The Relationship between Anxiety and Foreign Language Achievement in College Foreign Language Classrooms—A Case Study Based on Feedback Scenarios

Yao Yiqin[1], Wang Hanzhang[2], Xu Qi[3]

[1]Department of Medicine, Dali University, Dali, China, 671000
[2]School of Economics and Finance, Xi'an International Studies University, Xi'an, China, 710000
[3]School of Environment, Education & Development, The University of Manchester, Manchester, Britain, M139PL

Abstract: *This study, through questionnaires, explores the relationship between foreign language classroom anxiety and academic performance among college students. It finds that anxiety is widespread and associated with gender, age, and academic year. Positive feedback can reduce anxiety and improve grades, while negative feedback intensifies it. Factors such as the classroom environment, anxiety, and boredom affect self-reported grades. The conclusions highlight the need to pay attention to student emotions, boost confidence, improve classroom experiences, and enhance teacher-student communication. In terms of research methods, we have adopted a diverse range of data collection methods, including questionnaires, classroom observations, and learning logs, to obtain more comprehensive and in-depth research results. At the same time, we have also conducted more detailed categorizations of the research sample to better analyze the relationship between student anxiety and academic performance across different backgrounds. Hence, we recommend that teachers create more opportunities for interaction in the classroom, encourage students to express their opinions, and foster a positive and upward learning atmosphere.*

Keywords: *College Students; Foreign Language Anxiety; English Grades; Feedback Scenario*

1. Introduction

In the context of globalization, the importance of foreign language learning has become increasingly prominent. This study takes the results of feedback scenarios and survey questionnaires as a starting point, aiming to explore the relationship between foreign language classroom anxiety and academic performance among college students. This research attempts to uncover the mechanism of anxiety in the foreign language learning process, as well as how different types of feedback scenarios impact students' levels of anxiety and their foreign language grades.

Anxiety is a kind of irritable emotion arising from excessive worry about one's own or loved ones' life safety, future destiny, etc., which contains anxious, attached, worried, nervous, fearful, uneasy and other components. It is associated with critical situations as well as unpredictable and unmanageable events[1].

Foreign language learning anxiety, belonging to a kind of language anxiety, is a psychological phenomenon that is unique to the process of learning or using a foreign language[2]. It manifests itself as a tense and uneasy emotional state with a sense of fear in the foreign language learning environment due to the learner's concern that he or she will not be able to achieve the expected learning goals, the fear of making mistakes, and the fear of negative evaluation by others.

2. Research Design

2.1 Research problem

This study seeks to explore answers to the following questions:

What is the overall profile of foreign language anxiety among college students?

How foreign language anxiety relates to gender,age and grade level?

How do self-assessed grades correlate with classroom anxiety,classroom boredom,and classroom environment?

What is the response to foreign language anxiety?

2.2 Research target

The population of this study is the group of college students aged 18 to 27, with the largest number of college juniors and the smallest number of graduate students. In order to equalize the gender ratio and reduce the influence of the gender factor on this study, the male group in this study accounted for 51.2% of the total sample and the female group accounted for 48.8% of the total sample.

2.3 Research methodology

The questionnaire method, i.e., questionnaires were distributed to the subjects, and by completing the scale, quantitative data were collected, and further data analysis was done to provide the support of quantitative data for this study.

2.4 Research tools

(1)The Foreign Language Classroom Anxiety Scale - Reduced Version:Selected and validated by Dewaele and Mac Intyre (2014) from the 33-question full version of the Foreign Language Classroom Anxiety Scale (Horwitz et al. 1986).[3]

(2) Foreign Language Learning Boredom Scale:This scale is the first subscale of the Foreign Language Learning Boredom Scale (Li et al. 2023), which is a 5-point Likert scale containing 8 items(Li et al., 2023).

(3) The Classroom Environment Scale from Qingmei Ren's Subject Environment Scale (Ren Qingmei, 2016).[4]

2.5 Research process

From July 22 to August 5, 2024, which lasted for 14 days, the 205 valid data collected were analyzed by SPSS for data analysis, descriptive statistical analysis of the basic information of the samples, measurement topics, followed by reliability and validity analysis to ensure the authenticity and reliability of the collected data. Second, Pearson correlation analysis was conducted using the samples in order to investigate the correlation between self-assessment scores and the three dimensions of classroom anxiety, classroom boredom, and classroom environment. Differences were explored through independent samples t-test and one-way ANOVA, followed by regression analysis and mediation effect analysis to further determine the correlation between foreign language anxiety and grades.

3. Data Statistics

3.1 Descriptive statistics of basic information

In the research on the age distribution of the participants in this study, the 18 to 23 years age group had the largest number of participants with 107 participants or 52.2% of the total sample. This age group was followed by the 24 to 27 age group with 77 participants or 37.6%. In contrast, the 28+ age group had the lowest number of participants with only 4 participants or 2% of the total sample.

In the gender distribution of participants in this study, there were 105 male participants, accounting for 51.2% of the total sample. There were 100 female participants, accounting for 48.8% of the total sample, showing a relatively balanced gender ratio.

In the sample distribution of this study, it was found that senior undergraduate and graduate level students showed some differences in participation. Specifically, juniors had the largest number of students with 33 participants, or 16.1% of the total sample, demonstrating a high level of interest in the topic of this study among senior undergraduate students. This was closely followed by senior students,

also with 33 participants, also accounting for 16.1% of the total sample, a table that reflects the active participation of graduating seniors in the relevant research topic. In the postgraduate group, second-year students ranked third with 32 participants, accounting for 15.6% of the total, demonstrating the active participation of students in academic research at the postgraduate education level. In contrast, third-year students had the lowest number of participants with 22 participants, accounting for 10.7%, which may be related to the multiple pressures faced by graduate-level students such as employment and dissertation.

3.2 Descriptive statistical analysis of measurement topics

Table 1 Descriptive statistical analysis of measurement topics

Measurement Title	N	minimum value	maximum values	average value	Standard Deviation	skewness	kurtosis
Even though I am well prepared for my English class, I still get anxious.	205	1	5	3.54	1.293	-0.787	-0.443
I always think that other students speak English better than me.	205	1	5	3.43	1.249	-0.584	-0.538
I could feel my heart pounding when I was asked to answer questions in English class.	205	1	5	3.84	1.339	-1.001	-0.196
I'm worried about making mistakes in English class	205	1	5	3.51	1.297	-0.656	-0.55
When I speak in English class, I don't feel confident.	205	1	5	3.59	1.268	-0.711	-0.366
When I speak in English class, I get nervous and confused.	205	1	5	3.4	1.194	-0.56	-0.45
When I had to speak in English class without preparation, I began to panic.	205	1	5	3.37	1.188	-0.575	-0.358
Volunteering to answer questions in English class made me feel awkward.	205	1	5	3.32	1.209	-0.412	-0.553
English class isn't much fun.	205	1	5	3.46	1.532	-0.689	-1.056
I get sleepy in English class.	205	1	5	3.43	1.499	-0.718	-0.977
I tend to dither in English class.	205	1	5	3.27	1.45	-0.506	-1.107
In English class I was in the classroom, but my mind was wandering	205	1	5	3.17	1.418	-0.359	-1.121
I have a hard time concentrating in English class.	205	1	5	3.11	1.401	-0.331	-1.127
Time passes so slowly in English class.	205	1	5	3.13	1.389	-0.405	-1.086
I often have the feeling of not being able to listen in English class.	205	1	5	3.09	1.388	-0.356	-1.118
I always find a way to pass the time in English class	205	1	5	3.07	1.393	-0.297	-1.163
Please rate your English level.	205	1	10	5.41	2.368	0.028	-0.642
I complete my learning tasks as requested by my teacher	205	1	5	3.65	1.442	-0.91	-0.567
I actively answered the questions asked by the teacher	205	1	5	3.73	1.425	-1.005	-0.324
The teacher patiently answered the questions I asked	205	1	5	3.77	1.462	-0.973	-0.477
I continue to deepen my understanding of knowledge through activities	205	1	5	3.71	1.445	-0.952	-0.482
I feel like teachers try new ways of teaching	205	1	5	3.9	1.48	-1.16	-0.177

As table 1 shows, a total of 22 self-report questionnaire questions were included in the dimensional measures of this study to comprehensively measure participants' relevant attitudes and behaviours. One

of the questions on self-assessment of English proficiency presented a different scale range with a maximum value of 10 and a minimum value of 1 to accommodate the measurement of language proficiency. Comparatively, the other questions were presented on a standard 5-point Likert scale with a maximum value of 5 and a minimum value of 1 to ensure consistency and balance in the ratings. The mean values of the data obtained were clustered around 3.5, indicating a general attitude or behavioural tendency of the participants towards the measured dimensions. Statistical analysis of the distribution of the data illustrated that the absolute value of skewness was less than 3 and the absolute value of kurtosis was less than 10, and that these indicators were below the standard values recommended for normal distribution, indicating that the data conformed to a normal distribution.

3.3 Reliability Analysis

3.3.1 Factor analysis

In this study, in order to test the suitability of the data for factor analysis, Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test of sphericity were executed.The test results showed that the KMO measure was 0.934, which is higher than the generally accepted standard value of 0.7, indicating that the dataset is suitable for factor analysis. In addition, the approximate chi-square value of the Bartlett's test of sphericity was 6089.426, corresponding to 210 degrees of freedom, with a significance level of 0.000, which is well below the conventional threshold of 0.05, further confirming the existence of significant correlation between the variables, and reinforcing the suitability of the data for factor analysis.

Table2 KMO and Bartlett's test

KMO and Bartlett's test		
KMO Sample Suitability Quantity		.934
Bartlett's test of sphericity	approximate chi-square	6089.426
	Degrees of freedom	210
	significance	.000

As table 2 shows, Principal component analysis was used to factor analyse the measurement questions and the factors were rotated using the maximum likelihood method. Three main dimensions were extracted which together explained a significant portion of the data variance. The accumulation of variance for the first dimension was 38.392%, which is below the recommended value of 40%, indicating that there was no significant common method bias. Overall, the total variance accumulation of the three dimensions reached 86.512 per cent, a value well above the recommended standard of 60 per cent, indicating that the extracted factor structure adequately captures the variability of the original data

Convergence was reached after five iterations, revealing three stable factor dimensions. The factor loadings of each dimension were significantly higher than the suggested value of 0.7, indicating that the measurement topics of each dimension have high explanatory power with their corresponding latent factors.

3.3.2 Reliability Analysis

Cronbach's alpha (Cronbach's coefficient) was calculated for each dimension. The classroom anxiety dimension consisted of eight measurement topics and its Cronbach's coefficient was 0.962, indicating a high internal consistency of the measurement topics of this dimension. Similarly, the classroom boredom dimension consisted of 8 measurement topics with a Cronbach's coefficient of 0.986, reflecting that the topics of this dimension showed a high degree of consistency in evaluating students' feelings of boredom in the classroom. The classroom environment dimension consisted of five measurement topics, and its Cronbach's coefficient was 0.974, showing a high degree of homogeneity in the measurement topics of this dimension. Combining all measurement topics, the overall Cronbach's coefficient was 0.809, a value that is also higher than the recommended standard of 0.7, indicating that the entire scale has high reliability in evaluating different classroom experiences.

3.3.3 Internal consistency and discriminant validity

AVE open-square values in bold, Pearson's correlation in lower triangles

As table 3 shows, to assess convergent and discriminant validity, Composite Reliability (CR) and Average Variance Extracted (AVE) were calculated for each dimension. The results showed that the CR values of all dimensions exceeded the recommended criterion of 0.7, indicating that the measurement topics of each dimension have high reliability. Also, the AVE values were all above the suggested criterion of 0.5, indicating that the measurement titles of each dimension have high explanatory power in explaining the variance of latent variables.

Table 3 Internal consistency and discriminant validity

	CR	AVE	Self-assessment scores	Classroom Anxiety	Boredom in the classroom	Classroom environment
Self-assessment results	-	-	1			
Classroom Anxiety	0.966	0.780	-.174*	**0.883**		
Boredom in the classroom	0.986	0.897	-.192**	-.168*	**0.947**	
Classroom environment	0.976	0.892	.224**	-.157*	-.152*	**0.944**
* At the 0.05 level (two-tailed), the correlation was significant.						
** At the 0.01 level (two-tailed), the correlation was significant.						

3.4 Related Analysis

A Pearson correlation analysis was conducted to investigate the correlations between self-assessed grades and the three dimensions of classroom anxiety, classroom boredom, and classroom environment. The results of the analysis revealed that the Pearson correlation coefficients between the self-assessed scores and classroom anxiety were -0.174, classroom boredom -0.192, and classroom environment -0.224, and these correlations were significant, indicating that the self-assessed scores were correlated with these dimensions of classroom experience to varying degrees. In addition, the correlation coefficient between classroom anxiety and classroom boredom was -0.168, the correlation coefficient between classroom anxiety and classroom environment was -0.157, and the correlation coefficient between classroom boredom and classroom environment was -0.152, and these correlations were equally significant. These results indicate that there is a statistically significant correlation between students' self-assessment scores and their classroom experience, and that the dimensions of classroom experience are also correlated with each other.

3.5 ANOVA (analysis of variance)

3.5.1 One-way ANOVA for age

A one-way analysis of variance (One-Way ANOVA) was conducted in order to investigate the potential influence of the age factor on the variables of self-assessed achievement, classroom anxiety, classroom boredom, and classroom environment. The results of the analysis showed that the effect of age on these variables was not significant, indicating that the relationship between students' age and self-assessed grades, classroom anxiety, classroom boredom, and classroom environment did not reach a statistically significant level within the sample of this study.

3.5.2 Independent samples t-test for gender

In order to investigate the effect of gender factor on the variables of self-assessed grades, classroom anxiety, classroom boredom and classroom environment, an independent samples t-test was conducted. The results showed that the effect of gender on classroom anxiety and classroom environment reached statistical significance. Specifically, the F-value for classroom anxiety was 6.646, which corresponds to a significance level of 0.011, while the t-value was 2.863, which corresponds to a significance level of 0.005, indicating that there is a significant difference in classroom anxiety experience among students of different genders. Similarly, the F-value for classroom environment was 16.138 with a significance level of 0.000 and the t-value was 2.803 with a significance level of 0.006, which indicates that there is a significant effect of gender on students' perception of classroom environment. These results illustrate that gender may be a significant factor influencing students' classroom experiences and emotional responses in educational settings. However, for self-assessed grades and classroom boredom, the independent samples t-test did not find a significant effect of gender, which may indicate that these variables are not strongly associated with gender[5].

3.5.3 One-way ANOVA for grade level

A one-way analysis of variance (One-Way ANOVA) was conducted to examine the potential effect of grade level on the variables of student self-assessed achievement, classroom anxiety, classroom boredom, and classroom environment.

3.6 Regression analysis

3.6.1 Multiple Regression with Classroom Anxiety, Classroom Boredom, and Classroom Environment as Independent Variables and Self-Assessment Scores as Dependent Variables

The results of regression analysis illustrated that classroom anxiety was significantly negatively correlated with self-assessment scores, with an unstandardized coefficient of -0.384, a standardized coefficient of -0.181, a significance level of 0.009, and a Variance Inflation Factor (VIF) value of 1.067, which indicated that classroom anxiety was an important negative factor affecting self-assessment scores. Similarly, classroom boredom was significantly negatively associated with self-assessed achievement with an unstandardized coefficient of -0.341, a standardized coefficient of -0.197, a significance level of 0.005, and a VIF value of 1.065, suggesting that classroom boredom may undermine students' academic confidence. In contrast, classroom environment was significantly and positively correlated with self-assessed achievement with an unstandardized coefficient of 0.284, a standardized coefficient of 0.166, a significance level of 0.017, and a VIF value of 1.061, indicating that a positive classroom environment may enhance students' academic self-assessment. The overall model had an F-value of 7.973 and an R-square of 0.106, indicating that the model had moderate explanatory power for self-assessment scores, and a Durbin-Watson statistic of 1.837, which indicated that there was no significant autocorrelation among the residuals, thus validating the robustness of the model.

3.6.2 Regression of classroom environment as the independent variable and classroom anxiety as the dependent variable

The results of the analysis show that classroom environment has a significant negative effect on classroom anxiety with an unstandardized coefficient of -0.127, a standardized coefficient of -0.157, and a significance level of 0.025, suggesting that improving the classroom environment may help to alleviate students' feelings of anxiety. The model had an F-value of 5.124 and an R-squared of 0.025, indicating that classroom environment is a statistically significant predictor of classroom anxiety variability. The Durbin-Watson statistic was 1.973, indicating that there was no significant autocorrelation between the residuals, thus validating the robustness of the model.

3.6.3 Regression of Classroom Environment as the Independent Variable and Classroom Boredom as the Dependent Variable

The results of the analysis revealed that classroom environment had a significant negative effect on classroom boredom with an unstandardized coefficient of -0.151 compared to a standardized coefficient of -0.152 with a significance level of 0.029, indicating that a more positive classroom environment was associated with lower classroom boredom among students. The resulting model had an F-value of 4.83 and an R-squared of 0.023, which suggests that classroom environment statistically significantly explains the variability in classroom boredom, albeit with low explanatory power. The Durbin-Watson statistic of 1.888 indicated that there was no significant autocorrelation between the residuals, thus confirming the robustness of the model results.

3.7 Analysis of intermediation effects

Classroom environment as an independent variable, classroom anxiety as a mediating variable, and self-assessed performance as a dependent variable.

Table4 Model diagram of classroom anxiety as a mediator

Route	effect	efficiency value	LLCI	ULCI
Classroom environment➔Classroom Anxiety➔Self-assessment results	aggregate effect	0.3844	0.1533	0.6154
	direct effect	0.3462	0.1141	0.5783
	indirect effect	0.0381	0.0028	0.0919

As table 4 shows, the results of the analysis pointed out that the total effect value of classroom environment on self-assessed grades was 0.3844, and its 95% confidence interval (LLCI of 0.1533 and ULCI of 0.6154) did not contain zero, which indicated that the classroom environment had a significant positive effect on self-assessed grades. Further analysis showed that the value of the direct effect of classroom environment on self-assessed achievement was 0.3462 with a 95% confidence interval (LLCI of 0.1141, ULCI of 0.5783) again not containing zero, confirming the direct effect of classroom environment on self-assessed achievement.

Classroom environment as the independent variable, classroom boredom as the mediator variable,

and self-assessment scores as the dependent variable

Table 5 Model diagram of classroom boredom as a mediator

Trails	Effect	Efficiency value	LLCI	ULCI
Classroom environment➔Boredom in the classroom➔Self-assessment results	aggregate effect	0.3844	0.1533	0.6154
	direct effect	0.3423	0.1110	0.5735
	indirect effect	0.0421	0.0025	0.0962

As table 5 shows, the mediated effect analysis revealed a significant total effect of classroom environment on self-assessed achievement with a value of 0.3844, whose 95% confidence interval (LLCI of 0.1533, ULCI of 0.6154) did not contain zero, indicating that improvement in the classroom environment significantly enhances students' self-assessed achievement. The value of the direct effect of classroom environment on self-assessment scores was 0.3423, with a 95% confidence interval (LLCI of 0.1110, ULCI of 0.5735) that also did not contain zero, confirming that the classroom environment had a direct and positive effect on students' self-assessment scores. In addition, the indirect effect analysis revealed that classroom environment indirectly affects self-assessed performance by reducing students' classroom boredom with an indirect effect value of 0.0421 and a 95% confidence interval (LLCI of 0.0025 and ULCI of 0.0962) that does not contain zero, suggesting that classroom boredom mediates the relationship between classroom environment and self-assessed performance.

Parallel mediation of classroom boredom and classroom anxiety as mediating variables at the same time

The results of the analysis revealed that the classroom environment had a significant total effect on self-assessment scores, with a value of 0.3844 and a 95% confidence interval (LLCI of 0.1533 and ULCI of 0.6154) that did not contain zero, suggesting that the optimization of the classroom environment can significantly enhance students' self-assessment scores. After controlling for the effects of mediating variables, the value of the direct effect of classroom environment on self-assessment scores was 0.2844 with a 95% confidence interval (LLCI of 0.0524 and ULCI of 0.5165) not containing zero, confirming the direct effect of classroom environment on students' self-assessment scores. Further mediated effects analysis revealed an indirect effect value of 0.0514 in the pathway where classroom boredom served as a mediator, with a 95% confidence interval (LLCI of 0.0057, ULCI of 0.1105) not containing zero, suggesting that the classroom environment may indirectly contribute to students' academic self-assessment by reducing their classroom boredom. Similarly, in the path where classroom anxiety served as a mediator, the indirect effect value was 0.0486 with a 95% confidence interval (LLCI of 0.0076, ULCI of 0.0628) not containing zero, suggesting that the classroom environment may also indirectly promote student self-assessment of academic performance by alleviating students' classroom anxiety. The existence of a parallel mediator was demonstrated.

4. Discussion

Most of the questions (e.g., "Even though I am well-prepared for my English class, I still feel anxious") had mean values close to or slightly above the midpoint (3.5), suggesting that participants generally experienced some anxiety and lack of self-confidence in the English learning process.

Participants performed well in terms of learning attitudes (e.g., "I follow the teacher's requirements to complete the learning tasks") and positive behaviours (e.g., "I actively answer the questions posed by the teacher"), with generally high mean values (3.65-3.77), indicating that most students are able to actively participate in classroom activities and follow the teacher's requests.

"The teacher patiently answered the questions I asked" also received a high mean value (3.77), reflecting the teacher's positive response and patience in answering students' questions.

Topics related to classroom experience and engagement (e.g., "English class is not interesting", "I get sleepy in English class", etc.) had low mean values (3.07-3.46), indicating that some participants had a poor experience in English class, which may have affected their motivation and engagement in learning. learning motivation and engagement.

Participants' evaluation of their English proficiency was moderately high (mean 5.41), but the standard deviation was large (2.368), indicating that there are large differences in English proficiency.

5. Conclusion

5.1 Conclusions of the study

This study has drawn the following major conclusions through in-depth analyses of a number of aspects of young students' English learning process:

Balanced distribution of age and gender: the study sample is dominated by young students between the ages of 18 and 27, with a relatively balanced gender ratio, which helps to ensure the universality and representativeness of the findings.

Coexistence of anxiety and confidence in English learning: Participants generally experienced a certain degree of anxiety in the process of English learning, especially when speaking in class and facing challenges. At the same time, they showed a certain lack of confidence in their English proficiency, believing that there was still room for improvement. This anxiety and lack of confidence may have affected their learning experience and effectiveness to some extent[6].

5.2 Teaching Suggestions

Teachers should pay attention to students' possible anxiety during the learning process, and help students relieve their anxiety through classroom interaction and emotional support. Teachers introduce relaxing and enjoyable classroom activities, such as role-playing and group discussion, to reduce students' tension and increase classroom participation.

Teachers develop personalised teaching plans and tutoring programmes for different students' English levels and learning needs. Teachers make use of tiered teaching and cooperative group learning to meet the needs of students at different levels and promote the all-round development of each student.

References

[1] Jenny Lu. Educational anxiety: existential implications and their relevance[J].2024(05)

[2] Botes, E. & Dewaele, J.-M. et al. 2020. the Foreign Language Classroom Anxiety Scale and Academic Achievement: an Overview of the Prevailing Literature and a Meta-Analysis [J]. Journal for the Psychological of Language Learning 2(1): 26-56.

[3] Chen Yao. A study of the effects of high school students' emotional intelligence and foreign language anxiety on their willingness to communicate in the English classroom[D].2024(2)

[4] Ren Qingmei. The construction of effective classroom environment and empirical testing of evaluation scale in college English[J]. Educational Research,2016,37(04):105-11

[5] Dong Lianqi and Liu Meihua. An investigation of the path of effect of foreign language pleasure on foreign language achievement--a mediated model with moderation[J]. Modern Foreign Language 2022(2):195-206

[6] Ou, Min-Min. The predictive effects of foreign language anxiety, pleasure and boredom on high school students' English performance[J].