

Validating Foreign Language Classroom Anxiety Scale for High School Students

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ABSTRACT

With the implementation of the Bilingual 2030 policy by the National Development Council in 2018, understanding the anxiety levels of junior and senior high school students in Taiwan regarding the English language has become crucial, especially in the context of online learning. This study reviewed the Foreign Language Classroom Anxiety Scale, modifying its factor structure and reducing the number of items to 19. The revised scale encompasses four factors: anxiety, self-efficacy, social comparison, and unwillingness to attend English classes. Data collected from 625 junior and senior high school students, within the framework of online learning, indicate the proposed scale's effectiveness and reliability in investigating English language anxiety among students. Additionally, the study offers insights into the impact of gender, grades, and the four identified factors.

KEYWORDS

Anxiety, Foreign Language Classroom Anxiety Scale (FLCAS), High School Students, Online Learning, Self-Efficacy, Social Comparison, Unwillingness to Attend English Classes

INTRODUCTION

In the context of online learning, students need to develop the ability to manage language learning anxiety prudently. The Bilingual 2030 policy (National Development Council et al., 2021) served as a framework for enhancing the bilingual competence of Taiwan's youth, contributing to increased competitiveness. However, this English-centric view might have overlooked the significance of multiculturalism, diverging from the emphasis on balanced development in the context of online learning outlined in the 2030 Bilingual Nation policy (Chang, 2022). While the policy underscored the importance of bilingual skills, it needed to prioritize students' emotional well-being, foster a relaxed online learning environment, and facilitate virtual expression. This aligned with the perspective mentioned by Ferrer and Lin (2021) on the 2030 Bilingual Nation policy, suggesting that the government's emphasis on English might have overlooked the importance of multiculturalism,

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leading to some inconsistencies and challenges in national language policy. In this context, Graham and Yeh (2023) highlighted the need to pay attention to challenges as Taiwan implemented bilingual education policies and how these challenges translated into different arrangements, whether intended or unintended. It was hoped that this study might encourage dialogue among various stakeholders, aligning policy mechanisms and arrangements to achieve the intended goals. Notably, our study followed the recommendation of limiting the sample, delving into the foreign language classroom anxiety of high school students, and further exploring the impact of these policies on secondary education.

In addition, teachers can enhance oral proficiency through drama and role-playing and by employing positive feedback and rewards to encourage student participation. While it may not be possible to eliminate language learning stress, teachers have a responsibility to identify and mitigate factors that may contribute to anxiety, fostering positive learning experiences for students. We hope these measures will prompt further research into solutions, providing better support for students in the online learning environment (Qaddumi et al., 2023). Qualitative findings from this study indicate that participants in face-to-face learning environments reported higher levels of anxiety compared to those engaged in online courses (Véliz-Campos et al., 2023). Furthermore, Ngangbam (2022) proposed that despite a 55% positive reception of the 2030 Bilingual Nation policy among respondents, convincing the remaining 45% is essential for its smooth implementation and execution. Therefore, addressing the challenges of foreign language classroom anxiety, particularly in online learning environments, necessitates a deeper understanding of high school student perceptions and needs to ensure effective policy implementation.

The research work using the Foreign Language Classroom Anxiety Scale (FLCAS) is crucial for several reasons. Firstly, in secondary school students, the FLCAS demonstrated high adaptability in assessing anxiety related to learning a foreign language, particularly among those aged 13 to 19, according to the results of the study by Mella et al. (2015). The research highlighted the tool's temporal stability, gender invariance in measurement, and its correlation with academic achievement. However, due to the absence of a factor analysis in the work of Mella et al. (2015) on the FLCAS, our study aims to fill this gap in the literature.

On the other hand, the evolving landscape of education, particularly with the increasing prevalence of online learning, necessitates a reevaluation of the applicability of FLCAS in diverse settings. The FLCAS, developed in 1986 (Horwitz et al., 1986), assesses anxiety levels in foreign language classrooms. It helps identify highly anxious students, allowing educators to personalize teaching methods. The FLCAS has reshaped language education by fostering a supportive environment, and its introduction has prompted educators to adopt diverse teaching techniques, create inclusive spaces, and emphasize clear communication. This approach addresses anxiety rooted in language learning and enhances the overall learning experience. It was significant to highlight that middle and high school students, including both junior and senior high school students aged 12 to 17, served as the research subjects in this study. The study examined FLCAS in Taiwan and considered gender disparities. Furthermore, with the continuous advancements in educational technology, understanding the role of FLCAS in mitigating anxiety within the realm of online language learning becomes imperative for educators to tailor effective teaching strategies that address the unique challenges posed by digital platforms. Our understanding of these elements in language education, particularly in the context of online learning, has improved through the application of FLCAS. It provided insights into language anxiety within specific cultural and gender contexts. Therefore, the research work using FLCAS is not only a response to the limitations of previous studies but also a proactive effort to enhance our understanding of language anxiety and inform pedagogical practices in the dynamic landscape of contemporary education.

Across a spectrum of scholarly endeavors, the FLCAS has been harnessed as a critical lens to examine the intricate relationship between anxiety and language learning. Pioneering works, such as the seminal study by Horwitz et al. (1986), laid the foundation by utilizing questionnaires to

measure language anxiety among learners. Subsequent studies, like MacIntyre's and Gardner's (1991) investigation, saw the FLCAS joining forces with the focused essay technique, unraveling how anxiety influenced writing performance. Similarly, Cheng (2004) used FLCAS to craft a comprehensive scale for writing anxiety, entailing rigorous exploratory and confirmatory factor analyses.

Expanding the scope, Phillips (1992) fused FLCAS data with oral tests to illuminate the effects of anxiety on spoken language competence. In a prior study focused on Japanese EFL learners (freshmen), the researcher employed a survey-based technique to create a structured questionnaire that included the FLCAS and an evaluation of participant willingness to speak in English (Yashima, 2002). The FLCAS section aimed to measure participant anxiety related to learning a foreign language, while the willingness to communicate component gauged their inclination and comfort to engage in English communication. This comprehensive approach allowed the researcher to explore the intricate dynamics between anxiety levels and participant willingness to communicate, specifically within the context of Japanese EFL learners.

Shifting the focus to pedagogy, Young's (1991) investigation emphasized the importance of fostering a low-anxiety classroom environment by employing the FLCAS. Moreover, Sparks and Ganschow (2007) focused on assessing the impact of foreign language classroom anxiety, particularly emphasizing its potential adverse consequences on academic achievement. Concurrently, Botes et al. (2020) underscored the urgent need to mitigate the negative effects associated with low academic achievement by addressing foreign language classroom anxiety. In addition, Horwitz's (2001) correlation analyses contributed to establishing connections between anxiety, achievement, and language proficiency. This perspective supplemented the ongoing discussion concerning the intricate relationship between anxiety and academic success, providing a nuanced understanding of the role anxiety played in the language learning process. Consequently, this research furnished language educators, curriculum designers, and researchers with a more comprehensive set of evidence and guidance, emphasizing the crucial importance of individual differences such as FLCAS in influencing language learning achievements. In the context of online learning, a study utilizing the FLCAS for accurate assessment in the context of gender differences and anxiety levels among EFL learners found no significant link between gender and anxiety levels. Hence, the anxiety levels of men and women were similar (Behforouz et al., 2022; Najeh Bel'Kiry, 2022). These diverse studies collectively showcase the amalgamation of FLCAS with quantitative analyses, qualitative methodologies, and nuanced exploration of learner experiences, illuminating the multifaceted role of anxiety in the language learning environment.

The research questions were as follows:

1. Does the Foreign Language Classroom Anxiety Scale (FLCAS) reveal new factors for Taiwanese junior and senior high school students?
2. How does gender impact anxiety levels in online foreign language learning for junior and senior high school students?
3. Do junior and senior high school students exhibit varying levels of anxiety in foreign language learning?

These questions were employed to investigate the potential impact of foreign language anxiety on gender and grade levels in the context of Taiwan. This exploration included the possibility of replicating and modifying the FLCAS to assess the levels of foreign language anxiety among Taiwanese students. Moreover, the study aimed to identify factors contributing to variations in foreign language anxiety across different genders and grades in the Taiwanese educational setting, with a focus on potential adjustments to the FLCAS.

METHODS

Research Design

The research design for this study was crafted with the primary objective of understanding the levels and distribution of English language anxiety among Taiwanese high school students in the context of online learning, specifically utilizing the Foreign Language Classroom Anxiety Scale (FLCAS). The construction of the research plan aimed to provide a detailed exploration of the psychological and emotional aspects associated with learning English in an online environment, considering the unique challenges and opportunities presented by this mode of education.

Participants

Due to the challenges posed by the post-pandemic era, this study opted for data collection in 2023 through the online platform Google Forms, as opposed to traditional face-to-face methods. In Taiwan, a total of 625 formal online questionnaires and 51 pilot questionnaires were gathered from junior high school and high school students. The collected data were stored in the Google Forms database, and subsequent analyses were conducted by researchers to distill findings into a comprehensive report.

To ensure the reliability of the factor structure of FLCAS obtained from the study, this research invited 625 Taiwanese students as participants (see Table 1) in the year 2023. Among them, 326 were males (52%), and 299 were females (48%). Half of the participants were from junior high schools (317 students, 51%), while the other half were from senior high schools (306 students, 49%). There were two instances of missing data in the sample for the grades.

In participant selection, a purposive sampling technique was applied, with a specific focus on junior and senior high school students in Taiwan. This selection aimed to ensure the pertinence of the collected data to the research objectives, particularly within the context of the Bilingual 2030 policy.

Materials

To develop the new Foreign Language Classroom Anxiety Scale (FLCAS), this study selected items from the FLCAS scale used by Horwitz et al. (1986), and additional items were provided by the authors of this study after analysis. Initially, Horwitz et al. (1986) proposed three factors for FLCAS: communication apprehension, test anxiety, and fear of negative evaluation, comprising a total of 33 items (see Table 2); their study showed internal reliability with an alpha coefficient of .93 of all items. However, the construct validity was not reported. Therefore, the present study attempts to address this gap. These 33 items were presented to 625 secondary school students (including both junior and senior high school students). A five-point Likert scale was employed in this study, with the addition of a new option, “did not understand the meaning of the questions.” The other response options were 5 = *always*, 4 = *frequently*, 3 = *sometimes*, 2 = *occasionally*, and 1 = *never*.

Internal consistency was rigorously assessed via Cronbach’s alpha values in SPSS (statistical software), crucially indicating the reliability of factors by measuring item correlations. Modifications

Table 1. Frequency-based distribution of participant demographic data

Demographic Variables	Categories	Number of Participants	Percentage
Gender	Male	326	52
	Female	299	48
Grades	Junior high school	317	51
	Senior high school	306	49

Table 2. FLCAS with original factors (Horwitz et al., 1986)

Factor	Item
Communication apprehension	1. I never feel quite sure of myself when I am speaking in my foreign language class. 2. It frightens me when I don't understand what the teacher is saying in the foreign language. 3. I start to panic when I have to speak without preparation in language class. 4. I would not be nervous speaking the foreign language with native speakers (-). 5. I would not be nervous speaking the foreign language with native speakers. 6. I feel confident when I speak in foreign language class. 7. I feel very self-conscious about speaking the foreign language in front of other students. 8. I get nervous and confused when I am speaking in my language class. 9. I get nervous when I don't understand every word the language teacher says. 10. I feel overwhelmed by the number of rules you have to learn to speak a foreign language. 11. I would probably feel comfortable around native speakers of the foreign language (-).
Test anxiety	1. I tremble when I know that I'm going to be called on in language class. 2. It wouldn't bother me at all to take more foreign language classes (-). 3. During language class, I find myself thinking about things that have nothing to do with the course. 4. I am usually at ease during tests in my language class (-). 5. I worry about the consequences of failing my foreign language class. 6. I don't understand why some people get so upset over foreign language classes (-). 7. In language class, I can get so nervous I forget things I know. 8. Even if I am well prepared for language class, I feel anxious about it. 9. I often feel like not going to my language class. 10. I can feel my heart pounding when I'm going to be called on in language class. 11. The more I study for a language test, the more confused I get. 12. I don't feel pressure to prepare very well for language class (-). 13. Language class moves so quickly that I worry about getting left behind. 14. I feel tenser and more nervous in my language class than in my other classes. 15. When I'm on my way to language class, I feel very sure and relaxed (-).
Fear of negative evaluation	1. I don't worry about making mistakes in language class (-). 2. I keep thinking that the other students are better at languages than I am. 3. It embarrasses me to volunteer answers in my language class. 4. I am afraid that my language teacher is ready to correct every mistake I make. 5. I always feel that the other students speak the foreign language better than I do. 6. I am afraid that the other students will laugh at me when I speak the foreign language. 7. I get nervous when the language teacher asks questions which I haven't prepared in advance.

Note. The symbol (-) indicates items that required reverse scoring during analysis.

to the FLCAS aimed to strategically establish new factors, enhancing surface validity—ensuring effective capture and measurement of intended constructs. Numerical representations for each factor, based on the refined scale, quantified internal consistency. Notably, this assessment of reliability and validity hinged on the complete dataset of 625 formal online questionnaires.

Procedure

In the preparatory phase, we planned and defined the research questions, sample size, and participant selection criteria as part of the procedure. Subsequently, a structured questionnaire was developed using Google Forms, and participants were recruited through appropriate channels with the provision of pertinent research information and ethical standards. Participants accessed the Google Forms page to complete the questionnaire, leveraging the platform's user-friendly interface for streamlined data collection. Throughout the entire process, we ensured strict adherence to confidentiality and ethical standards, explicitly elucidating data usage to participants and safeguarding anonymity.

Data Analysis

Item Analysis

Modifications were made to the item categorization in the Foreign Language Classroom Anxiety Scale (FLCAS) to establish new factors and surface validity based on student questionnaire results. Subsequently, a research analysis was conducted to assess the measurement quality of the 33 items in the FLCAS. Descriptive statistics were calculated initially, followed by inter-group comparisons to evaluate the differences of each item within the existing factors.

Based on the skewness coefficient requirements ($\pm .7$), the findings showed that 14 items (1, 3, 9, 10, 12, 13, 14, 15, 18, 21, 25, 26, 30, and 32) should have been removed. In the end, the test anxiety factor saw the removal of six items, the communication apprehension factor saw the removal of seven items, and the fear of a negative evaluation factor saw the removal of one item.

Exploratory Factor Analysis

Disparities in gender and grade levels must be noted, as well as possible candidates for other variables. The FLCAS was subjected to a structural validity investigation in this study using exploratory factor analysis (EFA), which included principal component analysis and oblique rotation for each of the 33 items.

Items with loadings on relevant variables less than 0.4 were eliminated after the EFA. Bartlett's test of sphericity was used to examine the correlations between the items and evaluate the suitability of the sample. The Kaiser–Mayer–Olkin (KMO) measure was also computed to assess if the data was sufficient for factor analysis.

Reliability Analysis

For every factor, the Cronbach's alpha values were analyzed. Inappropriate items were removed to improve reliability. Based on the new factors, numerical representations for every factor were also calculated.

Correlation Analysis

The study used correlational analysis to examine the correlations between the items and factors on the Foreign Language Classroom Anxiety Scale (FLCAS). Further, the study looked at the correlations between the newly found FLCAS factors.

Independent t-Test

An independent *t*-test was conducted to examine the effects of grade and gender on foreign language classroom anxiety, investigating whether there were significant differences among different grades and genders.

RESULTS

The Validity and Reliability of FLCAS-HS

Following EFA and reliability analysis on the 625 FLCAS data points, 19 items were kept across the three FLCAS factors. The FLCAS-HS was created by organizing 9 items for anxiety, 6 items for self-efficacy, 2 items for social comparison, and 2 items for unwillingness to attend English classes from the newly designed four factors. In FLCAS-HS, *HS* stands for *high school students*. Essentially, FLCAS-HS is a tailored version of the Foreign Language Classroom Anxiety Scale designed specifically for high school students. This assessment tool aims to gauge the anxiety levels experienced by high school students in the context of learning a foreign language, especially within the framework of online education.

The appendix contains a list of all the items and factors in the FLCAS. The Foreign Language Classroom Anxiety Scale was revised to include 19 questions after items with low validity or reliability were eliminated. These 19 items were listed in the reorganized section, which discussed how Taiwanese junior and senior high school students are affected by anxiety associated with learning a foreign language. The FLCAS-HS, improved by this study, encompassed four new factors, each with cumulative explained variances exceeding 50%. Items were retained only if they surpassed +0.40 or were less than -0.40 for relevant factors and were less than 0.40 in absolute value for non-relevant factors. The four factors were anxiety, self-efficacy, social comparison, and unwillingness to attend English classes (refer to Table 3). The following provides a detailed description of the four factors.

Anxiety (ANX): In the context of Taiwanese junior and senior high school students, anxiety in the foreign language classroom was characterized by various expressions. It involved fear and apprehension when facing challenges such as not comprehending the teacher's instructions, feeling uneasy even when adequately prepared, worrying about potential corrections from the language teacher, experiencing a racing heart before participating in class discussions, feeling self-conscious about speaking in front of peers, becoming nervous and confused during language activities, fearing judgment from classmates, and experiencing anxiety when unexpected questions arose in class. These manifestations collectively contributed to the overall foreign language classroom anxiety experienced by Taiwanese secondary school students.

Self-efficacy (SE): In English class, Taiwanese high school students exhibit a strong sense of self-efficacy as they express minimal concern about making mistakes, feel comfortable taking additional foreign language classes, remain at ease during language tests, question the reasons behind others' stress in language classes, experience little pressure to prepare thoroughly, and feel confident and relaxed on their way to language class. Including the findings by Yang (2023), the study underscored a significant correlation between English learning anxiety and self-efficacy among high school students. Furthermore, it delineated the mediating role of self-efficacy in the influence of learning anxiety on academic performance, providing practical guidance for high school English education.

Social comparison (SC): In Taiwanese junior and senior high schools, students often experience language anxiety, comparing themselves to peers whom they perceive as more proficient in languages. This social comparison element contributes to heightened language-related stress. Individuals engage in comparisons with others for various reasons, a phenomenon central to social comparison theory. On one hand, people may be driven by fundamental needs such as self-evaluation, self-enhancement, and self-improvement. Concurrently, during the process of self-evaluation, individuals often gravitate toward familiar comparison standards they habitually use. This inclination involves relying on established benchmarks, be they naturally occurring like one's best friend or intentionally set through repeated prior comparisons. The preference for habitual comparison standards serves as a strategic approach to streamline decision-making, bypassing the considerable effort required to identify the most diagnostic standard—a task acknowledged for its challenging and often insurmountable nature (Crusius et al., 2022).

Unwilling to attend English classes (UA): Unwillingness to attend English classes can manifest in various ways among Taiwanese high school students. For instance, some students may find themselves distracted with unrelated thoughts (Item 6) during language class, while others may frequently experience a reluctance to attend their language classes altogether (Item 17). These expressions of disengagement and aversion underscored the need to explore factors contributing to students' reluctance. Understanding this aspect pointed to the presence of resistance among high school students when it came to acquiring proficiency in the English language. This resistance may have significantly impacted their self-assessed skills in foreign language proficiency (Dong et al., 2022).

Table 3. Original factors in FLCAS-HS replaced by new factors

Factor	Item
ANX	4. It frightens me when I don't understand what the teacher is saying in the foreign language. 16. Even if I am well prepared for language class, I feel anxious about it. 19. I am afraid that my language teacher is ready to correct every mistake I make. 20. I can feel my heart pounding when I'm going to be called on in language class. 24. I feel very self-conscious about speaking the foreign language in front of other students. 27. I get nervous and confused when I am speaking in my language class. 29. I get nervous when I don't understand every word the language teacher says. 31. I am afraid that the other students will laugh at me when I speak the foreign language. 33. I get nervous when the language teacher asks questions which I haven't prepared in advance.
SE	2. I don't worry about making mistakes in language class. 5. It wouldn't bother me at all to take more foreign language classes. 8. I am usually at ease during tests in my language class. 11. I don't understand why some people get so upset over foreign language classes. 22. I don't feel pressure to prepare very well for language class. 28. When I'm on my way to language class, I feel very sure and relaxed.
SC	7. I keep thinking that the other students are better at languages than I am. 23. I always feel that the other students speak the foreign language better than I do.
UA	6. During language class, I find myself thinking about things that have nothing to do with the course. 17. I often feel like not going to my language class.

Note. The original design items of SE were formulated as reversed items, but they are framed as non-reversed items in this study.

The FLCAS-HS and New Factors

Bartlett's test of sphericity reached a significant level in the new factors (5428.983, $p < .001$), indicating a degree of correlation among the items. The KMO value for the new factors was .933, signifying that the data was suitable for factor analysis. In the FLCAS-HS, the variance percentage for each anxiety factor was 27.535%, self-efficacy was 14.666%, social comparison was 6.148%, and unwillingness to attend English classes was 6.148%. The four new factors in the FLCAS-HS explained 54.497% of the variance (see Table 4). All items in the FLCAS-HS had factor loadings exceeding 0.440, with Cronbach's alpha reliability ranging between .655 and .926. The Cronbach's alpha for UA is 0.65, which is considered marginally consistent (Kotian et al., 2022, p. 575).

Junior and Senior High School Student Performance on FLCAS-HS Factors

The results indicated that Taiwanese students (both junior high and high school) experienced moderate anxiety in the foreign language classroom, except for self-efficacy and social comparison. The mean was highest in SC, suggesting that, on average, students exhibited widespread social comparison and social anxiety in language learning. Specifically, students generally felt less competent in language abilities compared to their peers and perceived their peers as more proficient in foreign language usage. This implied a low sense of self-esteem and self-worth, along with anxiety about others' language performance. Such emotional distress might have impacted their learning motivation and engagement, requiring specific support and encouragement to enhance their confidence and enthusiasm for language learning. Similarly, the substantial standard deviation associated with social comparison indicated significant variability; in other words, students perceived different levels of social comparison in the process of learning a foreign language in the classroom (see Table 5).

Table 4. Factor loadings of items and Cronbach's alpha of constructs in FLCAS-HS

Item	Factor			
	ANX	SE	UA	SC
27	.757			
20	.744			
29	.743			
31	.731			
33	.730			
16	.718			
19	.711			
4	.707			
24	.692			
8		.711		
28		.693		
5		.672		
22		.653		
11		.509		
2		.440		
17			.689	
6			.632	
23				.705
7				.623
Eigenvalues	7.581	2.196	1.333	1.084
% of variance	27.535	14.666	6.148	6.148
Cronbach's alpha	.926	.804	.655	.730

Table 5. Descriptive analysis of FLCAS-HS

Factor	<i>M</i>	<i>SD</i>
ANX	2.331	1.041
SE	3.211	.982
SC	3.449	1.224
UA	2.498	1.140

Correlation Between New Factors and Items

The four new factors of the FLCAS-HS exhibited substantial correlations when analyzed through Pearson correlation analysis. Firstly, correlations were identified between anxiety and concerns about peer performance, exam anxiety, and language instruction. Concerning self-efficacy, positive sentiments were evident regarding problem management in the classroom, confidence during tests, and a lack of worry about taking additional language classes. Social comparison revealed

Taiwanese high school student feelings of superiority in language skills and their self-evaluation compared to peers in terms of foreign language usage. Lastly, a notable correlation was observed between unwillingness to engage and daydreaming during language sessions and factors related to unwillingness to attend English classes. According to Table 6, these results indicated the correlations between anxiety, self-efficacy, social comparison, and unwillingness to attend English classes among Taiwanese high school students. These connections contribute to explaining student behaviors during the language learning process.

Gender Differences in FLCAS-HS

The effect of gender on English classroom anxiety was analyzed using an independent *t*-test, and the results are presented in Table 7. The analysis revealed a significant difference in the ANX factor ($t = 3.261^{**}$) and UA factor ($t = -2.442^*$) of English anxiety based on gender. However, it is noteworthy that, overall, there were no significant differences ($t = 1.280$) in gender across the four new factors.

Grade Comparisons on FLCAS-HS

The independent *t*-test was conducted to analyze the effect of grade level on English classroom anxiety, and the results are presented in Table 8. The findings revealed significant differences across grade levels in the ANX factor of English anxiety ($t = -6.276^{**}$). Furthermore, significant differences were observed across grade levels in the SE factor of English anxiety ($t = -3.824^*$). Overall, there were significant differences in grades across the four new factors ($t = -5.950^{***}$).

Table 6. Correlation analysis of new factors in FLCAS-HS

	SC	UA	ANX	SE
SC	1	.324**	.488**	.386**
UA		1	.407**	.337**
ANX			1	.427**
SE				1

Note. ** $p < .01$

Table 7. Comparison of gender on the new factors

Factor	Grades	<i>N</i>	<i>M</i>	<i>SD</i>	<i>t</i>
ANX	Females	299	2.473	1.091	3.261**
	Males	326	2.202	.977	
SE	Females	299	3.174	1.014	-.917
	Males	326	3.246	.952	
SC	Females	299	3.462	1.184	.250
	Males	326	3.437	1.261	
UA	Females	299	2.383	1.089	-2.442*
	Males	326	2.604	1.177	
Total	Females	299	2.789	.886	1.280
	Males	326	2.704	.760	

Note. * $p < .05$ ** $p < .01$

Table 8. Comparison of grades on the new factors

Factor	Grades	N	M	SD	t
ANX	Junior high school	317	2.082	.972	-6.276**
	Senior high school	306	2.592	1.052	
SE	Junior high school	317	3.065	1.014	-3.824*
	Senior high school	306	3.363	.929	
SC	Junior high school	317	3.298	1.256	-3.275
	Senior high school	306	3.616	1.166	
UA	Junior high school	317	2.435	1.170	-1.405
	Senior high school	306	2.563	1.110	
Total	Junior high school	317	2.558	.787	-5.950***
	Senior high school	306	2.940	.818	

Note. * $p < .05$ ** $p < .01$ *** $p < .001$

In summary, the level of English anxiety among senior high school students was found to be significantly higher than that of junior high school students, as evidenced by differences in both the anxiety and self-efficacy factors. Therefore, junior high school students exhibited higher self-efficacy (the scores of these items were reversed) and lower anxiety compared to senior high school students.

DISCUSSION

This study developed a new factor for the Foreign Language Classroom Anxiety Scale (FLCAS) based on the analysis of data from Taiwanese students, leading to a revision of the FLCAS structure. The revised scale is now referred to as FLCAS-HS. As a result, the stable internal consistency, reliability, and validity of the new factor allow educators and researchers to gain a better understanding of anxiety factors among Taiwanese learners in English classrooms.

Three questions were formulated for evaluation, and the study findings suggest the following answers. First, concerning Question 1 (Does the FLCAS reveal new factors for Taiwanese junior and senior high school students?), it was discovered that there are four new factors: anxiety, self-efficacy, social comparison, and unwillingness to attend English classes. The newly identified factors, formed by selected items, demonstrate good validity and reliability. This 19-item scale can function as an independent test to assess the effectiveness of interventions in studying the impact of English classroom anxiety. It enables a more comprehensive examination of the influence of other variables on these four new factors.

Botes et al. (2022) used the Short-Form Foreign Language Classroom Anxiety Scale (S-FLCAS), comprising eight items, with participants having an average age of 27. In contrast, Du (2019) conducted a reconstruction and validation of the FLCAS scale, resulting in a new 21-item scale tailored for university students while maintaining the original three-factor structure. Tóth's (2008) Hungarian Foreign Language Classroom Anxiety Scale (HFLCAS) study also underscored the three factors of foreign language anxiety, aligning with the model initially proposed by Horwitz et al. (1986). This suggested that, within the Hungarian context of English as a foreign language, the factors contributing to foreign language anxiety remained consistent with the model of Horwitz et al., encompassing communication apprehension, test anxiety, and fear of negative evaluation.

Al-Saraj (2014) developed the Arabic Foreign Language Anxiety Questionnaire and figured out the language anxiety for Saudi Arabian students. Toyama and Yamazaki (2018) delved into the

components of the FLCAS within the context of Japanese undergraduates. Their research identified two factors: communication apprehension and fear of failing, leading to the development of a new 12-item scale. Despite the variations across these studies, it is important to note that they did not include high school students and did not significantly modify the original factors of the FLCAS. Correspondingly, this study addressed the gap in research on the FLCAS for high school students. Conducting data analysis on junior and senior high school students aged 12 to 17, this study identified four new factors with a total of 19 items.

Second, regarding Question 2 (How did gender impact anxiety levels in online foreign language learning for junior and senior high school students?), the study found that female students exhibited a more anxious attitude in the English classroom, particularly in the anxiety factor (3.261**). Male students, on the other hand, showed a significantly higher average score ($M = 2.604$) than females' average score ($M = 2.383$) in the unwillingness to attend English classes (UA) factor, indicating there were significant differences ($t = -2.442^*$). While differences were identified in some factors, overall, these results are consistent with previous research, suggesting that the impact of gender on English classroom anxiety was not a significant difference (Kamil et al., 2021; Xiang, 2023).

Third, regarding Question 3 (Do junior and senior high school students exhibit varying levels of anxiety in foreign language learning?), significant differences were observed in both anxiety and self-efficacy among junior and senior high school students based on the findings of this study. This indicates a substantial contrast in attitudes toward foreign language learning anxiety between junior high school and senior high school students. In general, senior high school students exhibited a higher level of anxiety in foreign language learning compared to junior high school students (see Table 8). However, other researchers suggested that the levels of foreign language anxiety among junior high school students were higher than those observed in senior high school students. This contrasting finding adds a layer of complexity to the understanding of anxiety levels across different educational stages. While this study emphasizes the heightened anxiety experienced by senior high school students, these works imply a potential variation in this pattern that warrants further investigation (Yassin, 2018; Yorulmaz & Arabacıoğlu, 2023).

This might be related to the complication of English textbooks in Taiwan, where there is a higher degree of rigor, especially in senior high school English textbooks. Another potential explanation for the observed differences in anxiety levels could be attributed to the distinct academic and social pressures faced by students at these different educational stages. Junior high school students may experience heightened anxiety due to the transitional nature of their education and the increasing academic expectations. On the other hand, senior high school students might be influenced by factors such as college preparation, career aspirations, and a more mature approach to language learning. Further research could explore these factors to gain a deeper understanding of the nuanced differences in foreign language learning anxiety among students at various educational levels.

CONCLUSIONS, RECOMMENDATIONS, AND LIMITATIONS

In conclusion, this study contributes valuable insights by identifying new factors; therefore, the new scale is named FLCAS-HS. The research recommends potential enhancements and suggests a positive transformation in measuring foreign language anxiety. Despite its limitations, this research provides a foundation for future investigations, offering researchers and educators valuable considerations for refining the assessment and understanding of English classroom anxiety among students.

In light of the findings and for future research, it is recommended to expand the items related to unwillingness to attend English classes, as this study only included two UA questions, leading to insufficient covariance. Moreover, this study suggests the augmentation of items related to UA. The current study highlights the potential of self-efficacy in transforming the reversed items of the original FLCAS into non-reversed ones for assessment. Higher scores on SE correspond to lower

anxiety levels. These recommendations aim to enhance the comprehensiveness and effectiveness of future research in this domain.

However, it is important to acknowledge some limitations of this study. The UA items were limited, affecting the overall covariance. Future studies could benefit from a more extensive exploration of UA factors. Furthermore, while the transformation of reversed items to non-reversed in SE is promising, it requires careful consideration and validation in diverse contexts. Additionally, the generalization of the study's findings should be approached cautiously, considering the specific age group (12 to 17 years old) and the cultural context of Taiwanese junior and senior high school students.

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COMPETING INTERESTS

The authors of this publication declare there are no competing interests.

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