



(RESEARCH ARTICLE)



## Examining the influence of foreign language anxiety on organizational strategies and foreign language proficiency in Chinese secondary EFL learners

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### Abstract

Academic anxiety is one of the prominent emotions in learning English as a foreign language (EFL), and its impact on foreign language proficiency (FLP) has been extensively documented. However, the mediating effect of cognitive strategies between foreign language anxiety (FLA) and FLP has rarely been explored. In a sample of 524 Chinese secondary school students, the present study investigated the linkage between FLA, organizational strategies, and FLP. Structural equation modelling (SEM) and mediation analysis were conducted, and three findings were identified. First, FLA was negatively correlated with the use of organizational strategies. Second, the negative correlation between FLA and FLP was identified. Third, organizational strategies fully mediated the association between FLA and FLP after controlling for gender and age. Exploring the mediating mechanism between FLA and FLP might help EFL educators take intervention measures to alleviate the negative impact of FLA on foreign language learning. Limitations and directions for future research are discussed.

**Keywords:** Foreign language anxiety; Organizational strategies; Foreign language proficiency; Chinese secondary EFL learners; Mediating mechanism

### 1. Introduction

Emotions are regarded as the foundation of learning [1]. With the introduction of the control-value theory [2], achievement emotions have become a hot topic in subject teaching (e.g., English and mathematics). According to the control-value theory, control and value appraisals are the proximal antecedents of achievement emotions, and achievement emotions influence the key indicators of school outcomes (e.g., motivation, engagement, and achievement) [3]. In the field of EFL education, the relationship between achievement emotions and academic achievement has been confirmed. More specifically, positive achievement emotions (e.g., enjoyment and pride) were positively correlated with FLP [4,5], while negative achievement emotions (e.g., boredom and ) were negatively correlated with FLP [6,7].

In addition, the association between cognitive strategies and academic achievement was also explored in the EFL educational contexts. For instance, [8] documented that applying cognitive strategies in reading comprehension would promote students' achievement. Besides, the association between achievement emotions and cognitive strategies were explored [9]. However, few studies have examined the mediating effect of cognitive strategies between achievement emotions and academic achievement in the EFL context. The present study focused on academic anxiety and the use of organizational strategies in learning English and aimed to confirm the relationship between FLA, organizational strategies and FLP among Chinese secondary EFL learners. This research might contribute to the literature in two ways. First, if the mediating effect of organizational strategies between FLA and FLP is significant, the present study could provide empirical evidence for the control-value theory [2] and the resource limitation theory [10]. Second, this

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research further explored the mediating mechanism between FLA and FLP, which has practical implications for English educators implementing educational interventions.

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## 2. Literature review

### 2.1. Foreign language anxiety

Foreign language anxiety, as a commonly experienced emotion in the learning context, refers to the subjective feeling of tension and worry that foreign language learners feel when they are expected to perform in English [11]. At the initial phase, FLA may be a transitory episode of tension when EFL learners are required to perform in English. However, if FLA occurred frequently, it might cause EFL learners to associate FLA with English performance. It turned out to be difficult for EFL learners to decrease the FLA. At this point, FLA is no longer a state but a trait [12,13]. FLA is a kind of discrete achievement emotion, which could be described from the three dimensions of valence (i.e., positive or negative), activation (i.e., activating or deactivating), and object focus (i.e., activity-related or outcome-related) [14]. Accordingly, FLA can be described as a negative, activating, outcome-related emotion [15].

One critical reason FLA has received so much attention from English educators and researchers is that it negatively affects EFL learning outcomes. For example, in a study among Chinese college students, [16] documented that students' FLA had a negative predictive effect on their English achievement. Moreover, the mediating mechanisms between FLA and FLP were also explored in the existing literature. For example, [17] found that student engagement mediated the association between FLA and FLP. In another study among American high school students, [18] found that engagement and support mediated the relationship between anxiety and achievement. The control-value theory postulates that achievement emotions could affect academic achievement indirectly via the mediators of motivation and learning strategies [2]. However, few empirical studies have connected FLA with cognitive strategies [19]. The potential mediating effect of cognitive strategies (e.g., organizational strategies) between FLA and FLP requires further exploration.

### 2.2. EFL-related organizational strategies

Organizational strategy is one of the three components of cognitive strategy (i.e., rehearsal, organizational, and elaborational strategies) [20]. This term was defined as the process of integrating the inner connection between the new knowledge as well as the inner connection between the old and new knowledge. Organizational strategies were in-depth information processing, which could improve students' learning efficiency [21]. In this research, the EFL-related organizational strategies refer to the inner connection between the English knowledge being learned and the previous English knowledge in the process of English learning. As a cognitive strategies, EFL-related organizational strategies are conducive to EFL learners' memory and retrieval of English knowledge, and have a favourable impact on improving English performance.

The associations between achievement emotions and organizational strategies and the associations between organizational strategies and academic achievement have been explored in existing literature [4,9,11,22]. For instance, [11] explored the association between anxiety and cognitive processing strategies among Canadian French-speaking college students and found that anxiety and cognitive strategies were negatively correlated. In the opposite direction, in a study among Turkish college students, [22] found that cognitive strategies had a predictive effect on academic anxiety. In addition, the linkage between organizational strategies and academic achievement was also explored. For example, [4] documented that the use of organizational strategies had a significant predictive effect on EFL achievement.

There are two limitations in the existing studies. First, the causal relationship between academic anxiety and organizational strategies use was unclear. Second, achievement emotions and organizational strategies are domain-specific [23,24]. However, few studies have explored the association between organizational strategies and academic anxiety in the EFL domain, especially in the Chinese EFL learning context. This research was designed to investigate the relationship between EFL anxiety, organizational strategies and EFL achievement among Chinese secondary EFL learners.

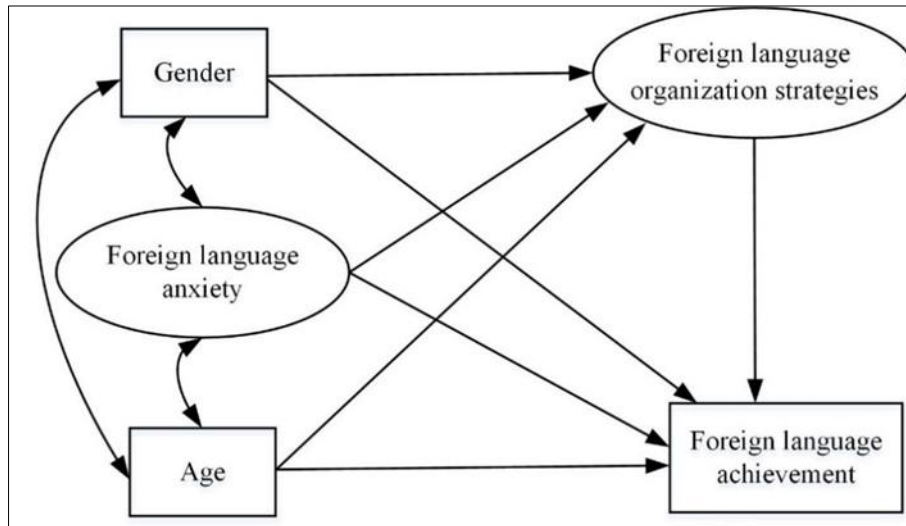
### 2.3. The interrelationships between FLA, organizational strategies and FLP

According to the control-value theory, cognitive strategies mediate the association between achievement emotions and academic achievement [2]. FLA is one of the achievement emotions [25], and organizational strategy is one of the cognitive strategies [20]. According to the theoretical hypothesis of the control-value theory, this research postulated that organizational strategies might mediate the linkage between FLA and FLP.

## 2.4. The present study

Based on the literature review, this research aimed to contribute to the existing literature by testing the following three hypotheses.

- H<sub>1</sub>: FLA would be negatively correlated with the use of foreign language organizational strategies.
- H<sub>2</sub>: FLA would be negatively correlated with FLP.
- H<sub>3</sub>: Foreign language organizational strategies would mediate the association between FLA and FLP after controlling for gender and age.



**Figure 1** The proposed model. Gender and age are covariates

## 3. Material and methods

### 3.1. Participants

Five hundred and twenty-four participants (248, 47.3% female) from 7<sup>th</sup> grade (218, 41.6%) and 8<sup>th</sup> grade (306, 58.4%) were recruited to take part in the questionnaire survey. The mean age of the participants was 13.66 years (age range = 11-15,  $SD = 0.62$ ). All participants were Chinese Han. Concerning socioeconomic status, most of the participants came from middle-class families.

### 3.2. Measures

#### 3.2.1. Foreign language anxiety scale

The four-item class-related anxiety scale adapted from the achievement emotions questionnaire [26] was used to measure participants' FLA. The original scale includes emotional experience in three scenarios: class-related, learning-related, and test-related [14]. This research only examined class-related anxiety for two reasons. First, Chinese secondary school students learn English mainly in the classroom context. Second, the domain-specificity of achievement emotions means that original items should be adapted to the English classroom teaching settings. One example of the foreign language anxiety scale is "Thinking about English class makes me feel uneasy".

Participants rated their responses on a 5-point Likert-type scale ranging from strongly disagree ("1") to strongly agree ("5"). The psychometric properties of the foreign language anxiety scale have been verified in existing studies [27,28]. The reliability of the foreign language anxiety scale was acceptable in this research (Cronbach's  $\alpha = 0.69$ ).

#### 3.2.2. EFL-related organizational strategies scale

The EFL-related organizational strategies were measured by the five items that were adapted from the *goal orientation and learning strategies survey* [29]. Participants rated their responses on a 5-point Likert-type scale (ranging from 1 = strongly disagree to 5 = strongly agree). One example item of the EFL-related organizational strategies is "I recognize

my English notes so that I can understand the English knowledge better". In this study, the EFL-related organizational strategies scale showed good reliability, with Cronbach's  $\alpha = 0.88$ .

### 3.2.3. Foreign language proficiency

Improving foreign language proficiency is one of the critical goals of EFL education. In this research, the English test scores at the end of the first semester of the 2022-2023 school year were used to represent the participants' FLP. A high English test score indicates a high FLP. Given that the Municipal Education Bureau uniformly developed the examination paper, the validity of the examination paper could be guaranteed. In the SEM analysis, FLP was treated as an observed variable.

### 3.2.4. Covariates

Existing literature has shown that the variables (i.e., FLA, FLP and organizational strategies) in the proposed model (see Figure 1) were affected by gender [30,31], and age [32,33]. More specifically, female students had higher language proficiency than male students [30] and age differences in academic performance were also confirmed [32]. Thus, gender and age were controlled as covariates.

## 3.3. Procedure

The original scales were translated from English to Mandarin Chinese by a Ph.D.-level college teacher with a background in English literature. And then, the Chinese version of the scales was back-translated by the researcher and a senior professor from the English department to guarantee the face validity of the scales. With the help of English teachers, the questionnaire survey was conducted in English class in paper-and-pen format. Written informed consent from the participants and verbal informed consent from participants' parents were obtained before conducting the questionnaire survey. Only the data of participants who consented to participate would be used for analysis. The English teachers would give friendly reminders to the participants to ensure no missing data in the questionnaire.

## 3.4. Data analysis

In sequence, the data analysis of the present study included five steps

- This study tested for common method bias because the data were all self-reported.
- This study reported the descriptive statistics (i.e., the skewness and kurtosis) of the studied variables for the maximum likelihood (ML) estimation.
- The properties of the measurement models were examined using confirmatory factor analysis (CFA).
- The relationship between FLA, FLP, and organizational strategies was explored using SEM.
- Mediation analyses were conducted to examine the mediating effect of organizational strategies between FLA and FLP.

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## 4. Results

### 4.1. Common method bias

The data in this research were all self-reported, and there might be common method bias. Harman's single-factor test excluded the potential common method bias [34]. Specifically, a single-factor model with all items of the studied variables of FLA and organizational strategies showed a poor model fit ( $\chi^2(20) = 338.911, p < 0.001, CFI = 0.753, TLI = 0.655, RMSEA = 0.175, 90\% CI [0.159, 0.191], SRMR = 0.124$ ), suggesting that common method bias was not likely to be serious in the dataset of this research.

### 4.2. Descriptive statistics

Table 1 demonstrates the descriptive statistics of the studied variables. The studied variable had satisfactory normality for ML estimation if the absolute values of Skewness and Kurtosis were less than 2 [35]. According to this criteria, as present in Table 1, FLA, organizational strategies, and FLP had satisfactory normality for ML estimation. The standardized factor loadings of the studied variables ranged from 0.47 to 0.92, which were all meaningful, for they were more than 0.35 [36]. Moreover, FLP was converted into standardized z-scores.

**Table 1** Descriptive statistics for studied variables

	Mean	SD	Skewness	Kurtosis	Cronbach's $\alpha$	Factor loadings
FLA	3.15	0.82	-0.29	0.09	0.69	0.47-0.76
Organization strategies	2.87	0.59	0.01	0.18	0.88	0.71-0.92
FLP	0.00	0.99	-0.84	-0.14	-	-

**4.3. Measurement models and latent bivariate correlations**

CFA, SEM, and mediation analysis were conducted using Mplus 8.3 [37]. In this research, the model were evaluated by the indexed of comparative fit index ( $CFI \geq 0.90$ ), Tucker-Lewis index ( $TLI \geq 0.90$ ), root mean square error of approximation ( $RMSEA \leq 0.08$ ), and standardized root mean square residual ( $SRMR \leq 0.10$ ) [38,39]. The measurement model of FLA and organizational strategies showed an excellent fit, with  $\chi^2(19) = 57.858, p < 0.001, CFI = 0.970, TLI = 0.956, RMSEA = 0.063, 90\% CI [0.045, 0.081], SRMR = 0.057$ .

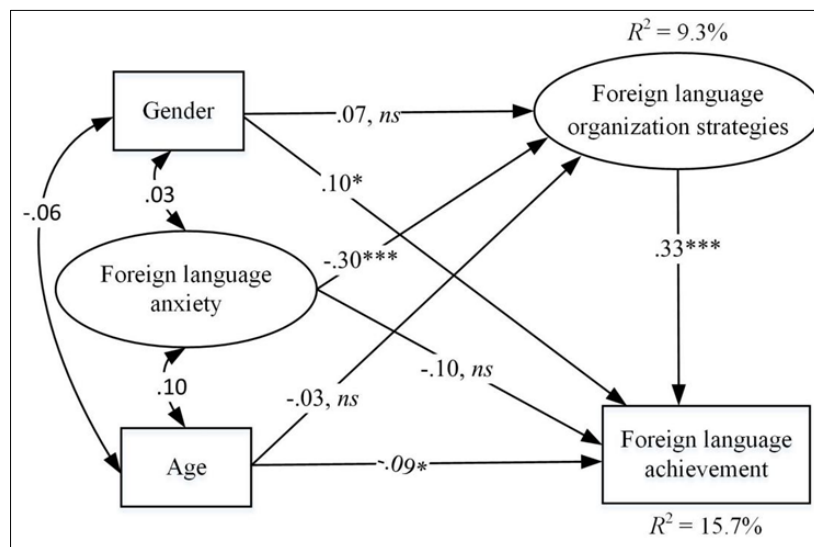
**Table 2** Results of correlations matrix for the studied variables

	1	2	3	4	5
1 FLA	-				
2 Organization strategies	-0.29***	-			
3 FLP	-0.20***	0.36***	-		
4 Gender	0.04	0.06	0.12**	-	
5 Age	0.10*	0.00	-0.10*	-0.06	-

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

The model fit was adequate when FLP, gender and age were added to the measurement model:  $\chi^2(37) = 128.728, p < 0.001, CFI = 0.936, TLI = 0.904, RMSEA = 0.069, 90\% CI [0.056, 0.082], SRMR = 0.056$ . Table 2 demonstrates the bivariate correlations between the studied variables. As shown in Table 2, there are three findings. First, FLA was negatively correlated with the use of organizational strategies and FLP. Second, the use of organizational strategies was positively correlated with FLP. Third, gender and age differences in FLP were also found.

**4.4. Structural equation modelling**



Note. \*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ ; \*  $p < 0.05$

**Figure 2** SEM testing the linkages between FLA, FLP, organizational strategies, age and gender

SEM was applied to test the proposed model in Figure 1. First, the proposed model demonstrated adequate fit, with  $\chi^2(39) = 133.312, p < 0.001, CFI = 0.934, TLI = 0.908, RMSEA = 0.068, 90\% CI [0.056, 0.081], SRMR = 0.060$ . Standardized regression weights are presented in Figure 2. There are five findings. First, FLA was negatively correlated with the use of organizational strategies ( $\beta = -0.30, SE = 0.06, p < 0.001$ ). Second, the use of organizational strategies was positively correlated with FLP ( $\beta = 0.33, SE = 0.06, p < 0.001$ ). Third, gender (male = 0 and female = 1) was positively correlated with FLP ( $\beta = 0.10, SE = 0.04, p < 0.05$ ), indicating that male students' English proficiency was lower than that of female counterparts. Fourth, age was negatively correlated with FLP ( $\beta = -0.09, SE = 0.04, p < 0.05$ ), showing that the older the participants, the worse their English proficiency was. Fifth, FLA explained a 15.7% variance in the use of organizational strategies and a 9.3% variance in FLP.

The mediating effect of organizational strategies in the association between FLA and FLP was examined by the bootstrap method with 5000 resamples. If the bias-corrected 95% confidence intervals (BCa 95% CIs) does not include zero, we have 95% confidence that the mediating effect is significant. As shown in Table 3, BCa 95% CIs do not straddle zero (BCa 95% CIs [-0.16, -0.06]), indicating that organizational strategies mediated the link between FLA and FLP. Besides, the direct effect of FLA on FLP was insignificant (BCa 95% CIs [-0.23, 0.03]). Taken together, it was found that organizational strategies fully mediated the association between FLA and FLP.

**Table 3** Results of mediation analysis

Model path	Effect	SE	Bias-corrected CIs 95%	
			Lower	Upper
Total effect	-0.20	0.06	-0.32	-0.07
Indirect effect: FLA→Organizational strategies → FLP	-0.01	0.02	-0.16	-0.06
Direct effect	-0.01	0.08	-0.23	0.03

## 5. Discussion

The association between achievement emotions and cognitive strategies [40,41] and the linkage between cognitive strategies and academic achievement [8,42] have been extensively explored in educational contexts. Moreover, the predictive effect of achievement emotions on academic achievement was also confirmed in previous studies [2,43]. However, studies exploring the mediating effect of cognitive strategies on the association between achievement emotions and academic achievement were quite limited, especially in China's EFL learning context. Accordingly, this research investigated the mediating effect of organizational strategies between FLA and FLP among Chinese secondary EFL learners.

First, results of bivariate correlation and SEM analysis demonstrated that FLA was negatively correlated with the use of organizational strategies, indicating that H<sub>1</sub> was confirmed. Above all, this finding was consistent with the theoretical assumptions of the control-value theory, that is, negative achievement emotions (e.g., academic anxiety) would generate a negative effect on the application of cognitive strategies (e.g., organizational strategies) [2]. This finding provided a new empirical basis for the control-value theory. In addition, this finding was also in sync with prior studies [11,44,45]. This finding contributes to the literature by providing new evidence for the correlation between achievement emotions and cognitive strategies, that is, FLA negatively predicted organizational strategies in EFL education.

Second, the negative correlation between FLA and FLP was also confirmed, showing that H<sub>2</sub> was supported. The relationship between academic anxiety and achievement has been vastly explored and found to be inversely correlated [17, 46]. This finding was consistent with the previous studies. Although studies have documented the detrimental effects of academic anxiety on academic achievement, this research provided evidence from the field of EFL education that FLA negatively affected FLP.

Third, the SEM and mediation analysis results showed that organizational strategies fully mediated the relationship between FLA and FLP, suggesting that H<sub>3</sub> was supported. The control-value theory postulates that cognitive strategies mediate achievement emotions and academic achievement [2]. However, few studies have investigated the relationship between achievement emotions, cognitive strategies, and academic achievement. This research contributed to this knowledge gap, confirming the mediating effect of organizational strategies between FLA and FLP. More specifically, FLA negatively affected organizational strategies, affecting FLP. Also, this research calculated the strength of the

mediating effect of organizational strategies between FLA and FLP, which provided empirical evidence for EFL educators to take intervention measures.

Three limitations need to be addressed. First, this study explored only some achievement emotions (i.e., academic anxiety) and cognitive strategies (i.e., organizational strategies). Future research is recommended to consider more achievement emotions and cognitive strategies and thoroughly explore the linkage between achievement emotions, cognitive strategies, and academic achievement. Second, data for the present study were all self-reported. Although common method bias was ruled out, future research is suggested to collect data from more resources (e.g., teachers and peers) to ensure more objectivity of the data. Third, the participants in this research were all Chinese Han students. Chinese Han people are the majority ethnic group (accounting for 91.11%) in China [47]. However, there are fifty-five ethnic groups in China and future studies are advocated to recruit participants from ethnic cultural groups.

Despite its deficiencies, this research has both theoretical and practical implications. First, this study provides empirical evidence for the control-value theory, confirming that negative achievement emotions (e.g., FLA) affect academic achievement (e.g., FLP) directly or indirectly through cognitive strategies (e.g., organizational strategies). Second, the mediating mechanism between FLA and FLP was explored, showing that organizational strategies fully mediated the relationship between FLA and FLP, suggesting that EFL educators should attach importance to organizational strategies in English teaching and guide students to use more organizational strategies to weaken the negative effect of FLA on FLP. Third, EFL teachers are suggested to take interventions (e.g., constructing positive teacher-student relationships, reducing direct controlling behaviours and creating a positive classroom environment) to reduce EFL learners' anxiety in learning English [48–50]. Besides, parental and peer supports are also the possible ways to reduce EFL learners' academic anxiety [51,52].

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## 6. Conclusion

This research explored the direct and indirect predictive effects of FLA on FLP while controlling for gender and age and found that FLA could affect FLP directly or indirectly via organizational strategies. More specifically, the use of organizational strategies fully mediates the link between FLA and FLP. In addition to providing a shred of empirical evidence for the control-value theory, from the practical dimension, this research recommended that EFL teachers and educators should take measures to reduce the levels of students' FLA and improve their use of organizational strategies to alleviate the detrimental effect of academic anxiety on EFL achievement.

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## Compliance with ethical standards

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### *Disclosure of conflict of interest*

The author(s) declare that there is no potential conflict of interest.

### *Statement of informed consent*

Informed consent was obtained from all individual participants included in the study.

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