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Evaluation of Academic Self-Concept to Predict EFL Achievement: The Mediating Role of Behavioural Engagement

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ABSTRACT

Academic self-concept is an essential psychological factor affecting students' school outcomes. However, few studies have examined the mediating role of behavioural engagement between academic self-concept and achievement. This study explored whether academic self-concept could affect academic achievement directly or indirectly via behavioural engagement. Five hundred and one Chinese English-as-a-foreign-language (EFL) learners from one middle school were recruited to complete the questionnaire. Results of structural equation modelling (SEM) and mediation analysis demonstrated that foreign language self-concept (FLSC) was positively correlated with foreign language achievement (FLA). Besides, it was also found that foreign language behavioural engagement (FLBE) partially mediated the relationship between FLSC and FLA. Therefore, improving EFL learners' self-concept is an important measure to increase their engagement in English learning, which in turn would improve their FLA. These findings have significant implications for EFL teaching and learning that emphasize the EFL learners' self-concept. Also, the limitations and directions for future studies are discussed.

Keywords: Academic Self-Concept, Behavioural Engagement, Academic Achievement, Mediating Mechanism, Chinese Secondary EFL Learners.

1. INTRODUCTION

Academic self-concept refers to an individual's cognition and evaluation of his or her academic ability, which has a positive effect on crucial school outcomes (Guay et al., 2010; Huang, 2011). The self-determination theory claims that competence (self-concept), relatedness, and autonomy are the three basic psychological needs that affect motivation (Kaplan et al., 2002), and that individuals would be motivated to engage if the basic needs are met. In the past decades, a large body of empirical research has explored the influence of academic self-concept on school outcomes, such as academic achievement (Huang, 2011), and academic engagement (Schnitzler et al., 2021). In particular, empirical studies have extensively explored the predictive effect of academic self-concept on academic achievement. However, few studies have explored the mediating mechanisms between academic self-concept and achievement, and there are even fewer related studies in the field of EFL education. Moreover, empirical research has confirmed the association between academic engagement and achievement (Collie et al., 2017). Accordingly, the present study hypothesized and endeavoured to verify that behavioural engagement mediates the relationship between academic self-concept and achievement in the Chinese EFL context.

2. LITERATURE REVIEW

2.1 Foreign Language Self-concept

Self-concept was defined as an individual's self-perception of his or her behaviours or image (Bong & Skaalvik, 2003), which is

based on the perception and judgement formed by the experience of the surrounding environment (Seiffge-krenke, 1990). Shavelson et al. (1976) divided self-concept into three facets: academic, social and physical. Among these, academic self-concept would be varied by combining different subjects (e.g., English, mathematics), indicating that academic self-concept is domain-specific. More specifically, Burns et al. (2018) documented that academic self-concept was subject-specific, suggesting that academic self-concept should be explored within a specific subject. Accordingly, this research defined FL self-concept as the perception and evaluation of English learners' English proficiency and ability in English learning.

The influence of academic self-concept on school outcomes has received extensive attention (Chen et al., 2015; Dabbagh, 2011; Kang & Wu, 2022; Perinelli et al., 2022; Wu et al., 2021). For example, in a study with Taiwanese college students, Chen et al. (2015) found that participants' academic self-concept had a positive predictive effect on their occupational choice intention. A meta-analysis conducted by Wu et al. (2021) documented that academic self-concept was significantly correlated with academic achievement (β= 0.08, p < 0.01). In addition, the antecedents of academic self-concept were also explored. For instance, Phillipson and Phillipson (2017) found that cognitive ability could affect academic self-concept directly or indirectly via parental expectations. In another study with Finland Grade One student, Pesu et al. (2016) confirmed that parents' and teachers' beliefs about children's abilities could affect their academic self-concept.

Given the importance of academic self-concept to academic achievement, the mediating mechanisms between these two constructs have been of enduring research interest (Chen et al., 2015; Guay et al., 2010; McInerney et al., 2012). In a study among Taiwan vocational college students, Chen et al. (2015) indicated that learning strategies (i.e., surface and strategic approaches) mediated the relationship between academic self-concept and achievement. Also, the mediating effects of autonomous academic motivation (Guay et al., 2010) and goal orientations (Bakadorova & Raufelder, 2020) between academic self-concept and achievement were also confirmed. Moreover, the correlation between academic self-concept and behavioural engagement (Schnitzler et al., 2021), and the relationship between behavioural engagement (Wu & Kang, 2021) were also confirmed. However, to our knowledge, few studies have explored the mediating effect of behavioural engagement between academic self-concept and achievement, especially in the context of EFL education.

2.2 Behavioural Engagement

Behavioural engagement refers to students' time, durability, effort and participation in the learning tasks (Miles & Stipek, 2006), which was determined by the interaction between academic environments and learners' behaviour characteristics (Skinner & Pitzer, 2012). In addition to behavioural engagement, emotional and cognitive engagement are the other two dimensions of academic engagement. However, behavioural engagement was more important than the emotional and cognitive facets of academic engagement (Conner, 2016), and emotional and cognitive engagement were considered to have an effect on school outcomes only through behavioural engagement (Yang et al., 2021). Green et al. (2007) documented that behavioural engagement was domain-specific, indicating that the research on behavioural engagement should be carried out in a specific subject (e.g., English).

Behavioural engagement was regarded as the manifestation of motivation (Martin et al., 2017), which demonstrated a positive effect on school outcomes and was also affected by various factors. On the one hand, the positive influence of behavioural engagement on academic achievement has been widely confirmed in the field of educational research (Collie et al., 2017; Feng & Hong, 2022; Kang & Wu, 2022; Ponitz et al., 2009). For example, in a study with Chinese high school students, Feng and Hong (2022) found that engagement had a positive effect on EFL achievement. On the other hand, educational studies identified a number of affecting factors of behavioural engagement, including academic self-concept (Green et al., 2012), teacher-student relationship(Gregory & Korth, 2016), academic enjoyment (Kang & Wu, 2022; Liu, 2022), school psychological capital (Wu et al., 2023).

Although the antecedents and consequences of behavioural engagement have been extensively explored, more research is needed to investigate the mediating effect of behavioural engagement among these related variables. Specifically, few studies have

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explored the relationship between academic self-concept, behavioural engagement, and achievement, especially in the field of EFL education. The present study aimed to verify the relationship between these three variables in the EFL learning context: whether FLBE mediates FLSC and FLA.

2.3 The Interrelationships between the Academic Self-concept, Behavioural Engagement and Achievement

Drawing upon the self-determination theory, the academic self-concept's predictive effect on engagement was verified (Guo et al., 2022; Schnitzler et al., 2021). Moreover, behavioural engagement's influence on academic achievement was also confirmed (Collie et al., 2017; Ponitz et al., 2009). Based on the self-determination theory and the findings of existing empirical studies, the present study assumed that behavioural engagement mediates the relationship between academic self-concept and achievement.

2.4 The Current Study

Based on the literature, the present study aimed to examine three hypotheses. Figure 1 presents the proposed relationships between the studied variables.

H1: Foreign language self-concept is positively correlated with foreign language achievement.

H2: Foreign language self-concept is positively related to behavioural engagement.

H3: Foreign language behavioural engagement mediates the relationship between foreign language self-concept and achievement while controlling for gender and age.

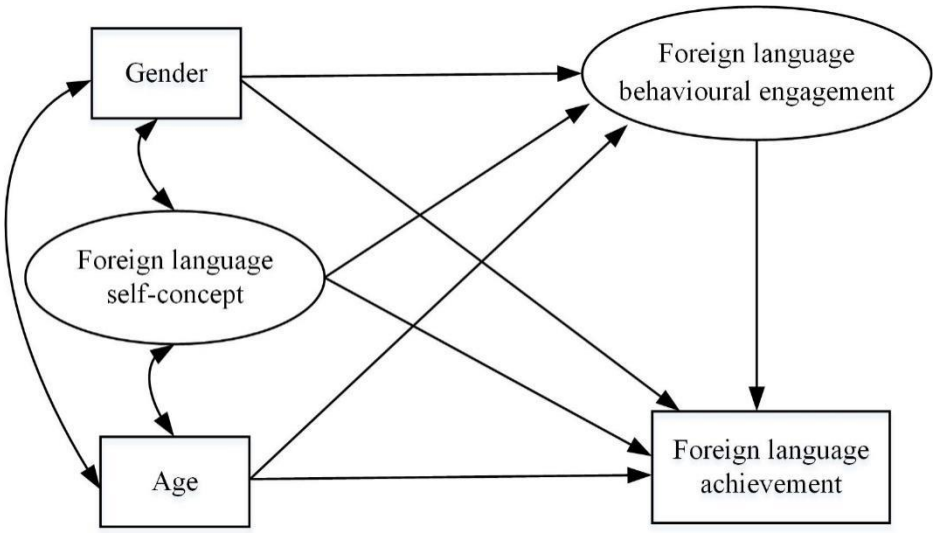

Figure 1. The proposed theoretical model

3. METHODOLOGY

3.1 Participants

501 Chinese secondary EFL learners were recruited to participate in the questionnaire survey via convenience sampling. There were 263 male participants (52.50%) and 238 female participants (47.50%). There were 208 seventh graders (41.52%) and 293 eighth graders (58.48). The average age of the participants was 13.66 (SD =.62). Participants were recruited from a middle school in Foshan City, Guangdong Province, China, and judging by the socioeconomic status data, vase majority of participants were from middle-class families. With the help of the English teachers, written informed consent from participants and oral informed consent from parents were collected.

3.2 Measures

3.2.1 Foreign Language Self-concept Scale

In the Program for International Student Assessment 2015 (PISA 2015), there are five items used to measure adolescents' academic self-concept (OECD, 2016). These five items were adapted to be specific for English learning (e.g., "I am good at English"). The psychometric properties of the foreign language self-concept scale were good in existing research (e.g., Kang & Wu, 2022). In this study, the internal consistency of the foreign language self-concept scale was good (Cronbach's $\alpha = 0.84$). In the SEM analysis, FLSC was treated as a latent variable.

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3.2.2 Foreign Language Behavioural Engagement Scale

We measured participants' foreign language behavioural engagement with the four items adapted from the Engagement and Disaffection Scale (Skinner et al., 2009). The original general behavioural engagement scale (e.g., "When I'm in class, I listen very carefully") was adapted into an English-related foreign language behavioural engagement scale (e.g., "When I'm in English class, I listen very carefully). Previous studies have demonstrated that the foreign language behavioural engagement scale was solid and reliable (e.g., Kang & Wu, 2022; Wu et al., 2023). This scale had good internal consistency (Cronbach's $\alpha = 0.85$).

3.2.3 Foreign Language Academic Achievement

Test scores are the primary determinant of Chinese secondary school students' admission to higher education. And Chinese secondary school students would work hard to achieve high scores, whether for themselves or the expectations of their parents and teachers. Concerning the importance of test scores, we collected participants' English scores of the most recent final exam to represent their foreign language academic achievement. The Municipal Education Bureau uniformly developed the examination papers to ensure their face validity.

3.2.4 Covariates

Gender and age differences in academic achievement were verified in existing studies (Denies et al., 2022; La Paro & Pianta, 2000). Moreover, gender and age might also affect academic self-concept (Marsh, 1989) and behavioural engagement (Kessels et al., 2014). Therefore, gender and age were controlled when analyzing the relationship between the studied variables (i.e., FLSC, FLBE, and FLA).

3.3 Data Analysis

In order to verify the research hypotheses of this study, the data analysis was divided into five steps. First, the potential problem of common method bias was evaluated before examining variable relationships for the data were all self-reported by participants. Second, the descriptive statistics of the studied variables were presented, which not only provides preliminary information on the variables but also verifies whether the maximum likelihood estimation could be performed. Third, confirmatory factor analysis (CFA) was conducted to assess the properties of the measurement model. Fourth, we conducted SEM to explore the relationships between FLSC, FLBE, and FLA. Fifth, mediation analysis was also conducted to study the mediating effect of FLBE between FLSC and FLA. Data were analyzed using SPSS 28.0 and Mplus 8.3 (Muthén & Muthén, 2013).

4. RESULTS

4.1 Common Method Bias

Harman's single-factor test was carried out to exclude common method bias (Podsakoff et al., 2003). All the items of latent variables (i.e., FLSC and FLBE) were subjected to a single-factor CFA and this single-factor model fits the data poorly, with $\chi^2(20) = 393.644$, $p < .001$, CFI = .810, TLI = .734, RMSEA = .194, 90% CI [.177, .211], SRMR = .075. The zero exclusion in the 90% confidence interval (CI) indicated that common method bias was unlikely to affect subsequent data analyses.

4.2 Descriptive Statistics

Table 1 shows the descriptive statistics of the studied variables. Roever and Phakiti (2017) proposed that the variables had satisfactory normality for conducting ML estimation if |skewness| < 2 and |kurtosis| < 2. According to these criteria, we found that FLSC, FLBE and FLA demonstrated satisfactory normality. In addition, participants' self-concept (*M*ean = 2.53/5.00, *SD* = .64) and behavioural engagement (*M*ean = 2.97/5.00, *SD* = .54) in learning English were at moderate levels.

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Table 1. Descriptive statistics for FLSC, FLBE, and FLA (N = 501)

	Mean	SD	Skewness	Kurtosis	Cronbach's α	Factor loadings
FLSC	2.53	.64	.07	-.28	.84	.58-.87
FLBE	2.97	.54	-.13	.41	.85	.68-.86
FLA	.00	.99	-.86	-.08	-	-

4.3 Measurement Models and Latent Bivariate Correlations

Several model fit criteria evaluated the measurement models. In this study, we adopted the criteria proposed by Chen (2007) and Hu and Bentler (1999), which include the comparative fit index (CFI ≥ .90), Tucker-Lewis index (TLI ≥ .90), root mean square error of approximation (RMSEA ≤ .08), and standardized root mean square residual (SRMR ≤ .08). Based on these criteria, we found that the measurement model of "FLSC→FLBE" showed an excellent fit, with $\chi^2(19) = 77.135$, $p < .001$, CFI = .970, TLI = .957, RMSEA = .078, 90% CI [.061, .097], SRMR = .040. As demonstrated in Table 1, the standardized factor loadings of FLSC and FLBE, ranging from 0.58 to 0.87 above the standard of 0.55 (Comrey & Lee, 2009), were also satisfactory.

Table 2. Bivariate correlations for FLSC, FLBE, and FLA (*N* = 501)

	1	2	3	4	5
1 FLSC	-				
2 FLBE	.67***	-			
3 FLA	.63***	.51***	-		
4 Gender	.06	.04	.10*	-	
5 Age	-.03	.03	-.08	-.06	-

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

Foreign language achievement and covariates of gender and age were added as observed variables, and the fit of the measurement model ("FLSC→FLBE→FLA") was excellent: $\chi^2(37) = 117.990$, $p < .001$, CFI = .964, TLI = .946, RMSEA = .066, 90% CI [.053, .080], SRMR = .038. Based on this precondition, we examined the bivariate correlations for FLSC, FLBE, and FLA. Table 2 shows the results of the bivariate correlation analysis. First, it was found that FLSC was positively correlated with FLBE and FLA. Second, we also found that FLBE was positively correlated with FLA. Third, the positive correlations between FLA and gender were also confirmed.

4.4 Structural Equation Modelling

The proposed model (see Figure 1) was examined by SEM using Mplus 8.3. The proposed model had excellent fit, with $\chi^2(39) = 119.669$, $p < .001$, CFI = .964, TLI = .950, RMSEA = .064, 90% CI [.051, .078], SRMR = .040. Figure 2 presents the proposed model with standardized regression weights. There are five findings. First, FLSC positively predicted FLBE ($\beta = .67$, $SE = .04$, $p < .001$). Second, FLBE had a positive predictive effect on FLA ($\beta = .16$, $SE = .06$, $p < .01$). Third, gender was positively correlated with FLA ($\beta = .07$, $SE = .04$, $p < .05$), demonstrating that female students gained higher FLA than male counterparts. Fourth, age was negatively correlated with FLA ($\beta = -.07$, $SE = .04$, $p < .05$), indicating that the older the secondary school students are, the lower their FLA will be. Fifth, FLSC explained significant proportions of variance in FLBE (45.5%) and FLA (41.7%).

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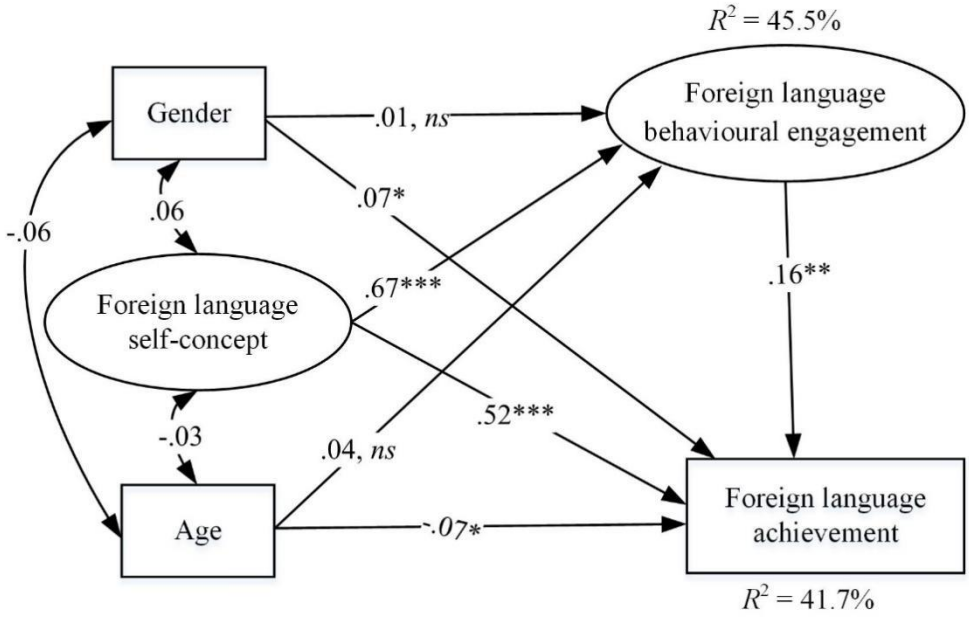

Figure 2. The relationship between FLSC, FLBE, and FLA. "ns" = insignificant coefficients; *** p < .001; ** p < .01; * p < .05.

4.5 Mediating Analysis

A bootstrap procedure was utilized to examine the mediating effect of FLBE between FLSC and FLA. More specifically, 5000 bootstrap samples were applied to calculate 95% bias-corrected confidence intervals (95% CIs), and the indirect effects would be perceived as significant if zero was not contained in the 95% CIs (Tofighi & Kelley, 2020). Table 3 presents the results of the mediating analysis. First, the indirect effect of FLBE between FLSC and FLA was significant (95% CIs [.03, .19]). Second, the direct effect of FLSC on FLA was also significant (95% CIs [.41, .63]), suggesting other mediators between FLSC and FLA besides FLBE. That is, FLBE partially mediates the relationship between FLSC and FLA.

Table 3. Results of mediating analysis

Model path	Effect	*SE*	Bias-corrected CIs 95%	
			Lower	Upper
Total effect	.63	.03	.56	.68
Indirect effect: FLSC →FLBE →FLA	.11	.04	.03	.19
Direct effect: FLSC→FLA	.52	.06	.41	.63

5. DISCUSSION

The present research investigated the relationship between FLSC, FLBE, and FLA while controlling for gender and age among Chinese secondary EFL learners. The associations between FLSC and FLBE, and between FLSC and FLA were explored. Furthermore, the mediating effect of FLBE between FLSC and FLA was examined. This research contributed to the literature by verifying that behavioural engagement partially mediated the linkage between academic self-concept and academic achievement in the EFL context.

First, it was confirmed that FLSC had a positive predictive effect on FLA, indicating that H_1 was supported. The positive predictive effect of academic self-concept on academic achievement has been verified by existing research (Dabbagh, 2011; Wu et al., 2021). On the one hand, this finding is consistent with existing research. On the other hand, this study validated the linkage between academic self-concept and achievement in the Chinese EFL context, contributing to the literature by validating the relationship between these two variables in a new context.

Second, this research also found that FLSC was positively correlated with FLBE, showing that H_2 was supported. This finding is

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consistent with the theoretical assumptions of the self-determination theory (Kaplan et al., 2002). Also, the positive correlation between academic self-concept and academic achievement was also confirmed by a large number of empirical studies (Green et al., 2012; Guo et al., 2022; Zhao et al., 2019). The contribution of this study is to verify the positive impact of academic self-concept on behavioural engagement in the field of EFL education, suggesting that the enhancement of foreign language self-concept might promote EFL learners' behavioural involvement in learning English.

Third, this study found that FLBE was partially mediated between FLSC and FLA, indicating that H_3 was supported. Several studies explored the mediating mechanisms between academic self-concept and achievement and found that learning strategies, autonomous academic motivation, and goal orientation were possible mediators (Bakadorova & Raufelder, 2020; Chen et al., 2015; Guay et al., 2010). This study further explored the mediating mechanism between academic self-concept and academic achievement, and found that behavioural engagement also played a mediating role between the two variables. Furthermore, this finding provides empirical evidence for the self-determination theory. That is, the higher the EFL learners' self-concept level, the higher the behavioural engagement in learning English, which might benefit foreign language achievement.

There are significant theoretical and practical implications of the present empirical study. First, the findings that FLSC could affect FLA directly or indirectly via FLBE, provide empirical evidence for the self-determination theory. EFL learners are recommended to improve their foreign language self-concept by way of increasing their cognitive ability (Phillipson & Phillipson, 2017), learning attitudes (Veas et al., 2019), and resilience (García-Martínez et al., 2022). In addition, students' significant others could also make positive contributions to improving students' foreign language self-concept, including teacher-student relationships, peer acceptance, and parental involvement (Mailhot & Feeney, 2017; Verschueren et al., 2012).

Despite its contribution, three limitations that need to be addressed. First, FLBE partially mediated the relationship between FLSC and FLA, suggesting that there are other mediators between these two variables. It is recommended that future research continue to explore the mediating mechanisms between academic self-concept and academic achievement (e.g., achievement emotions). Second, the causal relationships between FLSC, FLBE, and FLA could not be drawn, for the present study was based on cross-sectional data. In addition to the positive effect of academic self-concept on behavioural engagement and academic achievement (e.g., Schnitzler et al., 2021; Wu et al., 2021), there are studies documented that the reverse effect was also established (e.g., Awan et al., 2011). Thus, future studies are suggested to explore the causal relationships between FLSC, FLBE, and FLA. Third, all the data were self-reported. Although common method bias was ruled out, future research is recommended to collect data from a wider range of resources (e.g., teachers and peers) to improve the diversity and objectivity of the data.

6. CONCLUSION

Based on the data of 501 Chinese secondary EFL learners, this study explored the relationship among academic self-concept, behavioural engagement, and academic achievement. In addition to the positive association of foreign language self-concept with behavioural engagement and academic achievement, this study also found that behavioural engagement partially mediates academic self-concept and academic achievement. This study further revealed the mediating mechanism between academic self-concept and academic achievement. On the one hand, the complex relationship between academic self-concept and academic achievement is further clarified. On the other hand, the direction and strength of the mediating effect of behavioural engagement were elucidated, which is supportive for English educators and other stakeholders to take measures to improve students' foreign language self-concept and behavioural engagement, which in turn, could improve their English achievement (Fairchild & MacKinnon, 2009).

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DECLARATION

Competing 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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