a variety of studies in general education as well as in second/foreign language education (Hembree 1988; Gregersen et al. 2014; Sawyer 2005; Vitasari et al. 2010). Hembree's (1988) meta-analysis of 562 studies found that test anxiety did cause poor performance and that anxiety was inversely related to students' positive self-esteem and directly correlated to their fear of negative evaluation and their defensiveness. Strong test anxiety jeopardizes attention span due to the fact that anxious feelings can occupy parts of the working memory needed in problem solving (Eysenck 1988). Covington et al. (1986) proposed that the worry component of anxiety might interfere with test performance by diverting the individual's attention from the task at hand. They claimed that anxiety worked as a mediator of performance 'where the particular conditions of learning and evaluation are sufficiently threatening to disrupt test taking' (p. 72). At the risk of being overly simplistic, they formulated the following relationship:

perceived threat→anxiety arousal→impaired performance

In the field of second/foreign language learning, language tests are often used as screening mechanisms in selecting potential candidates for educational institutions. An example is the use of English-as-a-Foreign-Language test scores (e.g., IELTS scores, TOEFL scores) as one of the criteria for the admission of international students into English-speaking universities. This kind of practice creates anxious feelings for language learners for whom English is not their first language (Cheng et al. 2014). MacIntyre et al. (1997) posited that the interrelation between anxiety and language learning outcomes forms a vicious circle; that is, high anxiety levels lead to poor learning outcomes, and poor learning outcomes lead back to higher anxiety levels. Zin and Rafik-Galea's (2010) investigation indicated that the majority of the low proficiency Malay ESL learners experienced a moderate level of reading anxiety, which in turn influenced their reading performance significantly.

The measurement of language test anxiety was included as one of the three components of Horwitz et al. (1986) well-known language anxiety concept, together with communication apprehension and fear of negative evaluation. However, an examination of their questionnaire, the Foreign Language Classroom Anxiety Scale (FLCAS), revealed that only one item touched upon the component of test anxiety. A search of the relevant studies also confirmed that not only has there been insufficient validation of questionnaires on this topic but also that little attention has been paid to the effects of test anxiety on language

test performance (In'nami 2006). It seems that Horwitz et al.'s (1986) theory of language anxiety, with its emphasis on communication apprehension and fear of negative evaluation, together with Cassady and Johnson's (2002) model of test cognitive anxiety, are most suitable for the investigation of anxiety issues related to second/foreign language learning and testing in this study.

In the context of Chinese university students learning English as a foreign language, the high level of importance that has been placed on English language competence for tertiary-level English learners has dramatically influenced anxiety levels, both in their English classes and their tests (Cheng 2008). A knowledge of English is obligatory and achieving competence in the language is a prerequisite to graduate or for getting a good job. With this pressure in mind, learners are more likely to experience anxiety in the classroom (Liu 2006; Mak 2011). Admittedly, the underlying rationale for studying English in China is essentially economic, since it is seldom studied for its own sake. Chinese students are obliged to learn English if they hope to gain a better position in a global economy where English is the lingua franca (Gan et al. 2004; Yong and Campbell 1995).

This study examined students' perceptions of their anxiety levels, including foreign language classroom anxiety and test anxiety, and the relationships to their test performance on CET-4. Two research questions guided the study:

1) What is the nature of foreign language classroom anxiety and cognitive test anxiety?
2) How do these anxiety factors influence language test performance?

Methods/Experimental

Researchers noted that certain research contexts can particularly benefit from a mixed-methods approach (Yoshikawa et al. 2008). Such contexts include investigating aspects of individual behavior or contextual characteristics that are difficult to understand using a single method, conducting integrated studies of beliefs and practices in human development, and exploring causal associations and their mechanisms. The examination of the influence of anxiety, a psychological state, and its relationship, in this case to the learning of English as a foreign language, is a typical research situation that might benefit from a mixed-methods approach.

The survey method is used to understand the prevalence of foreign language classroom anxiety and test anxiety and to estimate the direction and magnitude of causal influence on test performance exerted by these phenomena; the interview method is used to shed light on mechanisms of cause and effect, if any, and to provide an explanation of any prevalence or discrepancies found. In addition, total scores and sub-scores for the CET-4 participants were obtained from the registrar's office in the participating university. The total full test score is 710 with a mean of 500 and a standard deviation of 70. There are four sections in the test: listening, reading, cloze, and writing and translation.

Survey instrument

The survey instrument consists of two primary constructs: *Foreign Language Classroom Anxiety* and *Test Anxiety*. The Foreign Language Classroom Anxiety Scale (FLCAS), developed by Horwitz et al. (1986), was used to assess students' anxiety levels in the classroom context. The FLCAS contains 33 items, each measured on a 5-point Likert scale, with responses ranging from 'strongly agree' to 'strongly disagree.' Higher scores indicate more anxiety in language-learning behavior. For example, for positively worded items, 'strongly agree' receives 5 points, and 'strongly disagree' receives 1 point, while for negatively worded items, the inverse applies. Total scores can range from 33 to 165. Internal reliability of the FLCAS (Horwitz 1986) shows a reliability coefficient of .93. Horwitz et al.'s (1986) FLCAS was revised according to Aida's (1994) study with Japanese university students. Items from the FLCAS were trimmed to avoid unnecessary redundancy based on the qualitative evaluations of the researchers in this study. For this current study, 17 of the 33 items in the FLCAS were retained. All negatively keyed items were re-coded for the data analyses. These items were named as FLCAS1 to FLCAS17.

To measure test anxiety, this study adopted the Cognitive Test Anxiety Scale (CTAS), which was developed by Cassady and Johnson (2002) to assess students' cognitive test anxiety levels. The original CTAS contains 27 items, each measured on a 4-point scale, with responses ranging from 'not at all typical of me' (4 points) to 'very typical of me' (1 point). This unidimensional scale of cognitive test anxiety (Cassady and Johnson 2002) has high internal consistency (.91) and has proven its concurrent validity through comparison with Sarason's (1984) Reaction to Tests. For this current study, items from the CTAS were trimmed following the same procedures used for FLCAS. Twenty of the 27 items in the CTAS were retained in the study, adopting the 5-point Likert scale as with the FLCAS. All negatively keyed items were re-coded for the data analyses. These items were named as CTAS1 to CTAS20.

Participants

The survey questionnaire was distributed to 921 participants from 32 classes in one south-eastern university in China. They were asked to describe their perceptions of anxiety from the perspective of foreign language classroom anxiety and cognitive test anxiety. Twelve consenting survey participants were given further interviews. These interviewees represented a balanced sample in terms of gender (six males and six females), their university major (six from Arts programs and six from Science), and their self-reported English competence (four from each level: high, medium, and low). They were interviewed in order to understand in more depth their perceptions of their own foreign language classroom anxiety and cognitive test anxiety in relation to their CET-4 performance. They were also asked about their perception of test anxiety in different language skills and possible reasons for such anxiety.

Interviewees' pseudonyms were chosen to reflect their genders and their university programs; within each category, the names are presented in a sequence of their

Table 1 Interviewee profile

Programs of study	Gender	Self-reported proficiency level		
		High (01)	Medium (02)	Low (03)
Arts programs	Male	Alan	Alex	Adam
	Female	Alice	Anna	Amy
Science programs	Male	Simon	Scott	Steve
	Female	Susan	Sara	Sally

self-reported proficiency levels from high to low. All six students from the Arts programs were named with an initial A, while those studying Science were allotted the initial S. In addition, in data reporting, interviewees with high self-reported proficiency levels were assigned a number of 01, those who had a medium proficiency level were assigned a number of 02, and those with a low proficiency level were assigned the number 03 (see Table 1).

Data analyses

Survey findings were analyzed using statistical methods. Descriptive statistics were first reported, followed by exploratory factor analysis (EFA). Direct oblimin was used as the rotation method, thus permitting factors to be correlated. The EFA results were analyzed from factor structure, scree plot, model fit, as well as factor interpretability perspectives.

Several steps were followed in analyzing the interview data. First, to organize and prepare the data for analysis; interviews were transcribed verbatim in Chinese and then translated into English. Items relevant to the research questions were identified and highlighted. Inductive analysis was used to uncover themes and patterns in the students' perceptions of Foreign Language Classroom Anxiety and Cognitive Test Anxiety. Open coding was used to help build ideas inductively and remain more attentive to what the interviewees had to say, rather than imposing pre-existing ideas or the findings from the statistical analyses on this part of the data analysis. Next, constant comparative method (Merriam 1998) was used to juxtapose responses from other interviewees.

Results

Results from the survey and the interviews were interpreted separately first and triangulated at a later stage to see if the results from the two sources supported each other in the discussion section.

Survey findings

Table 2 below shows the average frequencies at the sub-questionnaire level. The descriptive statistics indicate that the average for FLCAS is slightly higher than that of CTAS, while the standard deviation demonstrates the opposite, which means that students' reported Cognitive Test Anxiety has a wider spread than their reported

Table 2 FLCAS and CTAS average frequencies and descriptives

Items	Avg	SD	Strongly disagree	Disagree	Undecided	Agree	Strongly agree	Missing
FLCAS	2.893	0.038	5.256	36.669	24.700	30.167	3.056	0.869
CTAS	2.848	0.041	5.620	36.535	26.675	26.760	3.435	0.950

Foreign Language Classroom Anxiety. Frequency statistics and descriptive statistics at the item level can be found in Appendices 1 and 2.

The survey results were further analyzed using exploratory factor analysis (EFA). The rotation converged in 10 iterations (see Table 3). Since only factor loadings larger than .3 are reported here, factor loadings lower than that threshold were deleted without being displayed in the results table, resulting in three items being deleted from further analysis (i.e., FLCAS12,[1] CTAS1, and CTAS12).

Scree plot (see Fig. 1), model fit (see Table 4), and factor interpretability were used as criteria to understand the factor structures. The scree plot from the reduced correlation matrix indicated that the last major drop occurs following the third eigenvalue, suggesting that there should be three common factors. Further, using chi-square and degree of freedom obtained from maximum likelihood factor analysis, root mean square error of approximation (RMSEA) was calculated with 90% confidence intervals for different models using the FITMOD program (see Table 4). The 3-factor model had a RMSEA of .056 with a 90% confidence interval from .054 to .059, indicating a better model fit than the 2-factor model (RMSEA of .068 with a 90% confidence interval from .065 to .070). RMSEA in the 3-factor model suggested a good model fit. In addition, RMSEA decreased by .012 from the 2-factor model to the 3-factor model. The 3-factor model performed nearly as well as the 4-factor model, but RMSEA had a decrease of only .005, from .056 (3-factor model) to .051 (4-factor model). This minimal reduction indicated that the 3-factor model met the criteria for a trade-off between an adequate fit and model parsimony.

Furthermore, guided by factor interpretability, and coupled with the results from the scree plot and the model fit analysis, three factors were generated. The factors were named based on the characteristics of the loaded items on each factor: *class anxiety*, *test confidence*, and *test anxiety*. One item ('I feel confident when I speak in English class') was found to have double loadings on both factor 1 (class anxiety) and factor 2 (test confidence). The loading on *class anxiety* was negative (−.59), and the loading on test confidence was positive (.31). After re-coding, this item loaded only on class anxiety (.59). An examination of the characteristics of the items loaded on these two factors indicated that factor 1 was mostly about students' perceptions/feelings in the classroom, and factor 2 was mostly about their perceptions/feelings toward specific testing situations. Therefore, this item was categorized under the first factor, class anxiety. No other cross-loadings or double loadings were found.

Table 3 Factor structure of the anxiety items

Questionnaire items	Factor		
	1	2	3
FLCAS 2	.78		
FLCAS 14	.74		
FLCAS 1	.73		
FLCAS 8	.71		
FLCAS 6	.70		
FLCAS 17	.68		
FLCAS 11	.67		
FLCAS 9	.62		
FLCAS 10	.59		
FLCAS 7	.53		
FLCAS 3	.52		
FLCAS 16	.50		
FLCAS 13	.45		
FLCAS 4	.40		
FLCAS 15	.38		
CTAS 11		.88	
CTAS 10		.82	
CTAS 2		.49	
CTAS 5		.44	
FLCAS 5		.33	
CTAS 8			.71
CTAS 7			.67
CTAS 4			.61
CTAS 13			.60
CTAS 3			.60
CTAS 9			.59
CTAS 15			.59
CTAS 6			.56
CTAS 16			.54
CTAS 17			.53
CTAS 19			.50
CTAS 14			.37
CTAS 20			.32
CTAS 18			.30

One item (FLCAS5) from the FLCAS loaded on test anxiety. This item was presented as: 'I am usually at ease during tests in English class.' As the only item from the FLCAS that measured test anxiety, it was reasonable to expect that it would load on factor 3, test anxiety. The other two components of Foreign Language Anxiety—communication apprehension and fear of negative evaluation—could not be differentiated statistically from this dataset.

These three factors explained 43.14% of the total variance examined in the questionnaire items. To understand the tendency of students' anxiety patterns as well as the

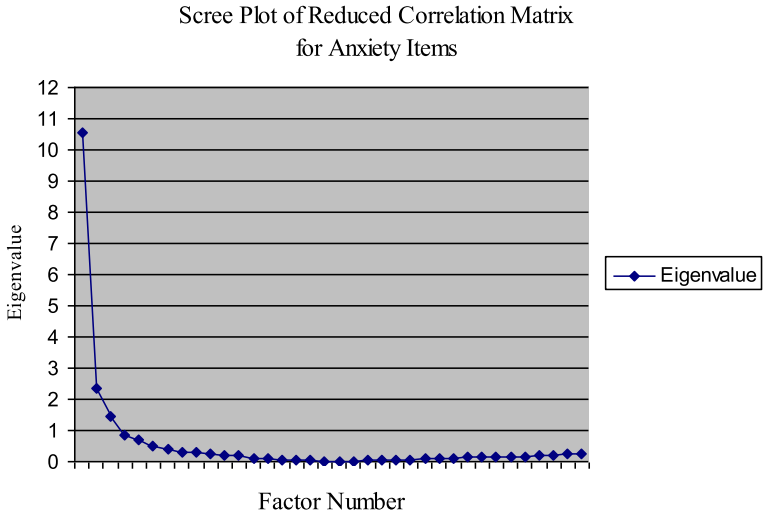

Fig. 1 Scree plot for anxiety items

relationships between these constructs, means, standard deviations, the internal consistency for each factor, and zero-order correlations among the three factors were calculated; they are presented in Table 5. The factor analysis assumed that the factor matrix was correlated (non-orthogonal). Indeed, the factor correlation matrix showed that these factors were correlated (–.38, .54, and – .43). Factor 1, class anxiety, included 15 items from the FLCAS scale; this factor had an internal consistency of .88. Factor 2, test confidence, contained five items loading onto it, with four items from the CTAS scale and one from the FLCAS scale; it had an internal consistency of .80. Factor 3, test anxiety, contained 14 variables loading onto it from the CTAS scale; it had an internal consistency of .87.

Factor scores from test confidence, test anxiety, and class anxiety were used to predict students' CET-4 test scores. Table 6 shows the results from multiple regression. The results indicated that test confidence was a positive predictor of students' test scores, and test anxiety was a negative predictor of students' test scores. Class anxiety was not a significant predictor in the presence of the other two factors.

Interview findings: English classroom anxiety and English test anxiety

The interview findings looked further into students' perceptions of anxiety from two perspectives: first, their perceptions of English learning in classrooms, and second, their

Table 4 Model fit for instrumental orientations

Model	RMSEA	90% confidence interval
1-factor model	0.085	< 0.083; 0.087>
2-factor model	0.068	< 0.065; 0.070>
3-factor model	0.056	< 0.054; 0.059>
4-factor model	0.051	< 0.048; 0.054>

Table 5 Descriptive statistics, reliabilities, and zero-order correlations of anxiety factors

Factor	No. of Variables	Mean	SD	Reliability	Correlation		
					F1	F2	F3
Class anxiety (F1)	15	43.69	9.77	.88			
Test confidence (F2)	5	16.17	3.40	.80	− .38		
Test anxiety (F3)	14	37.42	7.96	.87	.54	− .43	

perceptions of English test anxiety in the context of the CET-4. The latter includes students' assessments of their anxiety levels in each of four different language skills.

English classroom anxiety

None of this group of university students perceived him or herself to be particularly socially anxious, except for Sally. She described herself as an 'unsocial person' and did not want to interact with unfamiliar people. Six of the 12 interviewees reported that they had some degree of anxiety in the English classroom, especially when they were called upon to answer questions in their class and they did not have the answer. However, one student said: 'When I do know the answer, I expect the teacher to call me' (Simon_01_07[2]).

Sally mentioned that she not only felt anxious in the English classroom, but she felt anxious in any similar classroom situation. She summarized the situation by saying that 'looking back at my experience as a student, I have always had some sort of academic anxiety' (Sally_03_04). She explained that, whenever it came to academic settings, especially when she was asked to answer questions related to unfamiliar topics, she felt anxious. Sally's view of academic anxiety was echoed by Amy, who expressed a similar kind of anxiety, occurring only in academically related settings. She mentioned that, since elementary school, she had always been afraid of entering a teacher's office, and when she was called upon to answer a question that she was not sure about, her face tended to turn red, and sometimes she froze (Amy_03_18).

Some other student participants reported that they generally did not feel any sort of anxiety in the classroom because they had a high level of self-confidence regarding their English abilities and their teachers were friendly. Alex said that usually 'nothing too unexpected would happen in the classroom' (Alex_02_25). Another student, Anna, saw a close relationship between her English proficiency levels and her self-confidence level (Anna_02_27). For example, during group discussions in class, if she could

Table 6 Predicting CET-4 performance

	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. error	Beta		
Test confidence	3.38	.58	.23	5.85	.00
Test anxiety	− 1.22	.26	− .19	− 4.964	.00

Dependent variable: CET-4 total score

not understand certain vocabulary that other students used, she would feel frustrated and anxious, but if she considered that she could have a fluent conversation with others in English, she felt happy and confident.

In summary, academic anxiety, mainly reported by female students, seemed to be a phenomenon that they had experienced whenever they felt pressure to succeed academically. In addition, an association between language anxiety levels and their own perception of their competence in English was observed among this group of students.

English test anxiety

When it came to English test anxiety, the feelings of different students were quite similar to those regarding English classroom anxiety: 11 of the 12 students reported that they did not feel test anxiety. Two major factors accounted for this phenomenon. First, they felt that language abilities were relatively stable: if you did not know the answer, you did not know the answer and test cramming over a short period would not help much (Scott_02_13; Susan_01_39). Second, the students commented that they had grown up in an environment in which they were constantly being tested with all kinds of tests. They regarded themselves as very good at taking tests; otherwise, they would not have been admitted to the university.

The only student who mentioned that he had some kind of test anxiety was from the low proficiency group of participants. Adam reported that he had test anxiety not only in relation to language tests but also with other tests. He reported that, when he was taking a test, his body would get warm and his brain would try to dissociate from his surroundings (Adam_03_37). He concluded that his level of anxiety in different tests was partly dependent on the stakes of the test. He actually felt more anxious during English final examinations at university because students were only given one chance, and the credits awarded for the English course were very high. In the case of the CET-4, however, he felt less anxious because in his university students could take the test as many times as they wished until they passed the test or were satisfied with the score. Furthermore, this student noted that his anxiety level was often high at the beginning of a test, but as he progressed through the test, he was able to calm down and concentrate better.

Alice, Alan, and Simon regarded themselves as test-takers with adept test-taking skills, and the ability to guess at multiple-choice questions (as is the format for CET-4) with a high success rate, even if they were not sure of the answers (Alice_01_22). Some of the reading materials in English covered topics similar to those they had read about in Chinese, which made the test less anxiety-provoking (Alan_01_32). For Simon, the fixed mode of the English tests made him less anxious; he knew what kind of test content and test formats he could expect in the test (Simon_01_07). Additionally, compared to the English tests in high school, tests in universities focused less on grammar and more on overall understanding of the assigned paragraphs. These students generally regarded this change in focus as positive because they perceived that this would demand an overall understanding of reading materials,

rather than grammar or sentence structure, something which might be more applicable to their future use of English.

As for anxiety related to different language skills, the students' opinions differed slightly. Scott considered both listening and speaking as anxiety-provoking, while reading was not. With reading, one could practice by oneself without involving other people. With speaking, the lack of opportunities to practice oral English prevented the students from improving their proficiency, which, in turn, led to more anxiety when they had to speak in English (Scott_02_13). Alice felt most anxious in listening because the listener could not control the speed of the conversation and the choice of words used (Alice_01_22). However, in the case of speaking, the speaker was in control of both the speed and the vocabulary, and could sometimes use body language to facilitate the expression of their ideas (Sally_03_04).

Anna felt she suffered more anxiety in speaking and writing because both skills required her to produce something (Anna_02_29), whereas, in listening and reading, she could receive information passively. Two high-proficiency students, Alan and Susan, regarded listening as anxiety-provoking, but not writing. They both realized that, in writing, especially writing in English tests, there were expected writing formats; as long as they memorized and followed certain writing formats and used some complex or more sophisticated vocabulary, their writing scores would be fine (Alan_01_32; Susan_01_40).

Adam, however, felt he had the least confidence in writing and the most confidence in reading. He attributed his low English writing abilities to his low Chinese writing abilities (Adam_03_37), as he always had difficulty in organizing his thoughts and putting them into a written form. Alex, who had a strong accent in Chinese, reported that he felt most stressed when speaking English (Alex_02_25). He said he was from a remote rural area, where people usually had difficulty differentiating certain sounds in Chinese pronunciation, e.g., the 'h' and 'f' sounds. He did not become aware of this problem until he came to university. He said that he now realized that even his English teacher at high school could not differentiate certain sounds he made. He concluded that the Chinese accent that had been with him all his life had had a bad influence on his English accent, and it made him feel very frustrated because it seemed extremely difficult for him to correct those sounds in his English pronunciation at this stage.

Discussion and conclusions

The presence and influence of Foreign Language Classroom Anxiety on performance has often been reported in the literature (e.g., Cubukcu 2007; Horwitz et al. 1986; Liu 2006; MacIntyre and Gardner 1991). Gardner and MacIntyre (1993) claimed that language anxiety was the best single correlate of achievement. In a similar vein, Ganschow et al. (1994) study demonstrated that students with high levels of anxiety exhibited poorer language skills. Ganschow and Sparks (1996) also reported that students with low anxiety levels outperformed those with high anxiety levels overall. This study identified three interrelated constructs: class anxiety, test confidence, and test anxiety, and supported a negative association between class anxiety and test confidence, as well as between test anxiety and test confidence. Both forms of anxiety are closely correlated, with cognitive test anxiety being a significant negative predictor and test confidence

being a significant positive predictor of the test scores. Foreign language classroom anxiety, however, does not significantly predict test performance. Hence, this study managed to break down the language anxiety concept and looked at different effects of the anxiety facets on language performance. This result is a step further from previous correlational studies, for example, in Salehi and Marefat's (2014) correlation investigation, they found both foreign language anxiety and test anxiety had a statistically significant negative correlation with the exam grades. The two sub-concepts in the FLCAS (communication apprehension and fear of negative evaluation), however, are not identifiable statistically.

Interview results indicated that most students did not perceive themselves to be very anxious in their university settings, either in English classrooms or in English testing situations, irrespectively of their self-reported language proficiency. In addition, these students considered themselves to be experienced test-takers and were adept at test-taking. However, they did express their anxiety toward oral English, especially speaking skills in the classroom, a result that is in line with previous researchers' findings on the effects of students' anxiety on oral test performance (Hewitt and Stephenson 2012; Phillips 1992). These studies support a moderate inverse relationship between language anxiety and performance: students who expressed more foreign language anxiety tended to receive lower exam grades than their less anxious counterparts. However, because the CET spoken test is not included in the regular CET-4, which was the focus of this study, and students need to obtain a certain score or higher in their CET-4 in order to be able to take the spoken test, the actual relationship between anxiety and oral test performance was not investigated here.

The literature on anxiety in second/foreign language learning indicates that anxiety interferes with the processes of language encoding, storage, and retrieval (MacIntyre 1995). Cognitive processes through which anxiety might interfere with test performance were not, however, revealed from the survey and interview results in the current study. The one student who reported high anxiety in testing situations stated that he could manage to calm down after several minutes and concentrate on the test. The cyclical relation between anxiety and performance, that is, as students experience more failure, their anxiety level tends to increase, was not confirmed in this study. One thing to note is that interviews were conducted a few days after the test, not before or during the test, which might account for test anxiety being reported less frequently than one might expect.

Cross-cultural studies and studies conducted in Asian contexts have indicated that the view that Asian students were more likely to be anxious was a stereotype held by many people. For example, Crystal et al. (1994) reported on a cross-cultural study evaluating the popular stereotype that students in high-achieving Asian countries such as Taiwan and Japan experienced a higher degree of psychological distress than did their lower-achieving American counterparts. Their findings did not support this belief: the high-achieving Chinese students did not report higher psychological distress than their American counterparts.

Although general foreign language anxiety has been found to be independent of target language, levels of some specific categories of anxiety (e.g., reading anxiety) are found to vary by target language and seem to be related to the specific writing systems (Saito et al. 1999). The interview findings from this study supported the notion that

teachers' perceptions of students' language anxieties may sometimes be incongruent with students' own perceptions (Levine 2003). Students would attribute their skill-specific anxieties to a variety of factors, not necessarily related to gender, program of study, and/or English proficiency. An understanding of this incongruence and those specific types of language anxiety along with students' respective coping strategies should be within the repertoire of every language teacher.

A better understanding of language anxiety threshold can help learners and teachers to be aware of a student's comfort level, so as to avoid harmful feelings of anxiety, and carry out instructional interventions (e.g., coping strategies, tailored programs) whenever necessary to maximize learning. However, it has to be admitted that the threshold representing a person's uppermost limit of language anxiety is anything but fixed. Therefore, it is important to situate an individual's language learning in his/her specific context, while understanding or assessing his/her language anxiety threshold and encourage enjoyment in learning a language (Dewaele and Alfawzan 2018).

Oxford (1999) noted that 'behaviours vary across cultures, and what might seem like anxious behaviour in one culture might be normal behaviour in another culture' (p. 64). Horwitz (2001) contended that, when considering the issue of language anxiety and classroom practice, it is important to keep cultural differences in mind. Some practices perceived by one group of learners as comfortable may prove stressful for learners from a different cultural group who are used to different types of classroom organization.

Perspectives gleaned from research on the causes and effects of language anxiety inform us that language anxiety is multifaceted and occurs under different instructional conditions. Generally speaking, there are two options for language teachers in dealing with anxious students: first, they can help students learn to cope with the existing anxiety-provoking situation; and second, they can make the learning context less stressful. To make the first option possible, individualized instruction and proper learning and testing accommodation should be provided whenever necessary to assure quality language education; to enable the second option, teaching resources might be tailored to mirror the research results on language anxiety. Meaningful yet less anxiety-provoking materials should be employed to promote students' language learning at an optimal level. The level of task difficulty should be appropriate in order to motivate and challenge students' language development, while at the same time, minimize the arousal of unwelcome anxiety.

Endnotes

[1]The three deleted items were 'The more I study for an English test, the more confused I get' (FLCAS12); 'I have less difficulty than average college students in getting English test instructions straight' (CTAS1); 'During the CET-4, I have the feeling that I am not doing well' (CTAS12).

[2]The interviewee ID codes consist of three parts connected by underscores: (1) a pseudonym with a first letter A from the Arts programs or S from the Science programs; (2) a 2-digit number '01, 02, or 03', where 01 represents an interviewee with a high proficiency level, 02 represents an interviewee with a medium proficiency level, and 03 represents an interviewee with a low proficiency level; (3) a 2-digit number referring to the page number in the interview transcripts.

Appendix 1

Table 7 Anxiety frequency table

items	Missing %	Strongly disagree %	Disagree %	Undecided %	Agree %	Strongly agree %
FLCAS1	.7	4.1	26.7	25.9	38.4	4.2
FLCAS2	.7	6.0	46.3	22.4	22.2	2.4
FLCAS3	1.2	6.9	50.2	19.2	20.8	1.8
FLCAS4	.9	4.0	28.8	27.0	35.5	3.8
FLCAS5	.9	2.0	23.0	24.4	43.9	5.6
FLCAS6	.8	3.4	20.4	19.2	52.2	4.0
FLCAS7	.8	6.8	49.5	22.0	18..8	2.1
FLCAS8	.9	4.9	25.3	22.0	42.9	4.0
FLCAS9	.8	5.8	42.7	23.3	24.4	3.1
FLCAS10	1.1	3.2	33.6	39.2	19.4	3.5
FLCAS11	1.1	3.2	24.8	26.3	40.9	3.8
FLCAS12	.9	7.3	50.2	25.1	14.8	1.6
FLCAS13	.7	4.3	32.0	29.6	29.6	3.8
FLCAS14	.7	5.1	38.7	29.1	23.9	2.6
FLCAS15	.9	7.3	46.5	20.0	23.4	1.9
FLCAS16	.8	8.8	49.2	20.4	18.9	1.8
FLCAS17	.7	5.1	25.5	26.0	39.7	3.1
CTAS1	.7	1.9	11.5	24.9	53.2	7.8
CTAS2	.9	1.8	19.9	26.1	45.2	6.1
CTAS3	1.2	12.3	52.6	16.1	15.9	1.9
CTAS4	.7	10.9	57.0	19.7	10.2	1.4
CTAS5	.8	1.6	16.8	43.5	32.5	4.7
CTAS6	.9	6.7	46.2	24.4	19.3	2.5
CTAS7	.9	11.6	54.3	20.8	10.7	1.6
CTAS8	.9	10.2	56.3	19.5	11.8	1.3
CTAS9	1.3	12.1	52.5	18.6	13.9	1.6
CTAS10	1.1	1.5	26.2	31.1	34.2	5.9
CTAS11	.9	1.8	24.4	35.5	31.8	5.5
CTAS12	1.1	4.0	22.3	24.8	44.2	3.6
CTAS13	.8	6.1	44.1	27.1	19.9	2.0
CTAS14	.7	3.8	27.6	32.8	30.7	4.5
CTAS15	.9	5.5	47.9	23.6	20.2	1.8
CTAS16	.9	3.5	36.7	30.3	26.2	2.4
CTAS17	1.1	3.6	33.3	35.6	23.7	2.7
CTAS18	1.2	4.3	37.1	28.4	26.3	2.6
CTAS19	1.1	5.3	40.5	28.0	22.4	2.7
CTAS20	.9	3.9	23.5	22.7	42.9	6.1

Appendix 2

Table 8 Descriptive table

	N	Minimum	Maximum	Mean	Std.	Skewness		Kurtosis	
Items	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. error	Statistic	Std. error
FLCAS1	824	1	5	3.12	.987	− .233	.085	− .885	.170
FLCAS2	824	1	5	2.68	.957	.417	.085	− .733	.170
FLCAS3	820	1	5	2.59	.943	.508	.085	− .670	.171
FLCAS4	822	1	5	3.05	.973	− .134	.085	− .928	.170
FLCAS5	822	1	5	3.29	.938	− .348	.085	− .814	.170
FLCAS6	823	1	5	3.33	.954	− .665	.085	− .553	.170
FLCAS7	823	1	5	2.58	.926	.543	.085	− .501	.170
FLCAS8	823	1	5	3.15	1.006	− .380	.085	− .896	.170
FLCAS9	823	1	5	2.76	.977	.311	.085	− .859	.170
FLCAS10	821	1	5	2.87	.874	.311	.085	− .378	.170
FLCAS11	821	1	5	3.13	.874	− .311	.085	− .378	.170
FLCAS12	821	1	5	3.16	.951	− .314	.085	− .856	.170
FLCAS13	822	1	5	2.53	.882	.599	.085	− .172	.170
FLCAS14	824	1	5	2.95	.966	.032	.085	− .858	.170
FLCAS15	824	1	5	2.79	.939	.240	.085	− .771	.170
FLCAS16	822	1	5	2.65	.971	.381	.085	− .854	.170
FLCAS17	823	1	5	2.55	.949	.506	.085	− .558	.170
CTAS1	824	1	5	3.10	.981	− .319	.085	− .872	.170
CTAS2	824	1	5	3.54	.862	− .717	.085	.219	.170
CTAS3	822	1	5	3.35	.915	− .398	.085	− .648	.170
CTAS4	820	1	5	2.40	.952	.675	.085	− .215	.171
CTAS5	824	1	5	2.33	.842	.795	.085	.491	.170
CTAS6	823	1	5	3.22	.833	− .132	.085	− .222	.170
CTAS7	822	1	5	2.64	.936	.470	.085	− .539	.170
CTAS8	822	1	5	2.36	.870	.728	.085	.295	.170
CTAS9	822	1	5	2.36	.857	.752	.085	.228	.170
CTAS10	819	1	5	2.39	.923	.670	.085	− .076	.171
CTAS11	821	1	5	3.16	.932	− .017	.085	− .855	.170
CTAS12	822	1	5	3.15	.907	.008	.085	− .708	.170
CTAS13	821	1	5	3.22	.959	− .495	.085	− .673	.170
CTAS14	823	1	5	2.65	.919	.387	.085	− .597	.170
CTAS15	824	1	5	3.03	.950	− .042	.085	− .724	.170
CTAS16	822	1	5	2.64	.912	.464	.085	− .660	.170
CTAS17	822	1	5	2.86	.917	.166	.085	− .869	.170
CTAS18	821	1	5	2.88	.895	.132	.085	− .668	.170
CTAS19	820	1	5	2.84	.941	.177	.085	− .874	.171
CTAS20	821	1	5	2.76	.938	.301	.085	− .729	.170

Availability of data and materials
Data and materials are available.

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