

## Understanding Foreign Language Anxiety and Achievement in Chinese Secondary EFL Learners: The Role of Behavioural Engagement

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**Abstract:** Drawing up the control-value theory, the present study attempted to understand the relationships among Chinese secondary school students' English learning anxiety, behavioural engagement, and English performance. A total of 230 (113 males, 117 females) English as a foreign language (EFL) learners from one Chinese secondary school completed the academic anxiety scale and behavioural engagement scale. Participants final examination scores measured their English achievement. Structural equation model (SEM) analyses demonstrated that EFL-related anxiety could directly affect EFL achievement and indirectly via the mediator of behavioural engagement. EFL-related anxiety was able to explain 44.9% of the variance in behavioural engagement and 22.6% of the variance in English achievement. Implications for English education and limitations and directions for future studies are discussed.

**Keywords:** Academic Anxiety, Behavioural Engagement, English Achievement, Mediation Mechanism, Chinese Secondary EFL Students

### 1. Introduction

Academic anxiety was regarded as one of the most significant affective factors in the process of EFL learning (Zhao, 2007), which would generate pervasive effects on EFL learning and English performance (Awan et al., 2010; Oruç & Demirci, 2020; Weda et al., 2018). In the past decades, the measurement of foreign language anxiety, the antecedents and consequences of foreign language anxiety, and related intervention studies have been extensively explored by scholars (Li & Dewaele, 2021; Liu, 2006; Moradi, 2022; Shao et al., 2020). Drawing upon the control-value theory of achievement emotions (Pekrun, 2006), the prediction of control and value appraisals on academic anxiety and the impact of academic anxiety on academic performance have been considerably explored. However, previous studies mainly explored the negative effect of academic anxiety on academic performance, and seldom examined the mediating mechanism between these two constructs. In addition, some research suggested that academic anxiety was not entirely negative, but could positively affect school outcomes (Gkonou, 2012; Lomas, 2016). Given the inconsistency of existing research conclusions and the fact that mediating mechanism between academic anxiety and academic performance needs to be further explored, the present study endeavored

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to investigate the direct and indirect effects of academic anxiety on English achievement in a sample of Chinese secondary EFL students aged 12 to 14.

## **2. Literature Review**

### **2.1 Academic Anxiety**

Academic anxiety refers to the fear and apprehension experienced subjectively during the learning process, accompanied by physiological arousals of rapid heartbeat, sweaty palms, and so on (Putwain, 2007). In view of the domain specificity of academic anxiety (Goetz et al., 2006), this study focused on foreign language anxiety and defined it as the subjective feeling of tension, apprehension, nervousness, and worry in the process of foreign language learning and performance (MacIntyre & Gardner, 1994). From the three-dimensional taxonomy (i.e., valence, activation, and object focus) of achievement emotions, academic anxiety could be described as a negative, deactivating, outcome-related emotion (Pekrun et al., 2007; Shao et al., 2020).

Academic anxiety is a common achievement emotion in foreign language learning and has a significant impact on foreign language learning and learning outcomes. Therefore, a series of studies have been conducted either on the intervention of academic anxiety or the relationships between the antecedents and consequences of academic anxiety (Li & Dewaele, 2021; Moradi, 2022; Weda et al., 2018; Yan & Horwitz, 2008). For example, Li and Dewaele (2021) found that classroom environment and grit would act upon foreign language anxiety independently or jointly among Chinese secondary school students aged 13 to 20 years old. A meta-analysis by Brumariu et al. (2022) focusing on the relationships between academic anxiety and academic achievement, school dropout, and academic self-concept found that academic anxiety has a significant negative correlation with school dropout and academic self-concept, while its hindering effect on academic achievement was not particularly significant. In an intervention study with Iranian fifth graders, Moradi (2022) documented that strategy-based instruction would lower students' anxiety levels and enhance their academic achievement.

The theoretical framework of the present study was based on the control-value theory and the existing studies reviewed above. However, two aspects of the existing research need to be further solved. First, existing studies on the relationship between academic anxiety and performance were inconsistent (Brumariu et al., 2022; Weda et al., 2018). Second, based on the control-value theory of achievement emotions, the relationship between academic anxiety and performance has been studied by applying a correlational design. However, the mediating mechanism between academic anxiety and performance needs to be further studied, especially in the EFL learning context in China. The present study aimed to fill these two research gaps by investigating the relationship between academic anxiety and English performance and the mediating mechanism between these variables in a sample of 230 Chinese secondary EFL learners.

### **2.2 Behavioural Engagement**

Behavioural engagement can be defined as a student's involvement aspect in academic, social, and extracurricular activities (Li et al., 2022; Reeve, 2013). Behavioural engagement is one of the four modalities of academic engagement (i.e., behaviour, emotion, cognition, and agency) (Reeve & Tseng,

2011). This study focused on behavioural engagement for the following two reasons. First, behavioural engagement had a higher predictive effect on academic performance than other types of engagement. Second, other types of engagements act indirectly on school outcomes via behavioural engagement rather than directly on school outcomes as behavioural engagement does (Li & Lerner, 2013; Yang et al., 2021).

In view of the fact that behavioural engagement was regarded as the manifestation of motivation (Martin et al., 2017), the antecedents and consequences of behavioural engagement have been extensively studied (Bråten et al., 2022; Olivier et al., 2020; Reschly et al., 2008). For instance, Bråten et al. (2022) examined the relationship between behavioural engagement and text comprehension performance and found that these two variables were positively correlated. In a sample of 293 secondary school students, Reschly et al. (2008) examined the relationship between academic emotions and student engagement and found that positive emotion would directly affect engagement or indirectly through the mediator of coping strategies. Although these studies did not explicitly explore negative academic emotions (e.g., academic anxiety), they provided a theoretical framework for the present study. That is, academic emotions could influence academic performance through behavioural engagement.

### **2.3 English Achievement**

Academic achievement is paramount to educators and students at any stage of education (Rivkin & Schiman, 2015). Academic achievement is usually indicated by academic marks obtained in the learning process. Higher scores indicated students were likely to complete school education and achieve academic success (Kell et al., 2013; McCallumore & Sparapani, 2010). In this study, we defined English achievement as the English marks obtained by secondary school students on the final examinations. Existing studies have demonstrated that academic anxiety and behavioural engagement could affect academic achievement (Bråten et al., 2022; Brumariu et al., 2022; Pekrun, 2006). However, the relationship between academic anxiety, behavioural engagement, and English achievement needs to be further explored.

### **2.4 The Present Study**

The present study aimed to examine the mediating mechanism between academic anxiety and achievement in a sample of Chinese secondary EFL learners. From the third grade of elementary school to the doctoral level, English is vital in Mainland China (e.g., further study and promotion at work ) (Cheng, 2008; Kang & Wu, 2022; Wen, 2012). In addition, academic anxiety is one of the most common negative achievement emotions in EFL learning. Thus, it is of significance to investigate the correlation between academic anxiety and English achievement and the mediating mechanism underpinning these two constructs. Specifically, the present study attempted to address the following two hypotheses.

H1: Foreign language learning anxiety has a negative influence on English achievement.

H2: Foreign language engagement mediates the relationship between academic anxiety and English achievement.

### **3. Method**

#### **3.1 Participants and Procedure**

A total of 230 seventh-grade ( $n = 125$ ) and eighth-grade ( $n = 105$ ) EFL learners from one secondary school in Foshan City, China, participated in this study. The mean age of participants was 12.80 years ( $SD = .72$ ), with 49.1% male and 50.9% female students. Judging by socio-economic background, the participants were mainly from middle-class families.

With the assistance of the English teachers, the questionnaire survey was administered using a paper-and-pencil test in one English class. Before conducting the questionnaire survey, written consent forms were provided by the principal, English teachers, and students. Participants responded to the scale on a five-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). Only data from fellow students who signed written informed consent were analyzed.

#### **3.2 Measures**

##### **3.2.1 Foreign Language Learning Anxiety**

Foreign language learning anxiety was measured by the scale adapted from the Achievement Emotions Questionnaire (AEQ) (Pekrun et al., 2011). Given that test-related anxiety has been extensively explored in previous studies (e.g., Cakici, 2016; Zheng & Cheng, 2018), the present study focused on class-related emotions. Thus, four class-related items adapted from the AEQ (e.g., “While studying English, I feel like distracting myself in order to reduce my anxiety”) were utilized to measure students’ anxiety in learning English. The internal consistency of the foreign language learning anxiety scale was good for Cronbach’s  $\alpha$  equals to 0.763. In the SEM analysis, the foreign language learning anxiety was considered a latent variable.

##### **3.2.2 Foreign Language Engagement**

Foreign language engagement was measured by the four items adapted from the Engagement and Disaffection Scale (Skinner et al., 2009). One sample item of the foreign language engagement was “In English class, I work as hard as I can”. The foreign language engagement scale had a good internal consistency for Cronbach’s  $\alpha = 0.878$ . The present study treated foreign language engagement as a latent variable.

##### **3.2.3 Foreign Language Achievement**

The English scores of students’ final exams were used to represent their foreign language achievement. The examination papers for the final exam were set by the municipal education bureau in accordance with the curriculum syllabus and graded by the English teachers. The full score of the examination paper was 120 points, and the higher the score, the higher the foreign language achievement. In the present study, foreign language achievement served as an observed variable.

### 3.3 Data Analysis

Data were analyzed in four stages using latent structural equation modelling (SEM) using Mplus 8.3 (Muthén & Muthén, 2013). First, descriptive statistics, Cronbach's alpha, and Pearson correlations for the studied variables were calculated. Second, confirmatory factor analysis (CFA) was applied to examine the properties of the proposed measurement model consisting of latent variables of academic anxiety and engagement. Third, SEM was carried out to investigate the structural relationships in the hypothesized models. Fourth, the bootstrap with 5000 re-samples was implemented to assess the indirect effects, constructing 95% bias-corrected and accelerated (BCa) confidence intervals (CI). The indirect effect is significant if zero is not included in the BCa 95% CI.

We used maximum likelihood estimation methods, and goodness-of-fit was evaluated using the following indexes:  $\chi^2$ ,  $\chi^2/df$ , comparative fit index (CFI), standardized root mean square residual (SRMR), root mean square error of approximation (RMSEA), Tucker-Lewis index (TLI). The model fit would be good if they satisfied the traditional cutoff criteria of (a)  $CFI \geq 0.95$  and  $TLI \geq 0.90$ ; (b)  $RMSEA \leq 0.08$ ; and (c)  $SRMR \leq 0.10$  (Chen, 2007; Hu & Bentler, 1999).

## 4. Results

### 4.1 Preliminary Analysis

Table 1 demonstrates the results of descriptive statistics, including means, standard deviations (SD), skewness, kurtosis, reliability, and Pearson correlations between the studied variables. As shown in Table 1, there was a significant negative correlation between academic anxiety and engagement ( $\beta = -.231$ ). Academic anxiety was also negatively correlated with foreign language achievement ( $\beta = -.259$ ). In addition, we also found a significant positive correlation between academic engagement and foreign language achievement ( $\beta = .399$ ).

Table 1: Descriptive statistics, Cronbach's alpha, and Pearson correlations for the variables

	N	Mean	SD	Skewness	Kurtosis	Cronbach's alpha	1	2	3
1. Anxiety	230	2.423	1.007	.473	-.426	.763	1		
2. Engagement	230	4.320	.670	-.731	-.404	.878	-.231**	1	
3. Achievement	230	97.288	13.371	-1.945	6.135	-	-.259**	.399**	1

\*\*  $p < .01$ .

### 4.2 Measurement and Structural Model

There were two latent factors (i.e., foreign language learning anxiety and foreign language engagement) and seven indicators in the measurement model (Table 2, M1). Precisely, foreign language learning anxiety consisted of three indicators, and foreign language engagement consisted of four indicators. The

measurement model had good model fit:  $\chi^2 = 14.351$ ,  $df = 13$ ,  $\chi^2/df = 1.104$ ,  $CFI = 0.998$ ,  $TLI = 0.996$ ,  $REMEA = 0.022$ , and  $SRMR = 0.029$ . In addition, the factor loadings of each construct were statistically significant at  $p < .001$  (see Figure 1), and the factor loadings considerably exceeded the criterion of 0.35 (Byrne, 2010).

Table 2: Model fit indices from CFA and SEM analysis

	$\chi^2$	$df$	CFI	TLI	REMEA	SRMR
M <sub>1</sub> Measurement model	14.351	13	.998	.996	.022	.029
M <sub>2</sub> Structural model	32.774	18	.977	.964	.063	.036

Given that the measurement model had a good model fit, SEM analysis was conducted to examine the hypothesized models. First, the results of SEM analysis showed that the model fits were good:  $\chi^2 = 32.774$ ,  $df = 18$ ,  $\chi^2/df = 1.821$ ,  $CFI = 0.977$ ,  $TLI = 0.964$ ,  $REMEA = 0.063$ , and  $SRMR = 0.036$  (see Table 2, M<sub>2</sub>). Figure 1 displays the proposed model with standardized coefficients. All three direct path coefficients were statistically significant: (1) from foreign language learning anxiety to foreign language engagement ( $\beta = -.228$ ,  $p < .01$ ); (2) from foreign language engagement to foreign language achievement ( $\beta = .373$ ,  $p < .001$ ); and (3) from foreign language learning anxiety to foreign language achievement ( $\beta = -.197$ ,  $p < .01$ ). Also, the proposed model (“academic anxiety → engagement → English achievement”) explained significant proportions of variance in academic engagement (5.2%) and academic achievement (21.1%).

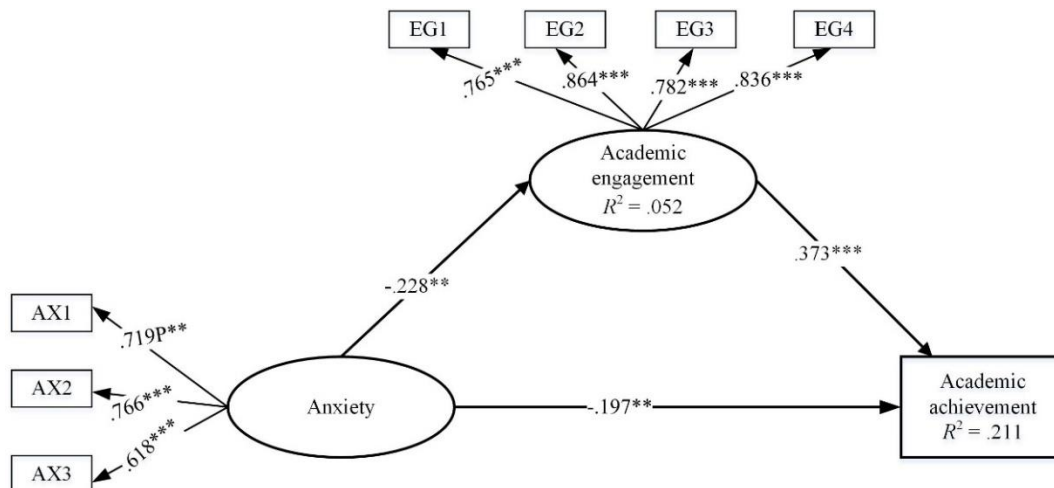


Figure 1: The relationship between foreign language learning anxiety, foreign language engagement, and foreign language achievement. All standardized coefficients are present. \*\*\* $p < .001$ ; \*\* $p < .01$ .

### 4.3 Test for Mediation

The overall coefficient of the mediation analysis is presented in Figure 1. We found that foreign language learning anxiety could affect foreign language achievement directly and indirectly through foreign language engagement. Supporting the hypotheses, the indirect effect of foreign language learning anxiety on foreign language achievement was significant ( $ab = -.085$ ,  $SE = .038$ ,  $BCa\ 95\% CI [-.179, -.026]$ ) (see Table 3), accounting for 30.10% of the total effect of anxiety on achievement. The direct effect of foreign language learning anxiety on foreign language achievement was also significant ( $c' = -.197$ ,  $SE = .068$ ,  $BCa\ 95\% CI [-.333, -.061]$ ), accounting for 69.90% of the total effect of anxiety on academic achievement.

Table 3: Mediation analysis results

	Effect	SE	95% CI	
			Lower	Upper
$c$ Anxiety → academic achievement (total effect)	-0.282	0.068	-0.415	-0.144
$c'$ Anxiety → academic achievement (direct effect)	-0.197	0.068	-0.333	-0.061
$ab$ Anxiety → engagement → academic achievement (indirect effect)	-0.085	0.038	-0.179	-0.026

### 5. Discussion

This study explored the relationship between foreign language learning anxiety and English achievement and the mechanism between these variables in a sample of 230 Chinese secondary EFL learners. This study found that foreign language learning anxiety was negatively correlated with English achievement, and foreign language learning anxiety could affect English achievement via the mediator of foreign language engagement, indicating that both H1 and H2 were supported.

The finding that foreign language learning anxiety was negatively correlated with English achievement is consistent with previous studies (e.g., Chin et al., 2017; Lam et al., 2015; Lei & Cui, 2016; Pekrun, 2006). This finding contributes to the literature in three ways. First, this finding provides empirical evidence for the hypothesis of the control-value theory that negative emotions (e.g., academic anxiety) are inversely related to academic achievement. Second, this study investigated the relationship between foreign language learning anxiety and English achievement in the non-Western cultural context, which discussed the relationship between academic anxiety and achievement in a broader cultural context. Third, taking the domain specificity of achievement emotions into consideration (Goetz et al., 2007), this study verified the relationship between academic anxiety and achievement in the EFL context in China, which overcame the uncertainty in the relationship between academic anxiety and achievement in previous studies (e.g., Lomas, 2016; Oruç & Demirci, 2020).

We also found that foreign language engagement mediated the relationship between foreign language learning anxiety and English achievement, which is consistent with the findings of the existing studies



(Oruç & Demirci, 2020; Scanlon et al., 2020). Existing studies have extensively explored the relationship between academic anxiety and achievement. However, few studies have investigated the mediating mechanism between the two variables, especially among Chinese secondary EFL learners. The present study contributes to the literature by finding that foreign language engagement partially mediates between foreign language learning anxiety and English achievement. Furthermore, we found that foreign language engagement accounted for 30.10% of the total effect of foreign language learning anxiety on English achievement. This finding has two implications. First, foreign language learning anxiety directly and indirectly affects English achievement. Second, in addition to foreign language engagement, there are other possible mediators between foreign language learning anxiety and English achievement.

## **6. Implications, Limitation and Future Directions**

The findings of the present study have both theoretical and practical implications. Theoretically, the finding that foreign language engagement mediated the relationship between foreign language learning anxiety and English achievement provided empirical evidence for the theoretical hypothesis of the control-value theory of achievement emotions (Pekrun, 2006), which broadened the application scope of this theory. Practically, the negative relationships between foreign language learning anxiety, foreign language engagement, and English achievement indicated that reducing anxiety levels in the foreign language learning process could increase EFL learners' learning engagement, which, in turn, improved their English achievement. Therefore, English teachers are advised to take measures to alleviate students' anxiety by way of reducing direct control over students (Assor et al., 2005), increasing academic support for students (Huang et al., 2010), and adopting teaching strategies of intervention (Tang, 2022). To parents, being more supportive and less controlling of children (Wei & Kendall, 2014), lower academic expectations for children (Peleg et al., 2016), and paying meaningful attention to children's anxiety (Taboas et al., 2015) are the possible ways to mitigate their children's anxiety.

The present study explored the correlation and mediating mechanism between academic anxiety and academic achievement in a sample of 230 Chinese EFL learners. However, there are three limitations need to be addressed. First, this study found that foreign language engagement partially mediated the relationship between foreign language learning anxiety and English achievement, implying that future studies need to take more mediators into consideration to have a more comprehensive understanding of the mechanism between academic anxiety and achievement. Second, the cross-sectional design of the present study prevents us from gaining a causal relationship between academic anxiety and achievement. Future studies are suggested to verify the causal relationships between these two variables by conducting a longitudinal analysis. Third, the present study exclusively relied on self-report data, showing that common method bias might exist (Podsakoff et al., 2003). In addition to self-report data, Future studies are recommended to collect from significant others (e.g., teachers, parents, and peers) to minimize the likelihood of common method bias.

## **7. Conclusion**

To sum up, this study confirmed that foreign language learning anxiety was negatively correlated with English achievement in a sample of 230 Chinese secondary EFL learners. Furthermore, we also found that



foreign language engagement played a partial mediating role between foreign language learning anxiety and English achievement. Given that academic anxiety is a type of common achievement emotion in EFL learning, exploring the mechanism between foreign language learning anxiety and English achievement would be beneficial for EFL educators to take measures to minimize the detrimental effects of academic anxiety, thus, improving the learning outcomes of EFL learners.

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