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Exploring the components of the foreign language classroom anxiety scale in the context of Japanese undergraduates

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Abstract

This study aimed to investigate the latent constructs in the Foreign Language Classroom Anxiety Scale using a research context of Japanese undergraduates who learn English as a foreign language. The study conducted both exploratory and confirmatory factor analysis against two different groups of Japanese undergraduate students. First, exploratory factor analysis was used to extract factors from 33 items of the scale in its application to 149 management major students. Subsequently, confirmatory factor analysis was conducted on the factors from the exploratory factor analysis. Data from 237 English language learners at two universities—155 undergraduates at a foreign study university and 82 at a general university—were applied to test a hypothetical model in relation to the extracted latent constructs. Results of the two factor analyses identified and confirmed two underlying components of the scale: (1) communication apprehension and (2) fear of failing. The model fit statistics illustrated that the two-factor paradigm appropriately fit the data from the second undergraduate group. Implications of the results are discussed.

Keywords: Foreign language classroom anxiety scale, English as a foreign language, Factor analyses, Japanese undergraduates

Introduction

Over the past 30 years, the concept of foreign language anxiety (FLA) has received much attention from many scholars and theorists in the domain of foreign language and communication studies (Park 2014). The FLA concept is thought to be related to an individual's affective filter, as introduced by Dulay and Burt (1977) and then developed by Krashen (1982), who focused on the process of an individual's second language (L2) acquisition. Krashen (1985) argued that comprehensible input and a state of the affective filter that allows the input lead to L2 acquisition. This filter is typically activated by a variety of psychological affective variables such as motivation, attitudes, self-confidence, and anxiety (Krashen 1981). The filter thereby serves a crucial psychological function through which to facilitate or hinder the processing and reception of input in the course of L2 acquisition. It seems obvious that FLA lies within the affective filter when highlighting a learning context of foreign languages.

MacIntyre (1998) defined FLA as an individual emotional experience of being worried or a negative feeling as a reaction to learning a foreign language. Emphasizing

specific learning contexts, Horwitz et al. (1991) described FLA as an individual complex of feelings, perceptions, beliefs, and behaviors that arises from a class situation where one learns and uses foreign languages. To measure FLA in classrooms, Horwitz et al. (1986) developed the Foreign Language Classroom Anxiety Scale (FLCAS). Although some researchers have questioned its construct validity (Sparks and Ganschow 2007), the FLCAS has been recognized as a reliable tool to examine FLA in classrooms (Young 1994). In fact, many studies have applied the FLCAS to analyze students' anxiety about foreign language learning in classroom situations (Aida 1994; Arnaiz and Guillen 2012; Dewaele 2013; Kitano 2001; Liu and Jackson 2008; Park and French 2013; Rodriguez and Abreu 2003; Sparks and Patton 2013; Sparks et al. 2011; Yashima 2002). Horwitz et al. (1986) noted that the FLCAS was designed based on academic performance evaluation of students. They pointed out three performance anxieties: communication apprehension, fear of negative evaluation, and test anxiety. Several researchers reported that exploratory factor analyses of FLCAS data in studies with various student populations have constantly produced the three factors (Arnaiz and Guillen 2012; Liu and Jackson 2008); however, it should be noted that some others documented a different number of underlying components of the FLCAS (Aida 1994; Cheng et al. 1999; Matsuda and Gobel 2004).

Park (2014) recently presented three reasons for the different latent constructs found in the FLCAS. The first reason concerns limited explanation by the scale developers (Park 2014). Horwitz et al. (1986) did not specify the underlying constituents of the FLCAS or clearly present which items among the 33 statements, as shown in [Appendix A](#), relate to which three constructs. As a result, researchers have misinterpreted the constructs of the scale (Park 2014). The second point is a methodological issue. Most researchers have simply applied exploratory factor analysis, possibly leading them to make room for subjective evaluations in the factor rotation and the naming of extracted factors (Park 2014). This argument articulates the need to affirm the underlying components of the FLCAS by using confirmatory factor analysis to check construct validity. Additionally, Park (2014) pointed out that the use of orthogonal rotation techniques like varimax should be reconsidered because those rotation methods assume that components of the measure are independent of each other (Field 2013). It has been suggested that the methods of oblique rotation should be employed for analysis of the FLCAS (Park 2014). The third reason corresponds to various translated versions of the FLCAS (Park 2014). The FLCAS was developed in English and has been translated into various native languages for participants to understand the scale; the validity of the measure might vary with different cultures (Park 2014). This view is in line with Horwitz's (2016) comment on the Park study. This scale was designed to measure anxieties based on American culture with English-speaking participants that may be different from those in other cultural backgrounds (Horwitz 2016). It is recommended that the FLCAS measure be investigated in different cultures because a different factor structure might be discovered (Horwitz 2016).

Accordingly, consistent with the aforementioned argument of Park (2014) and Horwitz's (2016) comments, the purpose of the present study was to first seek understanding of the components of the FLCAS in a higher educational context in Japan. In order to find and verify a factor structure of the FLCAS that is supposed to measure the anxieties of Japanese participants, this study applied the analytical method of confirmatory factor analysis preceded by the oblique rotation technique in exploratory factor analysis. Horwitz (2016) stated that Park's (2014) study was

particularly representative of the proper steps by which to explain the construct of FLA in classroom situations. Our study followed this approach. It was intended not only to make a contribution to the literature of FLA, but also to facilitate L2 acquisition of foreign language learners.

Theoretical foundation: The three components of the FLCAS

This section briefly explains how the constructs of the FLCAS were conceptualized by introducing key discussion points made by Horwitz et al. (1986). As described in the introduction, Horwitz et al. (1986) proposed the FLCAS in relation to three performance anxieties. The first construct of performance anxiety in classroom situations represents communication apprehension. It is assumed that mainly interpersonal interactions relate to FLA, which is conceptualized as the construct of communication apprehension. This describes a kind of shyness aroused by fear of communicating with others. Examples of communication apprehension include difficulty not only in speaking in dyads, in groups, or in public but also in listening to or learning oral messages (Horwitz et al. 1986). If individuals have difficulty speaking or listening to foreign languages in front of people, their communication apprehension will be high (Horwitz et al. 1986). It appears that the emotion of shyness characterized as typical of communication apprehension is provoked in social situations in which individuals become conscious of interacting with others who are not psychologically familiar to them. When considering the trait of shyness, it seems that communication apprehension is likely to arise in immediate response to the person's environment. Moreover, individual difficulty in speaking or listening to foreign languages has also been ascribed to linguistic deficiency. Horwitz et al. (1986) documented the complaint of anxious learners who had difficulty discriminating foreign-language sounds and structures, giving the example of an anxious student who indicated hearing only the loud voice of his instructor. If such students cannot hear certain sounds, they will be worried about communication in class. A study of Abu-Rabia et al. (2014) reported a negative relationship between linguistic skills and language anxiety, suggesting that students with linguistic deficiency have communication apprehension. Taken together, it is thought that social and interpersonal aspects such as psychological distance and a psychological safety environment, as well as individual attributes, may be centrally related to communication apprehension.

This study highlighted Japanese learners' experience of English as a foreign language (EFL) in classrooms. It is important to explore how the constructs proposed by Horwitz et al. (1986) relate to Japanese EFL learners. As discussed above, one aspect in relation to communication apprehension is social and interpersonal contexts where individuals feel shy when speaking in the classroom. In Japan, there has been a trend toward having more interaction in EFL classes. Japanese students are expected to speak English in their classrooms in order to answer questions and talk to their classmates, even though this communicative interaction in class is not part of traditional Japanese pedagogy (Yashima et al. 2009). Several research studies concerning Japanese classroom situations of EFL have addressed the shyness of Japanese students in class or their reluctance to speak in front of people (Cutrone 2009; Doyon 2000; Mayer 1999). This notion suggests that Japanese students have communication apprehension or FLA in a classroom situation. Indeed, an empirical study of Williams and Andrade (2008) reported that Japanese

students' FLA was related to speaking in front of classmates. Thus, when considering the situation of L2 learning in classrooms, the first construct of communication appreciation seems to be applicable to Japanese learners.

The second construct of performance anxiety concerns test anxiety. This arises from a fear of failure. Test anxiety makes students worry about and feel burdened by foreign language tests (Horwitz et al. 1986). Because foreign language classes often give students tests or quizzes, test-anxious students will experience many performance difficulties (Horwitz et al. 1986). Accordingly, the main theme of test anxiety seems to be the negative feeling when a person believes he or she will probably fail tests as objective evaluative methods. It is thought that a person with high test anxiety is typically a perfectionist.

Test anxiety is also considered a crucial construct in the Japanese EFL context. To obtain a high score on examinations or quizzes, many Japanese L2 students must memorize material and develop understanding through careful attention and analysis (MacWhinnie and Mitchell 2017). Too much focus on this requirement is thought to create an unfavorable learning environment where Japanese students are too anxious about their test performance and focus less on the acquisition and development of their English capabilities and skills. Kondo and Yang (2003) identified low proficiency in English as one factor of FLA in classrooms and applied their measure designed for Japanese undergraduate students; their study implied that Japanese students were worried about their performance and feared failure. These notions suggest that the second construct of test anxiety applies to Japanese EFL situations.

The third construct of performance anxiety refers to fear of negative evaluation. While the construct of test anxiety pertains to objective evaluation, fear of negative evaluation emphasizes feelings about others' evaluations or expectations (Horwitz et al. 1986). This third construct has a broader scope in connection with social evaluation situations such as interviews, oral presentations, or speaking contests (Horwitz et al. 1986). Thus, the fear of negative evaluation is not constrained to test-taking situations in classrooms (Horwitz et al. 1986). The person who has a strong fear of negative evaluations may be very sensitive to the views of others in the classroom such as teachers, native speakers, fluent L2 speakers, and peers (Horwitz et al. 1986). The essence of this third construct concerns individuals' projection of others' negative evaluations. Rather than an immediate psychological response to interactive situations like a feeling of shyness, this construct is thought to involve a person thinking or believing that others will evaluate him or her badly as a result of a projection or an unstable psychological condition such as moodiness or neuroticism.

The third construct of fear of negative evaluation is also considered to be associated with Japanese EFL situations. In Japanese classroom situations, instructors are thought to be very powerful in shaping students' attitudes, thoughts, and behaviors as a result of the socialization process of the Japanese educational system. There is a large power distance between instructors and students in Japanese culture (Hofstede 1997). Instructors' demeanors and attitudes affect Japanese students' attitudes in classrooms (Shimizu 1995), so their evaluative reaction to students' behavior and performance in class has a strong effect on students' anxiety (Cutrone 2009). Even though Japanese instructors recognize students who are highly motivated, the students may still feel uneasy about EFL (MacWhinnie and Mitchell 2017). Students can also feel judged by other students based

on the evaluation paradigm of Japanese societal values (Cutrone 2009). Empirical research has documented that Japanese students' anxiety represents fear of negative evaluation by both teachers (Williams and Andrade 2008) and classmates (Kondo and Yang 2003). Accordingly, the third construct proposed by Horwitz et al. (1986) is thought to be applicable to Japanese EFL learning situations.

Previous findings on the components of the FLCAS

In this section, we review seven previous articles that discussed constructs of the FLCAS. Because the study of Park (2014) included a comprehensive review of studies related to the underlying factors of the FLCAS, this study largely relied on Park's study. While his study helped us review relevant past studies on the components of the FLCAS, our study not only examined the analytical methods, labels, and key statistics of the previous studies, but also highlighted constituent items of each factor, particularly relating to the three constructs of communication apprehension, test anxiety, and fear of negative evaluation. Table 1 summarizes the results of the seven studies. It includes research year, sample size, research context, and factor loadings of each component found in the studies.

The study of Aida (1994) was a first attempt to find the components of the FLCAS (Horwitz 2016). Her examination used 96 university students taking Japanese as a foreign language in the USA. Using principal component analysis with varimax rotation, the study found four critical factors: (1) "Speech anxiety and fear of negative evaluation," with 18 items exceeding 0.5 factor loadings; (2) "Fear of failing the class," with four items; (3) "Comfortableness in speaking with Japanese people," with three items; and (4) "Negative attitudes," with two items. According to Thompson (2004, as cited in Park 2014), a factor should have three or more items that account for the total variance. Based on that guidance, Aida's study resulted in the first three constructs. For the internal consistency reliability of the 33-item FLCAS, the Cronbach's alpha was 0.94. The first factor was thought to include all three constructs proposed by Horwitz et al. (1986): communication apprehension (e.g., No. 3), test anxiety (e.g., No. 8), and fear of negative evaluation (e.g., No. 31). The second factor seemed to relate strongly to test anxiety (e.g., No. 10). The third factor had three reversed items and with its positive title of "Comfortableness" seemed to reflect a contrast with the construct of communication apprehension (see Items 11, 14, and 31). The study did not report students' majors but indicated whether student participants were native English speakers or nonnative English speakers. The results revealed that anxiety levels did not differ between native and nonnative English students when they learned Japanese in the USA. Assuming that for students who are nonnative English speakers Japanese is a second or even third or fourth foreign language, Aida's study implied that past foreign language learning experience did not have a strong influence on anxiety level when studying foreign language in classrooms.

Cheng et al. (1999) analyzed data from 423 English major students of four universities in Taiwan to investigate the speaking and writing anxiety of ELF. They used a Chinese version of the FLCAS for speaking anxiety and a distinct measure for writing anxiety. Their study employed principal component analysis with varimax rotation and showed two factors. By using only FLCAS, the first factor, exhibited by 10 items of the FLCAS exceeding 0.5 factor loadings, was labeled "Low self-confidence in speaking English," while the

Table 1 Summary of seven previous studies' results of factor analysis for the FLCAS

Item	Aida 1994 (N = 96) Research context: USA; scale language: English	Chen et al. 1999 (N = 423) Research context: Taiwan; scale language: Chinese	Matsuda and Gobel 2004 (N = 252) Research context: Japan; scale language: Japanese	Liu and Jackson 2008 (N = 547) Research context: China; scale language: Chinese	Yashima et al. 2009 (N = 182) Research context: Japan; scale language: Japanese	Mak 2011 (N = 313) Research context: Hong Kong; scale language: Chinese	Park 2014 (N = 217) Research context: Korea; scale language: Korean												
	Speech anxiety and fear of negative evaluation	Fear of falling	Comfortableness with Japanese	Low self-confidence in speaking English	General English classroom performance anxiety	Low self-confidence in speaking English	Communication apprehension and fear of negative evaluation	Test anxiety	Communication apprehension with positive attitude	Lack of confidence in speaking English in class	Fear of speaking in public	Anxiety about not understanding everything taught	Helplessness and negative attitude toward the English class	Speech anxiety and fear of negative evaluation	Uncomfortableness when speaking with native	Negative attitudes towards the English class	Fear of failing the class	Communication apprehension and understanding	Communication apprehension and confidence
1	0.58			0.72		0.60				0.61				0.54					0.60
2 (R)				0.51	0.55		0.46												0.53
3	0.77			-0.66		0.50		0.57						0.69					0.58
4	0.56			0.58	-0.55			0.79						0.64					0.58
5 (R)						-0.62		0.39					-0.56			0.70			
6						0.48		-0.47								0.66			
7	0.71					0.57				0.89									
8 (R)	-0.56				0.38										0.65				0.63
9	0.54				-0.52					0.52				0.67					0.66
10						0.51			0.51		0.44				0.66		0.68		0.58
11 (R)										-0.67									
12	0.69				-0.68						0.47			0.61					0.64
13	0.76				-0.46				0.44	0.54	0.49		-0.40	0.59				0.60	0.66
14 (R)					0.58										0.71				
15					0.53													0.58	0.66
16	0.60				-0.65									0.55			0.50		0.58
17						0.70										0.72			0.58
18 (R)	-0.67					-0.58				-0.64		-0.39	0.64						0.72
19					0.50	-0.42					0.56			0.57					0.58
20	0.73				-0.73				0.50		0.38								0.58
21	0.58				0.55	-0.31							0.67						0.58
22 (R)					0.41							-0.48		0.54			0.51		0.51

second factor, with 10 items, was labeled “General English classroom performance anxiety.” When investigating factors using both measures together, they found four factors. Among them, two factors were related to FLCAS items and were very similar to the aforementioned results using only FLCAS. The first factor had nine items, while the second factor had seven items. Both labels were the same as the ones using only FLCAS. The factor loadings depicted in Table 1 represent the latter examination of their study that only reported those statistics. The internal consistency reliability was 0.95 as determined by Cronbach’s alpha. It seemed that the first factor included communication apprehension as a primary element (e.g., No. 13) and fear of negative evaluation as a secondary element (e.g., No. 31). The second factor seemed to consist of the two constructs of test anxiety (e.g., No. 21) and fear of negative evaluations, particularly by teachers (e.g., No. 19). As described in Table 1, the second factor included four items (4, 15, 19, and 29) among the five items highly associated with the communication involvement between the teacher and the student in classroom situations. Therefore, the second factor could be characterized as the influence of a teacher’s interaction with students. This notion suggests that English majors who must pay more attention to the teacher’s explanation or subtle messages might experience more anxiety in class.

Matsuda and Gobel (2004) investigated the relationship between individual demographic variables, student performance, and FLA. When examining FLA, the study focused on foreign language classroom anxiety and foreign language reading anxiety using two different measures. Their research context was a Japanese university, and participants consisted of 252 English major students in a Japanese university in Kyoto. Using principal component analysis together with varimax rotation, they initially showed seven factors. After eliminating smaller factor loadings, they found two factors: (1) “General English classroom performance anxiety,” with 21 items exceeding 0.3 factor loadings, and (2) “Low self-confidence in speaking English,” with 12 items. The Cronbach’s alpha was 0.78. Table 1 illustrates their study results. The first and second factor names were the same as those of the study of Cheng et al. (1999), but the constituent items of those factors were quite different—even though both involved participants who were English majors. Although the factor named “General English classroom performance anxiety” consistently included three items of involvement of teachers with students (4, 19, and 29), the factor identified by Matsuda and Gobel contained various items in relation to communication apprehension (e.g., No. 9) and fear of negative evaluation (e.g., No. 31). Also, the factor named “Low self-confidence in speaking English” seemed to contain at least the two constructs of communication apprehension (e.g., No. 1) and test anxiety (e.g., No. 10). It should be noted that the study of Matsuda and Gobel included items with > 0.30 factor loadings, while that of Cheng et al. (1999) contained those with > 0.50 factor loadings. Thus, the number of constituent items in the study of Matsuda and Gobel was larger than that of Cheng et al. (1999). This indicates that the evaluation rule for addressing items has substantial influence on the results of factor analysis.

Liu and Jackson (2008) investigated Chinese EFL learners’ FLA with a participant group of 547 university students required to take English listening and speaking courses. Those students did not major in English. The researchers used a Chinese version of the FLCAS with slight modifications and three additional questions and applied a factor analysis with varimax rotation. The Cronbach’s alpha was 0.92. Although they documented three

underlying components—fear of negative evaluation, communication apprehension, and test anxiety—their analytical explanation seemed insufficient and inconsistent. For example, according to their description, the third factor named “Test anxiety” consisted of two items, Nos. 8 and 21; however, its factor loadings were 0.304 and -0.126 , respectively. Item No. 21 should have been eliminated due to its very low factor loading. Moreover, the second factor named “Communication apprehension” was composed of seven items (1, 9, 14, 18, 24, 27, and 32 in their study) whose factor loadings ranged from 0.094 to 0.611; however, the 0.611 of No. 14 as the highest score was not included in the column of the second factor but in that of the third factor of test anxiety. Accordingly, we reanalyzed factor loadings described in their study by using a cut-off factor loading of > 0.30 because the sample size was greater than 500; we also eliminated items with a crossloading with > 0.30 factor loading. As shown in Table 1, results of their study illustrated three factors in the 33 original questions: (1) the first factor with four items (3, 13, 19, and 31); (2) the second factor with three items (10, 25, and 30); and (3) the third factor with four items (2, 14, 18, and 32). When interpreting four constituent items of the first factor, the factor included the two constructs of communication apprehension (e.g., No. 3) and fear of negative evaluation (e.g., No. 19). The second factor was associated with test anxiety (e.g., No. 10). Similar to the third factor of Aida’s study, the third factor of the study of Liu and Jackson (2008) comprised all reversed items and seemed to be linked with communication apprehension with a positive attitude (e.g., No. 2). This suggests that even though several items were thought to conceptually include the same construct, students’ response to such items might be different depending on the positive or negative format of questions. Because of this reanalysis, the names of the three factors were revised, as shown in Table 1.

Yashima et al. (2009) examined the interplay of classroom anxiety in a Japanese university using 182 students who enrolled in EFL classes. The students had various majors such as law, commerce, economics, and letters. They used principal axis analysis with promax rotation on the FLCAS items. While their research originally showed five factors, we eliminated one factor that had only two items. As a result, their study showed four factors: (1) “Lack of confidence in speaking English in class,” with nine items exceeding 0.3 factor loadings; (2) “Fear of speaking in public,” with 10 items; (3) “Anxiety about not understanding everything taught in class,” with seven items; and (4) “Helplessness and negative attitude toward the English class,” with six items. The Cronbach’s alpha values were 0.76 for Factor 1, 0.81 for Factor 2, 0.73 for Factor 3, and 0.58 for Factor 4. Table 1 summarizes the results of their factor analysis. Yashima et al. (2009) and Matsuda and Gobel (2004) employed Japanese students, but their participating students had different majors. Results of factor analysis differed between the two studies in terms of the number of factor components. The difference might be ascribed to student majors. When comparing the two studies in aspects other than factor numbers, there were some similarities. The first factor of “Lack of confidence in speaking English in class” of Yashima et al.’s study had six items (1, 7, 10, 18, 23, and 28) commonly included in the second factor of “Low self-confidence in speaking English” of Matsuda and Gobel (2004). Those six items seemed to consist of the three constructs of communication apprehension (e.g., No. 1), test anxiety (e.g., No. 10), and fear of negative evaluation (e.g., No. 23). As another similarity, the second and third factors’ items identified by Yashima et al. could be seen in the first factor of “General English classroom performance anxiety” in the study of

Matsuda and Gobel. All 10 items of Yashima et al.'s second factor were included in the first factor of the study of Matsuda and Gobel, while three items (4, 22, and 29) among seven items of Yashima et al.'s third factor were common in the first factor of that of Matsuda and Goble. The 10 items of Yashima et al.'s second factor seemed to be mostly characterized as addressing the construct of communication apprehension. The three items (4, 22, and 29) of Yashima et al.'s third factor were thought to be linked with the construct of test anxiety. Thus, while the number of factors differed between the two studies, there were some commonalities between them.

Mak (2011) investigated speaking-in-class anxiety with Chinese ESL learners. Her study involved 313 university students in Hong Kong who were required to take English and used principal component analysis with varimax rotation. The study did not report students' major. Results of the analysis illustrated five constructs of the FLCAS. Because one factor had just two items, we eliminated it. As illustrated in Table 1, the four components corresponded with (1) "Speech anxiety and fear of negative evaluation," with 15 items exceeding 0.5 factor loadings; (2) "Uncomfortableness when speaking with native speakers," with four items; (3) "Negative attitudes towards the English class," with three items; and (4) "Fear of failing the class/consequences of personal failure," with three items. The internal consistency statistic was a Cronbach's alpha of 0.91. With regard to Chinese-speaking contexts, we compared the study results of Mak with those of Cheng et al. (1999) and Liu and Jackson (2008). Compared with the study of Cheng et al. (1999) using a Taiwanese research context, there seemed to be some commonality. The first factor of the study by Mak contained 15 items as described above: six items (1, 9, 13, 24, 27, and 31) identified in the first factor of "Low self-confidence in speaking English" of the study by Cheng et al. Those items seem to be associated with the construct of communication apprehension, except No. 31, which had a feature of the construct of fear of negative evaluation. The other three factors identified by Mak were thought to differ from the two factors found by Cheng et al. Furthermore, there was no similarity between the results of Mak's study and those of Liu and Jackson's (2008) study. The second factor in Mak's study seemed to include the two constructs of communication apprehension (e.g., No. 11) and test anxiety (e.g., No. 8). Moreover, the second factor consisted of four items (8, 11, 14, and 32), all of which were reverse questions. This trend could also be seen in the study of Aida (1994). The third factor of Mak's study had three items (5, 6, and 17), all of which would be difficult to clearly categorize into one of the three constructs; thus, the research might have labeled "Negative attitudes towards the English class" as a general view of students' demeanor towards the class. Finally, the fourth factor seemed to be connected to the construct of test anxiety (e.g., No. 10).

The most recent study was that of Park (2014). He used two groups for exploratory factor analysis, as well as confirmatory factor analysis. The first group comprised 217 Korean students who took English conversation or composition courses in a Korean university. While English conversation courses are a proper context for the FLCAS, which emphasizes speaking or listening anxiety in classrooms, English composition courses may be limited as a research context for the scale. Most of the participants concentrated on English or international culture studies in the university. For his analysis, Park applied maximum likelihood exploratory factor

analysis with direct oblimin rotation. As described in Table 1, results showed two dominant factors: (1) “Communication apprehension and understanding,” with 13 items exceeding 0.5 factor loadings, and (2) “Communication apprehension and confidence,” with 10 items. The Cronbach’s alpha was 0.93 for all 33 items, 0.90 for the first construct, and 0.87 for the second construct. Based on this result, he moved to the second group and conducted confirmatory factor analysis with score results from 244 students. They had various majors, including natural sciences, social sciences, engineering, and medicine. The two-factor model had a comparative fit index (CFI) of 0.899, incremental fit index (IFI) of 0.900, root mean square error of approximation (RMSEA) of 0.068, and chi-square of 484.68 ($p < 0.01$). These statistics indicated that this hypothetical model with two factors properly fit the observed data; thus, it was acceptable. As its label shows, the first factor included the construct of communication apprehension (e.g., No. 12), and it also seemed to contain fear of negative evaluation, particularly from teachers (e.g., No. 19). Also, the second factor included communication apprehension (e.g., No. 1) as well as test anxiety sustained by one item (No. 8). When closely examining constituent items of both factors, the feature of the first factor, like that of the second factor of Cheng et al. (1999) study, included all five items of communication involvement between the teacher and the student in classroom situations (4, 15, 19, 29, and 33). The second factor of Park’s study included all seven reversed questions (2, 8, 11, 14, 18, 28, and 32), which comprised 70% of the constituent 10 items. A similar pattern was seen in the study of Aida as well as that of Mak. Accordingly, those studies imply that a positive or negative form of questions might affect students’ response towards anxiety in classroom situations.

Our research aimed to discover the latent factors of the FLCAS by conducting two factor analyses. In the first analysis, exploratory factor analysis was used to determine how many factors exist in the FLCAS, while the second analysis confirmed the number of factors discovered on the initial study through confirmatory factor analysis. Additionally, we also investigated the two-factor model of Park (2014) using the same sample applied in the second analysis to compare our study with Park’s.

Methods

Study sites and samples

Before describing our methods, it is useful to briefly explain EFL in Japanese higher education. In general, Japanese undergraduate students are most familiar with the grammar-translation approach of learning EFL. Communicative language teaching using authentic materials and task-based materials is considered important in Japan; however, only a minute fraction of EFL educators in the country have skills to conduct EFL classes with a communicative approach. Thus, typical Japanese EFL undergraduates have considerable experience in sentence translation, grammar exercises, and spelling tests and little experience in EFL speaking and communication.

This study used FLCAS scores from Japanese undergraduate students at three different universities. For the first study, to extract factors from the FLCAS utilizing exploratory factor analysis, management major students were asked to participate in this project. They were enrolled in requisite EFL courses of the department of business

administration in University A near the Tokyo area. The EFL courses in this department were designed to develop four skills of EFL—speaking, listening, writing, and reading—and cultural intelligence. All the courses met once a week for 90 min and were taught in small classes. Some of the courses were taught by one of the authors, and the others were taught by our research collaborators. A total of 149 students from University A participated in this study. Among them, three were sophomores and 146 were freshmen. In addition, 49 were women and 100 were men—a gender ratio similar to that for the management major in Japan. The average age of the undergraduates was 18.13 years ($SD = 0.38$).

The subsequent study using confirmatory factor analysis involved undergraduate students of two different universities near the Nagoya area. Those two universities were independent of each other. University B concentrated on foreign language education, while University C had various departments including social sciences, technology, urban studies, and applied science. A total of 237 students of the two universities, who were required to complete EFL courses, participated. At University B, 131 students were freshmen and 24 were sophomores. Among these 155 students, 111 were women and 44 were men. This gender ratio seems to be related to the language major. Similar to University A, the average age of these participants was 18.26 years ($SD = 0.52$). Sociodemographic characteristics of University C were slightly different from the others. Among the 82 total participants, 72 were sophomores, 8 were juniors, and 2 were seniors, with 21 women and 61 men. The average age of participants at University C was 19.29 years ($SD = 0.65$). This study identified the majors of the participants of University A but not those of Universities B and C, which had different types of departments. None of the university students received any compensation for participating in this research.

Data collection

In April 2017, authors started to collect responses to the questionnaire online during EFL classes. The data collection process ended in the middle of May. Among 189 respondents of University A, 149 provided valid data for analysis. First, the participants were asked to complete a sociodemographic questionnaire relating to age, gender, and grade. Next, they were given the URL link to the online version of the FLCAS and were asked to complete it and send their responses digitally to the authors by clicking a button. The questionnaire took approximately 5 min to complete. One of the authors engaged a research collaborator who teaches at both Universities B and C. This collaborator used the same procedure to collect data. Among 160 respondents at University B, 155 provided valid responses that are included in the analyses, whereas among 89 responses from University C, 82 were valid and usable for analysis.

Measures

To assess participants' anxiety for learning and using EFL, we administered the FLCAS (Horwitz et al. 1986) (Appendix A). As described in the introduction, this measure consists of 33 statements that ask students to evaluate their level of EFL anxiety or the feeling of unease, worry, nervousness, and apprehension experienced in learning or using L2. Nine of the statements are reverse scored. An example of an FLCAS item is

“It frightens me when I don’t understand what the teacher is saying in English.” Participants responded on a 5-point Likert-type scale that ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). The participants were asked to read each statement and then to select a single answer from the rating scale.

This study used a Japanese version of the FLCAS created by Yashima et al. (2009) (Appendix B). They reported three steps for making the FLCAS Japanese version. First, both the statements and the scale of the FLCAS were translated into Japanese. Then, its Japanese translation was translated back to an English version. The bilingual researchers discussed and analyzed the wording of the items. The Japanese version of the FLCAS was useful to avoid any problems that Japanese learners could encounter in responding to each item.

Data analysis

For exploratory factor analysis, this study applied principal component analysis with direct oblimin rotation to extract the underlying components of the FLCAS using scores from 149 Japanese undergraduates of the department of business administration of University A. We chose principal component analysis for two reasons. First, this factor analysis is applied to derive maximum variance from the data set with individual components; hence, it serves to decrease a greater number of variables into a fewer number of components (Tabachnick and Fidell 1996). Because principal component analysis is a technique for data reduction (Costello and Osborne 2005; Field 2013), it can better manage the data set. Particularly, it can also be used as a first step to reduce variables (Yong and Pearce 2013) that correspond to 33 items of the FLCAS. Second, principal component analysis represents a major analytical tool used in past studies of the FLCAS, as described previously (Aida 1994; Cheng et al. 1999; Matsuda and Gobel 2004; Mak 2011). With regard to a rotation method, this study selected direct oblimin rotation to interpret the extracted variables of the FLCAS because it is assumed that one type of FLA is related to another type of FLA in a classroom. In fact, Park’s (2014) study showed that two factors of the FLCAS were correlated with each other.

To identify dominant components of the exploratory factor analysis, we adopted eigenvalues > 1 together with scree plot analysis. For each item investigation, to determine whether an item was kept or dropped, we adopted the following three guidelines:

- Using a factor loading of at least 0.5 as a cut-off point because the sample size is between 100 and 200 (Stevens 2002, as cited in Field 2013)
- Requiring a minimum of three items per factor or component (Costello and Osborne 2005; Thompson 2004, as cited in Park 2014)
- Dropping a complex item with crossloading in case of difficult interpretation (Yong and Pearce 2013).

Applying this process, we continued the analysis until particular factors were extracted and the aforementioned guidelines were satisfied. To verify the construct validity of the factors identified from exploratory analysis, confirmatory factor analysis was conducted using a different sample of 237 undergraduates from Universities B and C. Since the sample consisted of two different types of universities, which might affect the

result of confirmatory factor analysis, we analyzed not only the entire sample of 237 students, but also each sample of each university separately. Additionally, we also examined to what extent these data properly fit the two-factor model of the FLCAS presented by Park (2014).

Results

Exploratory factor analysis

The initial exploratory factor analysis of 33 items of the FLCAS produced six factors. Among them, two factors had only one or two items with a loading factor of 0.5 or more, so these three items (6, 17, and 22) were eliminated. At that point, nine items (1, 5, 9, 12, 16, 19, 28, 29, and 33) had factor loadings of less than 0.5. With 12 items excluded, 21 items were left for further investigation. Table 2 shows the correlation matrix for all 33 items, while Table 3 depicts results of the initial exploratory factor analysis with direct oblimin rotation. As shown in Table 2, the correlation coefficient of the 33 items ranged from -0.09 to 0.71 , including 22 relationships that had a negative correlation. Close examination of the 22 relationships showed that Item No. 22 had seven negative correlations, suggesting that this item may need to be further investigated in terms of its content as well as its translation. A correlation coefficient of ≥ 0.214 represents the critical value of 0.01 ($p < 0.01$), whereas that between 0.163 and 0.213 describes the critical value of 0.05 ($p < 0.05$).

The second factor analysis of 21 items resulted in identification of five factors. Three factors were, however, composed of fewer than three items: the second factor had two items (14 and 32), the fourth factor also had two items (7 and 8), and the fifth factor had just one item (24). Moreover, three items (11, 18, and 23) had factor loadings of less than 0.5. Accordingly, eight items were eliminated, leaving 13 items to be examined further. Among those items, one component included seven items (2, 3, 13, 20, 26, 27, and 31), and the other component consisted of six items (4, 10, 15, 21, 25, and 30). The third factor analysis of the 13 items was conducted. Only one item (21) did not get more than a 0.5 factor loading and was then excluded. Table 4 shows results of the second factor analysis, and Table 5 exhibits those of the third factor analysis.

To verify the two dominant factors extracted from the third factor analysis, the fourth factor analysis using the 12 items was conducted. The first dominant factor comprised the same seven items (2, 3, 13, 20, 26, 27, and 31), while the second dominant factor consisted of five items (4, 10, 15, 25, and 30). The items grouped together in the first dominant factor seemed to be associated with communication apprehension (Horwitz et al. 1986), which manifests the students' perceived difficulty in speaking in groups and also in oral communication in the target language. Six items from this group were thought to be linked with communication apprehension (2, 3, 13, 20, 26, and 27). More specifically, four items related to body sensations such as tension (26 and 27), trembling (3), and heart pounding (20) caused by anticipation of communication in EFL and receiving attention in class. Thus, the first factor can be labeled as "communication apprehension," one of the three commonly discussed constructs of the FLCAS. The seven items of this factor explained 47.70% of the total variance.

The five items loaded onto the second factor related to students' worries about class. In other words, the items seemed to concern students' perceived difficulty in understanding

Table 2 Correlation matrix for the 33 items of the FLCAS (Continued)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33				
0.43	0.43	0.27	0.51	0.09	0.04	0.17	0.40	0.35	0.31	0.35	0.46	0.35	0.28	0.56	0.39	0.14	0.19	0.43	0.46	0.33	0.25	0.32	0.17	0.42	0.49	0.46	0.33	1.00								
0.37	0.22	0.22	0.43	0.10	0.11	0.13	0.27	0.32	0.27	0.26	0.28	0.30	0.15	0.45	0.22	0.16	0.32	0.17	0.32	0.49	-0.02	0.23	0.06	0.37	0.25	0.29	0.25	0.34	1.00							
0.51	0.40	0.68	0.26	0.24	0.34	0.29	0.10	0.52	0.30	0.31	0.46	0.53	0.31	0.42	0.34	0.38	0.18	0.56	0.54	0.44	-0.02	0.41	0.22	0.31	0.44	0.57	0.27	0.30	0.18	1.00						
0.32	0.32	0.25	0.26	0.33	0.03	0.04	0.30	0.28	0.19	0.36	0.24	0.34	0.67	0.23	0.19	0.26	0.53	0.09	0.33	0.09	0.18	0.33	-0.15	0.21	0.18	0.36	0.38	0.32	0.09	0.24	1.00					
0.63	0.44	0.49	0.55	0.32	0.22	0.30	0.39	0.63	0.37	0.53	0.43	0.60	0.42	0.59	0.43	0.33	0.41	0.43	0.62	0.43	0.12	0.40	0.06	0.52	0.51	0.59	0.44	0.48	0.43	0.49	0.43	0.49	0.36			

A correlation coefficient ≥ 0.214 represents the critical value of 0.01 ($p < 0.01$). A correlation coefficient between 0.163 and 0.213 represents the critical value of 0.05 ($p < 0.05$)

Table 3 Results of the first exploratory factor analysis of the FLCAS with direct oblimin rotation ($n = 149$)

Item No.	Factor						h^2
	1	2	3	4	5	6	
2	0.61						0.63
20	0.56						0.73
31	0.55						0.70
27	0.53						0.71
13	0.53						0.63
26	0.53						0.64
3	0.50						0.68
18		-0.71					0.65
24		0.64					0.50
32		-0.61					0.75
14		-0.54					0.74
11		-0.54					0.66
6			-0.80				0.64
17			-0.74				0.63
22				0.75			0.57
30					-0.80		0.57
4					-0.62		0.58
25					-0.58		0.52
15					-0.54		0.66
21					-0.54		0.54
8					-0.52		0.50
23						0.76	0.67
7						0.53	0.61
10						0.50	0.51
1							0.70
5							0.55
9							0.62
12							0.56
16							0.49
19							0.60
28							0.56
29							0.60
33							0.65
Eigenvalue	11.751	2.567	1.950	1.570	1.408	1.126	
% of total variance	35.61	7.777	5.910	4.758	4.266	3.412	
Total variance						61.734	

EFL class content. This latent construct is close to “General English performance anxiety” identified by Cheng et al. (1999), in that they shared most items exceeding 0.5 factor loadings (4, 15, 25, and 30). The term “performance anxiety” has to do with excessive perceived stress caused by the attention from an audience and the fear of failure, and the four items (4, 10, 15, and 25) of the second factor seemed to concern such fear. Our second factor was

Table 4 Results of the second exploratory factor analysis of the FLCAS with direct oblimin rotation ($n = 149$)

Item no.	Factor					h^2
	1	2	3	4	5	
3	0.84					0.70
31	0.82					0.72
20	0.71					0.71
27	0.70					0.72
13	0.67					0.69
26	0.62					0.64
2	0.53					0.53
32		-0.86				0.77
14		-0.80				0.72
30			0.83			0.63
4			0.66			0.60
15			0.58			0.65
25			0.57			0.54
21			0.53			0.55
10			0.53			0.48
7				0.68		0.56
8				-0.51		0.60
24					0.83	0.75
23						0.69
11						0.66
18						0.64
Eigenvalue	7.747	2.068	1.383	1.312	1.025	
% of total variance	36.889	9.848	6.586	6.246	4.879	
Total variance					64.448	

also similar to Aida’s (1994) latent factor named “Fear of failing,” in that they both had items (10 and 25) related to the fear of failing EFL courses. Moreover, the factor was analogous to Liu and Jackson’s (2008) second factor of test anxiety with three constituent items (10, 25, and 30). Based on these observations, the second factor in our analysis can be labeled “fear of failing.” The five items explained 10.86% of the total variance. The correlation between the two components was significant ($r = 0.62, p < 0.01$); thus, oblique rotation methods seemed to be appropriate.

We also examined the internal consistency of the seven items of communication apprehension (the first factor), showing a 0.89 Cronbach’s alpha coefficient. Cronbach’s alpha for the five items of fear of failing, the second factor, was 0.78. In addition, Cronbach’s alpha for all 33 items was 0.94. In sum, the results of the fourth factor analysis indicated that those two factors were principal, as showed by eigenvalues larger than 1, accounting for 58.56% of the total variance. The results of the exploratory factor analysis with direct oblimin rotation are described in Table 6.

Confirmatory factor analysis

Table 7 illustrates the results of the confirmatory factor analysis of this study’s two-factor model in terms of the entire sample of 237 participants: 155 students from

Table 5 Results of the third exploratory factor analysis of the FLCAS with direct oblimin rotation ($n = 149$)

Item No.	Factor		h^2
	1	2	
3	0.87		0.68
31	0.86		0.64
27	0.75		0.70
20	0.75		0.69
13	0.67		0.55
2	0.67		0.42
26	0.64		0.57
30		0.83	0.58
4		0.75	0.62
15		0.65	0.65
10		0.62	0.36
25		0.55	0.52
21			0.45
Eigenvalue	6.103	1.319	
% of total variance	46.944	10.144	
Total variance			57.088

University B and 82 from University C. The table also compares Park's two-factor model with our sample of 237 participants from University B and University C. In addition, for comparison purposes, the table provides the indices of Park's model using his Korean participants. Concerning the entire sample, both the University B sample and the University C sample, the model fit indices of the two-factor structure, including RMSEA, CFI, and IFI, fell within the acceptable range. The goodness-of-fit index (GFI) of the entire sample was 0.926, while that of the two individual university samples was close to 0.90 (0.894 for University B and 0.855 for University C). The model fit indices indicated that the data for all 237 undergraduates fit the two-factor model well. It should be noted, however, that the results of the chi-square test of independence for the full set of data did not meet the acceptable range ($p < 0.01$). As discussed in Park's (2014) study, the chi-square statistic is sensitive to sample size; thus, this study considered other indices necessary to assess model fit. The aforementioned indices, especially RMSEA and CFI (Coovert and Craiger 2000; Liu et al. 2004), applied in this study served to evaluate model fit. Park's two-factor model had lower scores than our two-factor model, whether applying our sample of Japanese undergraduates or his original sample of Korean participants. The index of RMSEA of 0.089 of Park's model using our sample stayed within an adequate range, while the other indices were close to acceptable. Finally, our confirmatory factor analysis confirmed the two-factor structure concerning both University B and C. The results suggest that our two-factor model may be applicable to examination of EFL anxiety of students who learn in various types of universities in Japan.

Discussion and conclusions

The results of this study viewed in conjunction with those of the previous seven studies led to two conclusions. The first conclusion concerns the factors and structure of the

Table 6 Results of the fourth exploratory factor analysis of the FLCAS with direct oblimin rotation ($n = 149$)

Item No.	Factor 1	Factor 2	h^2
	Communication apprehension	Fear of failing	
3	0.87		0.68
31	0.87		0.65
27	0.75		0.70
20	0.74		0.70
13	0.68		0.55
2	0.66		0.42
26	0.64		0.57
30		0.77	0.53
4		0.77	0.66
15		0.66	0.67
10		0.64	0.39
25		0.53	0.51
Eigenvalue	5.724	1.303	
% of total variance	47.70	10.86	
Total variance		58.559	

FLCAS. Our exploratory and confirmatory factor analyses showed a two-factor model that consists of communication apprehension (seven items) and fear of failing (five items), although the first run of exploratory factor analysis produced six factors with an eigenvalue greater than 1. Consistently, the other seven studies also documented multiple factors, with a range of two to four components. Accordingly, it is reasonable to conclude that the FLCAS measure has multiple dimensional factors in terms of students' fear and anxiety about foreign language learning.

The second conclusion relates to the inconsistency of a number of factors as well as constituent factor items of the FLCAS among all FLCAS factor analysis studies, including the present research. As presented in Table 1, the previous seven studies showed a different number of factors. A two-factor model was shown by three studies, plus the current research; a three-factor model was proposed by two studies; and a four-factor

Table 7 Results of confirmatory factor analysis ($n = 237$): Goodness-of-fit indices of the two-factor model for the FLCAS

Model	N	χ^2	df	Sig	RMSEA	IFI	CFI	GIF
This study's two factor model of the entire sample	237	107.52	53	$p < 0.01$	0.066	0.945	0.944	0.926
This study's two factor model of University B sample	155	106.07	53	$p < 0.01$	0.081	0.922	0.921	0.894
This study's two factor model of University C sample	82	86.50	53	$p < 0.01$	0.088	0.909	0.906	0.855
Park's two-factor model using this study sample	237	657.75	229	$p < 0.01$	0.089	0.825	0.824	0.799
Park's two-factor model using his original Korean sample	217	484.68	229	$p < 0.01$	0.068	0.900	0.899	

model was offered by two studies. Furthermore, close examination of the models with the same number of factors showed that the items in a factor from one study did not match those of another. For example, our study resulted in two factors of communication apprehension (seven items: 2, 3, 13, 20, 26, 27, and 31) and fear of failing (five items: 4, 10, 15, 25, and 30). The first or second factor's items did not match with those of Cheng et al. (1999) using Taiwanese participants (one factor of nine items: 1, 2, 9, 13, 14, 18, 24, 27, and 31; the other factor of seven items: 4, 15, 19, 21, 25, 29, and 30). Like this comparison, comparisons with the other two-factor structure studies showed an inconsistent pattern.

A detailed comparison of constituent items from previous studies was presented above and indicated that several factors of the earlier studies contained a mixture of the three constructs conceptualized by Horwitz et al. (1986). In fact, our communication apprehension factor included seven constituent items; it seemed that six items related to communication apprehension (2, 3, 13, 20, 26, and 27), while one item involved fear of negative evaluation (31). As Horwitz (2016) and Park (2014) suggested, inconsistent results may relate to cultural backgrounds and translated versions of the FLCAS measure. Congruently, the model fit indices of our study results differed from those of Park's (2014) study, as shown in Table 7. Even when the FLCAS was investigated in the same country, inconsistent results occurred. Both our study and Matsuda and Gobel's study (2004) using Japanese samples showed a two-factor structure (their one factor of 21 items; the other factor of 12 items), but with different constituent items for each factor.

Demographic characteristics of subjects such as educational major may be a reason for this inconsistency. Tajima (2002, as cited in Andrade and Williams 2009) reported that students' EFL anxiety levels in class differ between English majors and non-English majors. Although our study results did not provide clear evidence regarding the effect of students' majors, the fact that three studies in the same country—Matsuda and Gobel (2004), Yashima et al. (2009), and this study—had differing numbers of factors and different constituent factor items suggests that other differences are at play. Subjects' majors may have a strong impact on the results of factor analysis when examining EFL classroom anxiety.

Finally, this inconsistency could be ascribed to different analytical methods to examine the FLCAS—a different type of exploratory factor analysis with a different method of rotation. Our study applied principal component analysis with oblimin rotation and attempted to repeat exploratory factor analysis four times to reduce items. Those statistical tools may also affect factor analysis results. Thus, our second conclusion is that the FLCAS measure tends to show a different pattern of constituent factor items—related to cultural contexts, student major, and statistical methods.

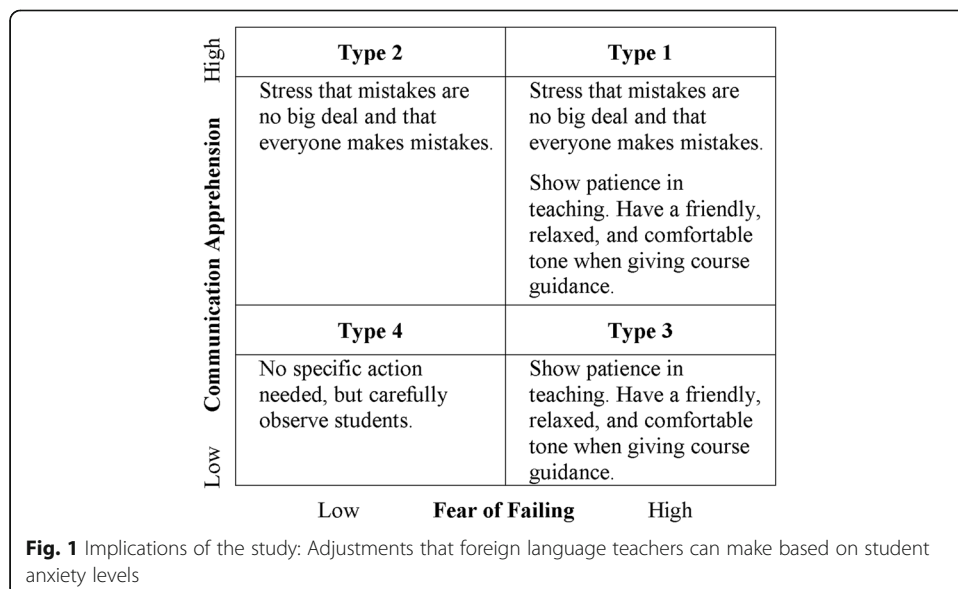
Implications

Based on the results of this study, we offer two implications. The first implication concerns methodology. As discussed above, the FLCAS measure seems to be sensitive to cultural contexts, student's major, translation, and analytical strategies. Thus, in future analyses of the factor structure of the FLCAS, it will be important to consider these points. As our study examined Park's two-factor model using a Japanese sample, a

promising study would be to test our two-factor model and Park’s model using a different sample to evaluate how those models are acceptable with a different research context.

The second implication is a practical one in an academic context. A great amount of research has addressed students’ fear or anxiety about foreign language learning. As Horwitz et al. (1986) indicated, those negative emotions are complex and involve the three components proposed. To address those emotions, it seems crucial to examine more specific factors that students are worried about when studying a foreign language. This study identified communication apprehension and fear of failing. By utilizing the two-factor model of this study, instructors should examine attitude toward foreign language learning and then focus on improving the learning environment. For example, if Japanese students are concerned about understanding English during class, instructors should create a positive learning environment and encourage students that they can understand what is being taught, specifically addressing the students’ anxiety. Accordingly, this practical implication would lead students to learn more English with less anxiety in English class.

The third implication describes a teaching aspect. People experiencing negative emotions do not take in information efficiently; consequently, students who are anxious, angry, or depressed will not learn (Goleman 1995). Similarly, students who experience too much tension and fear in EFL classrooms will not grasp the content regardless of its intelligibility, because theoretically a high affective filter hinders the processing and reception of input in the course of L2 acquisition (Krashen 1981, 1982, 1985). Our findings of the two-factor model of the FLCAS (i.e., the one factor of communication apprehension and the other factor of fear of failing) are thought to be applicable in an EFL classroom situation where teachers attempt to help their students manage these negative emotions. As shown in Fig. 1, a combination of the two factors has four categories depending on whether students experience high or low communication apprehension and high or low fear of failing. Identifying students’ types in this way allows teachers



to take various measures to create a low-anxiety learning environment and promote L2 acquisition. For instance, teachers could adjust their attitude toward learners' mistakes. Communication apprehension partly derives from learners' knowledge that they will almost certainly have difficulty making themselves understood (Horwitz et al. 1986), and L2 learners tend to experience less anxiety when instructors have the attitude that mistakes are no big deal and that everyone makes mistakes (Young 1990). Therefore, showing such an attitude would help in a class with many Type 2 students. On the other hand, if an instructor has many Type 3 students in a class, showing patience might help. As Type 3 students start to worry when they do not understand what a teacher said, it is important for teachers to patiently teach according to the way students learn. In addition, explaining course goals, grading rules, and assessment criteria with a friendly, relaxed, and comfortable tone could be an effective technique to alleviate Type 3 anxiety. L2 learners have reported that a good sense of humor, friendliness, a relaxed attitude, patience, and comfortableness are the top characteristics of teachers that tend to reduce students' anxiety (Young 1990).

Limitations

One of the limitations of this study was a methodological issue. As described in the methods, this study did not identify the major or study concentration of participants at University B and C. Since students' majors are considered a factor that affects how they respond to the measure, the lack of this information is a weakness of this study, particularly in terms of whether or not the participant was majoring in English, a difference that has had a critical effect on anxiety levels (see Tajima 2002, as cited in Andrade and Williams 2009). This study conducted separate confirmatory factor analyses for Universities B and C, and results showed that a difference in type of university might not have a strong influence, particularly in Japan. In other words, our two-factor model may be applicable to students in various Japanese universities. However, those results do not indicate how confirmatory factor analysis results for English majors differ from those of non-English majors. Accordingly, future studies should gather information on demographic features of participants, and particularly students' major, when investigating FLA.

The second limitation of this study concerns classification of the 33 items of the FLCAS in relation to latent constructs proposed by Horwitz et al. (1986). However, since Horwitz et al. (1986) did not specify which FLCAS items are associated with each construct, the classification made in the present study relied on our interpretation and evaluation based on the description of each construct conceptualized in their research. As described above, it has been difficult to categorize three items (5, 6, and 17) into one of the three constructs. These items are thought to be characterized as a global aspect of foreign language classroom anxiety rather than contextually specific situations relevant to one of the three constructs. Although it is crucial to determine and confirm the number of latent components using FLCAS, future research should also explore how each item of FLCAS is linked with one of the three constructs. Such research would greatly contribute to the development not only of the FLCAS but also the area of FLA in classroom situations.

Appendix A

Table 8 Foreign Language Classroom Anxiety Scale (Horwitz et al. 1986)

Item No.	Descriptions
1	I never feel quite sure of myself when I am speaking in my foreign language class.
2	I don't worry about making mistakes in language class (R).
3	I tremble when I know that I'm going to be called on in language class.
4	It frightens me when I don't understand what the teacher is saying in the foreign language.
5	It wouldn't bother me at all to take more foreign language classes (R).
6	During language class, I find myself thinking about things that have nothing to do with the course.
7	I keep thinking that the other students are better at languages than I am.
8	I am usually at ease during tests in my language class (R).
9	I start to panic when I have to speak without preparation in language class.
10	I worry about the consequences of failing my foreign language class.
11	I don't understand why some people get so upset over foreign language classes (R).
12	In language class, I can get so nervous I forget things I know.
13	It embarrasses me to volunteer answers in my language class.
14	I would not be nervous speaking the foreign language with native speakers (R).
15	I get upset when I don't understand what the teacher is correcting.
16	Even if I am well prepared for language class, I feel anxious about it.
17	I often feel like not going to my language class.
18	I feel confident when I speak in foreign language class (R).
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.
21	The more I study for a language test, the more confused I get.
22	I don't feel pressure to prepare very well for language class (R).
23	I always feel that the other students speak the foreign language better than I do.
24	I feel very self-conscious about speaking the foreign language in front of other students.
25	Language class moves so quickly I worry about getting left behind.
26	I feel more tense and nervous in my language class than in my other classes.
27	I get nervous and confused when I am speaking in my language class.
28	When I'm on my way to language class, I feel very sure and relaxed (R).
29	I get nervous when I don't understand every word the language teacher says.
30	I feel overwhelmed by the number of rules you have to learn to speak a foreign language.
31	I am afraid that the other students will laugh at me when I speak the foreign language.
32	I would probably feel comfortable around native speakers of the foreign language (R).
33	I get nervous when the language teacher asks questions which I haven't prepared in advance.

Appendix B

Table 9 The Japanese version of the Foreign Language Classroom Anxiety Scale (Yashima et al. 2009)

Item No.	Description
1	英語の授業で話すとき自信がもてない。
2	英語の授業で間違えることは気にならない。
3	英語の授業で当てられると思うと体が震える。
4	英語の授業で先生の言っていることが理解できないととても不安だ。
5	もつと英語の授業があつてもよいと思つている。
6	英語の授業中に、授業と関係ないことを考えていることがよくある。
7	他の生徒の方が自分よりよくできると思う。
8	英語の授業中に行われるテストではだいたい落ち着いている。
9	英語の授業で準備なしに話さないといけない時、パニックになる。
10	英語の単位を落としたときの影響が心配だ。
11	英語の授業で動揺する人の気持ちがわからない。
12	英語の授業では、緊張のあまり、知っていたことも忘れてしまうときがある
13	英語の授業で自分からすすんで答えるのは恥ずかしい。
14	英語をネイティブスピーカーと話すとき緊張しない。
15	先生が何を訂正しているのか理解できなとき動揺する。
16	英語の授業の予習を十分にしているにもかかわらず心配になる。
17	よく英語の授業を休みたくなる。
18	英語の授業で話すのに自信がある。
19	先生が自分の間違いをいちいち直しそうなので心配だ。
20	英語のクラスで当たりそうになると胸がときどきする。
21	英語のテスト勉強をすればするほど、混乱する。
22	英語の授業の予習をしなければならぬというプレッシャーを感じない。
23	常に他の学生の方が英語で話すのが上手だと感じている。
24	他の学生の前で英語を話すとき自意識がとて高くなる。
25	英語のクラスは進むのが速いのでついていけるかどうか心配である。
26	他の科目よりも英語のクラスの方が緊張する。
27	英語のクラスで話すとき緊張したり混乱したりする。
28	英語の授業の前には、自信をもちリラックスしている。
29	先生の言うことがすべて理解できないと不安になる。
30	英語を話すために勉強しないとけない文法規則の数に圧倒される。
31	私が英語を話すとき他の学生が笑うのではないかと思う。
32	ネイティブスピーカーに会うときおそろくリラックスしてられると思う。
33	先生が、前もつて準備していなかつた質問をすると緊張する。

Abbreviations

CFI: Comparative fit index; EFL: English as a foreign language; FLA: Foreign language anxiety; FLCAS: The Foreign Language Classroom Anxiety Scale; IFI: Incremental fit index; L2: Second language; RMSEA: Root mean square error of approximation

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This study presented key results of the factor analysis, including the correlation matrix, which allows anyone to conduct a factor analysis.

Authors' contributions

Both authors contributed equally to the completion of this manuscript. Both authors read and approved the final manuscript.

Competing interests

The authors declare that they have no competing interests.

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