A Moderated Mediation Model of Expectancy-Value Interactions, Engagement, and Foreign Language Performance

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Abstract
Based on the Expectancy-Value Theory (EVT), this study examined the interactive relation between expectancy of success and attainment value, and how they predicate students’ Foreign Language (FL) performance via behavioral engagement. Self-report data were collected from 522 Chinese non-English majors aged 18 to 22 years in their sophomore year. Results of structural equation modeling indicated that expectancy of success and attainment value interacted in predicting Chinese sophomores’ FL performance. The expectancy of success had both direct and indirect effects on FL performance when investigating the mediating role of behavioral engagement. Both theoretical and practical implications are discussed.

Keywords
attainment value, expectancy of success, FL performance, behavioral engagement, expectancy-value theory

Introduction
This study examined Chinese sophomores’ Expectancies of Success (ESs) and Subjective Task Values (STVs), and their interaction, as the indirect antecedents of FL achievement via behavioral engagement. From the perspective of expectancy-value theory (EVT; Eccles, 2009; Eccles(Parsons) et al., 1983; Guo et al., 2017; Wigfield & Eccles, 2000), ESs and STVs predict the choice of learning activities and the motivation of behavioral performance, giving insight into the achievement motivation of students (Eccles(Parsons) et al. (1983), and thus predict their academic achievement (e.g., Pintrich & de Groot, 1990). Expectancy and value are also predictors of engagement (Lam et al., 2012; Nagengast et al., 2011), relate to the motivational mechanism that decides the quality and level of students’ learning engagement (e.g., Wigfield & Eccles, 2000; Yli-Piipari & Kokkonen, 2014), and forecast academic achievement, psychological well-being, and academic emotions (Meyer et al., 2019; Turner & Schallert, 2001; Wigfield, 1994; Wigfield & Cambria, 2010). Thus, an appreciation of expectancy and value, as well as their influential mechanism on FL performance, serves as an opportunity to enhance the understanding of the motivation, processes, and results of Chinese sophomores’ English learning.

The current research aimed to examine how expectancy and value beliefs affect Chinese sophomores’ English learning results. With the in-depth development of economic globalization and mobilization of the international population, few would question the importance of English to citizens of the 21st century (Griffiths et al., 2014; Loh, 2019; Pan & Block, 2011), especially to those citizens from developing societies (Guilherme, 2007). English is passionately embraced by students from primary school to university because of political, economic, ideological, and personal development concerns (Bolton & Botha, 2015). In Mainland China today, among those with a foreign language learning experience, 93.8% learned English (Tong, 2006), that is, English is the most important foreign language to Chinese language learners. To Chinese university students, English is the exam-compulsory subject to those who wish to pursue a graduate degree (Cheng, 2008), and proficiency in English is regarded as a bonus for those who seek promotion in governmental, financial, business, educational, and other government-support institutions (He, 2001). In short, English is of high importance to the academic, professional promotion, and upward mobility of...
Chinese college students. Besides, both expectancy and value in the horizon of EVT are domain-specific (Eccles et al., 1993; Trautwein et al., 2012), however, recent studies (Guo et al., 2016, 2017; Guo, Marsh et al., 2015; Putwain et al., 2019; Trautwein et al., 2012) mainly focused on Science, Technology, Engineering, and Mathematics (STEM) areas, very few studies have addressed the impact of expectancy and value beliefs on academic performance of English as a Foreign Language (EFL; Loh, 2019) though English education is momentous to college students in the Chinese context. To address this limitation, this study deliberated on the impact of students’ expectancy and subjective value on English performance.

According to the classic EVT (Atkinson, 1957), both expectancy and value are emphasized to jointly affect the learning outcome (Trautwein et al., 2012). More precisely, only a high level of expectancy and subjective task value beliefs simultaneously will help to accomplish a task and gain a high academic achievement. That is, the educational outcomes are impacted by both expectancy and value beliefs in a multiplicative way. However, due to the lack of means to detect the multiplicative relations between expectancy and value beliefs (e.g., Guo, Marsh et al., 2015; Nagengast et al., 2011), their latent synergistic effects on academic achievement have not been extensively examined in the previous empirical studies (e.g., Guo et al., 2016; Putwain et al., 2019). Extending previous work, structural equation modeling techniques (Bollen, 1989), specifically, the Latent Moderated Structural equations approach (LMS; Klein & Moosbrugger, 2000) was adopted to examine the interaction effects of expectancy and value beliefs on foreign-language performance.

The sociocultural context was regarded as one of the proximal socializers for the production of ESs and STVs (Eccles & Wigfield, 2020), however, the Mainland Chinese students who are deeply influenced by Confucian culture have gained surprisingly little attention. Compared with Western students, students influenced by Confucian culture are described as generally facing academic stress, having a passive learning style, and hardly engaging in deep critical thinking (Tan & Yates, 2011; Tran, 2013). Several studies (Eccles & Wigfield, 2020; Kumar et al., 2018; Tonks et al., 2018; Wigfield & Wagner, 2005) indicated that both the meaning of a construct in expectancy-value model (e.g., ESs) and the meaning of those relations that specified in this model could vary greatly from culture to culture. Kumar et al. (2018) argued that the research on motivation mainly took European American students as participants and students from other cultures remain to be investigated. However, with a few exceptions (e.g., Guo, Marsh et al., 2015; Jiang et al., 2018;) that touched upon the mathematics-related expectations and values of middle school students in South Korea and Hong Kong, many of these empirical studies predominantly focused on primary and secondary school students in Western countries (e.g., Guo et al., 2016; Putwain et al., 2019; Safavian, 2019; Trautwein et al., 2012). Therefore, there is a great need for research that focuses on students from Mainland China to examine the validity and robustness of EVT in a non-Western cultural context.

**Expectancy-Value Theory**

As a prominent theory of motivation in education, EVT proposes that expectancy of success and subjective value are the two chief influencing factors of academic outcomes (Putwain et al., 2019). That is, the modern EVT emphasizes that students’ motivational beliefs exert significant influences on their achievement-related behaviors, educational aspiration, academic choice, engagement, and achievement (Eccles, 2009; Guo et al., 2017; Guo, Marsh et al., 2015; Putwain et al., 2019; Trautwein et al., 2012), and expectancy of success and value are presumed to be the driving forces behind the wide-ranging educational outcomes. According to Eccles (Parsons) et al. (1983), the expectancy of success refers to the subject’s task-related belief in the possibility of achieving success in that task. However, as highlighted by Eccles and Wigfield (2002), the expectancy of success is inseparable from one’s ability beliefs and the subjective capability evaluation (e.g., academic self-concept) was applied to serve as the operational definition of the expectancy element (Arens et al., 2019; Guo et al., 2017; Guo, Marsh et al., 2015; Putwain et al., 2019). Thus, in the current study, academic self-concept that refers to students’ self-assessment of academic competence was used to measure the expectancy of success.

The value component of modern EVT contains multiple facets rather than a single-dimensional factor (Arens et al., 2019). For example, based on the previous studies (Eccles(Parsons) et al., 1983; Wigfield & Eccles, 1992), Wigfield and Eccles (2000) identified four dimensions of values, those are, intrinsic value (interest and enjoyment), attainment value (subjective importance), utility/instrumental value (usefulness for future goals), and cost (opportunity or emotional expenditure (Wigfield & Eccles, 2000). All of these four value facets are positively correlated with the expectancy of success and exert interactive influences on achievement motivation (Eccles & Wigfield, 2002; Nagengast et al., 2011; Putwain et al., 2019), however, the correlations between value facets and expectancy of success are different. Relatively higher relations were found between academic self-concept and intrinsic value (Arens et al., 2011; Eccles(Parsons) et al., 1983; Fredricks & Eccles, 2002). Additionally, an empirical study showed that the correlation between academic self-concept and attainment value is similar to the relationship between academic self-concept and intrinsic value and the effect size of relations between these two value facets and academic self-concept is higher than the association between the left two value facets and academic self-concept (Trautwein et al., 2012). For that reason, intrinsic value that depicts the liking and enjoyment a student gains from performing a task and attainment value that
The motivation in the model of EVT integrates instructional contexts and social relatedness contests (Lam et al., 2012), which is not consistent (Wigfield, 1994; see review by Wigfield & Cambria, 2010). In elementary and junior high school students, students’ expectancy and value beliefs are relatively independent because they may pursue some activities they are interested in without considering whether they are capable of doing them well. Moreover, the lack of appropriate statistical methods makes previous studies unable to test the latent interactions between expectancy and value (Guo, Marsh et al., 2015; Nagengast et al., 2011; Putwain et al., 2019). Consequently, expectancy and value beliefs were taken as two distinct direct factors in predicting students’ academic achievement (Eccles et al., 1993; Pintrich & de Groot, 1990). Taking secondary school students as samples, several studies have suggested that the relations between expectancy, value, and academic achievement are indirect, which are mediated through variables such as academic effort (Nagengast et al., 2011; Trautwein et al., 2006; Wu & Fan, 2017), academic engagement (Nagengast et al., 2011; Putwain et al., 2019), emotional consequences (Frenzel et al., 2007; Pekrun, 2009), achievement goals (Plante et al., 2013), and self-control (Galla et al., 2018). Among the various mediating variables between expectancy, value, and academic achievement, Putwain et al. (2019) argued that behavioral engagement is the dominant one. Thus, this study mainly focuses on behavioral engagement.

Except for the few studies on primary school students that show expectancy and value beliefs can predict students’ academic performance separately (e.g., Pintrich & de Groot, 1990), the joint prediction of expectancy and value on academic performance reflect the cornerstone of EVT (Nagengast et al., 2011). This means that the relationship between the two elements of EVT is in a dynamic development process with the aging of the participants (Wigfield & Cambria, 2010) and the accumulated effect of them will not stabilize till late adolescence (Fredricks & Eccles, 2002). Thus, the interactive effect between expectancy and value beliefs need to be considered if the participants are not primary school students (e.g., Guo, Marsh et al., 2015; Guo, Parker et al., 2015; Meyer et al., 2019; Nagengast et al., 2011; Trautwein et al., 2012). The present study takes college students as the participants, so when discussing expectancy and value beliefs’ effect on EFL learners’ academic performance, we should take the multiplicative effect of expectancy and value into consideration.

Joint and Mediated Effects of Expectancy, Value, and Engagement on EFL Academic Achievement

In EFL educational settings, expectancy and value beliefs were demonstrated to be positively correlated with students’ academic achievement. For example, Mori and Gobel (2006) and Gu (Michelle) (2009) argued that expectancy and value beliefs are significant predictors of college students’ foreign language learning effect. Plante et al. (2013) also found a positive relationship between EVT facets and French-speaking adolescent students’ grades in language arts through path analysis. Loh (2019) reviewed the antecedents of students’ expectancy-value theory of motivation as well as its predictive effect on students’ achievement-related outcomes (e.g., academic performance, persistence, choices) while learning a second language. What needs to be emphasized is that cultural variation plays a role in shaping students’ L2 motivation (Huang et al., 2015), that is, students’ motivation in learning a foreign language may differ as to their cultural context and social identities change. The findings were not carried out in Confucian cultural context, nevertheless, have provided a theoretical possibility for exploring how EVT predicts Chinese students’ academic achievement in EFL.

Engagement characterizes the actual energy that a learner has expended to achieve a certain result, which is an effective mean for achievement motivation to be implemented. The motivation in the model of the expectancy-value theory was viewed as both a quantitative and qualitative phenomenon (e.g., Fryer, 2019; Loh, 2019) that can potentially promote L1 and L2/FL learning. That is, the motivation construct does not directly achieve a certain academic outcome, but rather it integrates an individual’s internal processes and the external world she or he experiences, and develops dynamically in the interaction of individual and social factors (Gu (Michelle) (2009). The contextual model for student engagement that was proposed by Lam et al. (2012) was recognized by most educational researchers (Oga-Baldwin, 2019), and according to which, engagement plays a central mediating role between motivational beliefs and academic performance. Further, as argued by Ericsson and Pool (2016), engagement is an essential element of practice and through which, motivation as the pre-decisional force of student outcomes was embodied and produced practical results. In line with Dörnyei’s (2000) process-oriented model of student motivation, the mediating effect of engagement between motivation and performance has been confirmed in empirical studies (González et al., 2015; Salanova et al., 2010). More generally, motivation in the model of EVT integrates instructional contexts and social relatedness contests (Lam et al., 2012), and considers engagement as the core mediator in achieving certain academic outcomes (Oga-Baldwin, 2019; Putwain et al., 2019).

Behavioral engagement refers to students’ laborious dedication in learning activities and extracurricular activities provided by schools (Lam et al., 2012), which is
positively correlated with academic outcomes (Kuh et al., 2008; Ladd & Dinella, 2009). In the existing literature, the meta construct of engagement applies three interrelated dimensions to conceptualize the rich connotation of engagement construct (e.g., Fredricks et al., 2004; Lam et al., 2012), those are behavioral, emotional, and cognitive dimensions. These three subdimensions act simultaneously and are interrelated with each other in the learning process, although their effect sizes on academic performance are not the same. For example, Ladd and Dinella (2009) found that behavioral engagement is a greater predictor in predicting students’ long-term achievement trajectories than emotional engagement. Li, Lerner, et al. (2010) confirmed that both emotional engagement and behavioral engagement play a mediating role between developmental assets and academic competence, but the predictive effect size on academic competence is different as emotional engagement solely exerts an indirect influence on academic competence through behavioral engagement. Lei et al. (2018) compared the effect sizes of behavioral engagement, cognitive engagement, and emotional engagement on academic achievement, and found that behavioral engagement has the highest predictive effect, followed by cognitive engagement and emotional engagement. In sum, behavioral engagement was considered the most significant predictor in predicting the subsequent academic achievement (Fredricks et al., 2004; Ladd & Dinella, 2009; Lei et al., 2018; Li, Chen, et al., 2010).

**Aims and Hypotheses**

This study aimed to examine the main assumption of EVT about the multiplicative effects of ESs and STVs on students’ academic achievement through the medium of behavioral engagement (see Figure 1). The links among these constructions were tested in the context of FL learning of students from Confucian culture. By doing so, this study would improve on earlier research by revealing the multiplicative and mediational mechanism among the variables of ESs, STVs, behavioral engagement, and academic achievement. Further, this study would expand the validity range of EVT by considering sophomores’ FL learning in the Confucian cultural context. Although all the constructs (i.e., ESs, STVs, behavioral engagement, and academic achievement) are domain-specific (Putwain et al., 2019) and students’ appraisals of their ESs and STVs are culturally determined (Eccles & Wigfield, 2020), only two studies that drew on EVT were conducted in Confucian cultural context (Guo, Marsh et al., 2015; Jiang et al., 2018). Furthermore, these two studies focused on eighth graders, and the interactions between ESs and STVs in older students have not been examined. Finally, the previous studies on EVT mainly focused on STEM subjects (e.g., Guo et al., 2017; Guo, Marsh et al., 2015; Jiang et al., 2018; Putwain et al., 2019) and few studies have examined EVT by focusing on English subject even in Western cultural context (Loh, 2019), and fewer studies have examined EVT by focusing on English subject in the Confucian cultural context.

Based on EVT as outlined already, Figure 1 pictures the hypothesized model specifying the proposed correlations among ESs, STVs, engagement, and FL performance. Concisely speaking, our research hypotheses were as follows:

**Hypothesis 1.** Expectancy and attainment value will positively predict behavioral engagement in a multiplicative manner. Precisely, the higher the attainment value, the stronger the predictive effect of expectancy on behavioral engagement.

**Hypothesis 2.** Expectancy and attainment value interaction will indirectly and positively predict FL academic performance via behavioral engagement.
Methods

Participants
A total of \( N = 522 \) sophomores (female \( n = 409 \), male \( n = 113 \)) from a normal university in Southwest China (mean age = 19.4 years, \( SD = 0.72 \)) were recruited. All participants were non-English majors in their final year of learning EFL, and they have four college English classes per week, two classes each in listening and speaking, and comprehensive exercises. The ratio of boys to girls in normal universities in China is unbalanced, with the ratio of boys to girls reaching 1 to 4 (Wang, 2015). And the gender distribution of the sample is consistent with the gender distribution of normal university students in China. The participants came from 10 classes, of which five classes are for science majors such as mathematics and engineering, and the other five classes are for liberal arts majors such as business administration and literature. As far as socioeconomic status is concerned, most of the students in this normal university are from the middle class.

Measures

Expectancy of success. Students’ expectancy of success was assessed by the four-item version of Liem et al.’s (2015) English Self-concept Scale to measure their expectation of achieving a good score in learning English (e.g., “I have always done well in English”). Participants responded using a seven-point scale (1 = strongly disagree to 7 = strongly agreed; \( \alpha = .90 \)). The English Self-concept Scale has good psychometric properties in the respects of internal consistency and constructs validity. These items were partially taken from the Academic Self-description Questionnaire II (Marsh, 2007) and it has been utilized in quite a few studies to investigate tie-up with academic achievement (Guo, Parker et al., 2015; Marsh & Martin, 2011; Televantou et al., 2021).

Values. The perceived value of the English course was measured with the 12-item version of the Michigan Study of Adolescent Life Transitions (MASLT) scale (Eccles et al., 2005). This scale consists of three subscales (four items for each subscale), which were applied to assess students’ intrinsic value, attainment value, and utility value. Items were adapted to be relevant to English lessons and examinations (e.g., “I like the subject matter of English course” for intrinsic value; “The amount of effort it takes to do well in English courses worthwhile to me” for attainment value; “I think English is useful” for utility value). All these three values were measured on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agreed), but only the attainment value subscale was analyzed in the present study (\( \alpha = .82 \)).

Behavioral engagement. To measure students’ behavioral engagement in learning EFL, we use the four-items in the modified Engagement versus Dissatisfaction with Learning Questionnaire (Skinner et al., 2009) to gauge their involvement with the endeavor of studying English. These four items were modified to refer to EFL (e.g., “In English class, I study as hard as I can”). Both the construct validity and internal consistency of this subscale has been demonstrated by Skinner et al. (2009) and Skinner and Chi (2012) and it has been used to go into relations with academic achievement and well-being (King & Gaerlan, 2014; King & Gano- tice, 2015; Putwain et al., 2019). In this study, the internal consistency of this scale was good for \( \alpha = .82 \).

Foreign language achievement. We collected participants’ final course exam scores to represent their foreign-language performance. The course exams were proposed by the Foreign Language Department affiliated to the Faculty of Foreign Languages and graded jointly by the English teachers. The examination paper was designed based on the course textbook to measure their reading and writing skills which include 20 multiple-choice items, 20 cloze test items, 20 sentence translation items, and writing an English composition (range 0–100; \( \alpha = .85 \)).

Data Analysis

In this study, both the Confirmatory Factor Analyses (CFAs) and the Latent Moderated Structural equation modeling analysis (Klein & Moosbrugger, 2000) were carried out to capture the multiplicative effect of ESs and STVs on behavioral engagement and FL performance. Both the CFAs and LMS approaches were conducted with the Mplus 8.3 (Muthén & Muthén, 2013). More specifically, some CFAs were initially conducted to investigate the psychometric properties and validity of each construct. Moreover, the LMS approach was implemented to evaluate the predictive effect of expectancy and value interaction on behavioral engagement as well as FL performance. Precisely, there are three mediational models, those are, the indirect effect of expectancy, attainment value, and their interaction on academic achievement through engagement as well as the direct effects of engagement on achievement (see Figure 1). By examining these models, we estimated conditional indirect effects of expectancy on achievement at different levels of attainment value as mediated by behavioral engagement. Moreover, all variables used in this study are normally distributed (see Table 2), thus Maximum Likelihood (ML) was applied to test the parameters.

Results

Preliminary Analysis

Both the factor loadings and the goodness of fit indexes from CFAs are documented in Table 1. The model fit was evaluated based on the comparative fit index (CFI), the Tucker-Lewis index (TLI), the root mean square error of approximation
Table 1. Results of the Confirmatory Factor Analyses.

| Factor loadings | $\chi^2 (df)$ | CFI | TLI | RESEA | SRMR |
|-----------------|----------------|------|------|--------|------|
| Expectancy      | 0.76–0.89      | 2.29 (2) | 1.000 | .999   | .017 | .006 |
| Engagement      | 0.60–0.82      | 1.27 (2) | 1.000 | 1.003  | .000 | .007 |
| Attainment Value| 0.64–0.85      | 5.14 (2) | .996 | .987   | .055 | .014 |

Note. Factor loadings are standardized coefficients. All factor loadings are significant at $p < .001$.

Table 2. Descriptive Statistics and Bivariate Correlations of the Study Variables.

| Range | M | SD | Skewness | Kurtosis | 1 | 2 | 3 | 4 |
|-------|---|----|----------|----------|---|---|---|---|
| 1. Expectancy | 1–7 | 3.68 | 1.30 | .05 | -.37 | .417** | .347** | .347** | .287** |
| 2. Engagement  | 1–7 | 4.45 | 1.09 | -.32 | -.38 | .400** | .478** | .478** | .387** |
| 3. Attainment Value | 1–7 | 5.38 | 1.02 | -.54 | .26 | .414** | .400** | .400** | .287** |
| 4. Achievement | 0–100 | 81.91 | 5.15 | -1.00 | 1.04 | .414** | .400** | .400** | .287** |

Note. **$p < .01$.

Structural Equation Modeling

SEM was estimated to test the moderated mediational model that is hypothesized in Figure 1. To inspect whether the mediational LMS model is acceptable, the first step is to examine whether the fitness of the base model, which omitted interaction terms, is acceptable. The next step is to examine whether the model fit of the mediational LMS model is better than the base model. The Akaike Information Criterion (AIC) was used as the criteria for it is the relative quality of statistical models for a given data set (Aho et al., 2014). The larger the value of AIC, the more information loss (Sardeshmukh & Vandenbarg, 2017). The base model, which omitted interaction terms, provided an excellent fit: $\chi^2 (60) = 152, p < .001; \text{RMSEA} = 0.055, \text{SRMR} = 0.044, CFI = 0.971; \text{and TLI} = 0.963$. The AIC value of the mediational LMS model is a little bit less than the base model (less 5), which suggests that the mediational LMS model of the present study is acceptable and proceeded to investigate the beta coefficients (see Figure 2).

Effects of expectancy, attainment value, and engagement on achievement. The engagement has a significant predictive effect on academic achievement ($\beta = 0.28, p < .001$). Besides, the direct predictive effect between expectancy and academic achievement is also significant ($\beta = 0.31, p < .001$), while the predictive effect of attainment value ($\beta = 0.01, p = .821$) and ($\beta = -0.04, p = .419$) on academic achievement are not significant. Nevertheless, the present study aims to explore the indirect effects of expectancy, attainment value, expectancy $\times$ attainment value interaction on academic achievement through engagement. Expectancy ($\beta = 0.33, SE = 0.09, 95\% CI[0.17, 0.55]$), attainment value ($\beta = 0.63, SE = 0.16, 95\% CI[0.34, 0.97]$), and the expectancy $\times$ attainment value interaction ($\beta = -0.13, SE = 0.06, 95\% CI[-0.28, -0.04]$) showed significant indirect effect on achievement via engagement. To interpret the indirect predictive effect of expectancy $\times$ attainment value interaction on achievement, Figure 4 presents indirect simple slopes of attainment value at different levels. As shown in Table 3, the indirect simple slopes estimated for low and high achievement values were $\pm 1 SD$. It can be seen from Figure 4 when the attainment value is low, the indirect correlations between expectancy and

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achievement are more significant than that the attainment value is at the mean level or high level. To put it another way, the indirect correlations between expectancy and achievement weakens as the levels of attainment value rise.

**Discussion**

The current study investigated the relationships among expectancy, attainment value, behavioral engagement, and FL performance in a sample of 18 to 22-year-old Chinese sophomores. In this structural model, behavioral engagement was contemplated to be the mediator between expectancy, attainment value, and FL achievement. Meanwhile, the relationships between expectancy-attainment value interaction and FL achievement were also examined by substituting different levels of attainment value in the mediation model of “expectancy-value interaction → behavioral engagement → FL achievement.” In the context of foreign language learning in China, strong support was found for the pathway of expectancy and value appraisals → engagement → achievement that was firstly proposed by Putwain et al. (2019).

The finding that expectancy and attainment value predict behavioral engagement both in additive and interactive manners was consistent with previous studies examining ETVs.
in the education research domain (e.g., Putwain et al., 2019; Wang & Eccles, 2013) and add on work utilizing latent moderated mediation model to explore how expectancy and attainment value interactively predict academic achievement (e.g., Guo et al., 2016, 2017; Trautwein et al., 2012). Classic EVT emphasizes that both expectancy and value are indispensable for motivating students’ engagement (e.g., Atkinson, 1957; Eccles(Parsons) et al., 1983; Meece et al., 1990). However, our results are consistent with the research of Guo, Parker et al. (2015), Guo, Marsh et al. (2015), and Putwain et al. (2019) and found that high attainment value would compensate for low expectancy to a certain extent. This implies that the associations between expectancy and attainment value could be both interactive (e.g., Nagengast et al., 2011; Trautwein et al., 2012) and additive (Eccles, 2009; Eccles(Parsons) et al., 1983). Besides, the predictive effects of Chinese college students’ expectancy and value to their engagement in FL learning were different. Unlike Meece et al. (1990) work that emphasizes the importance of expectancy to educational outcomes, we found that high attainment value would compensate for low expectancy to a certain extent. This implies that the associations between expectancy and attainment value could be both interactive (e.g., Nagengast et al., 2011; Trautwein et al., 2012) and additive (Eccles, 2009; Eccles(Parsons) et al., 1983). Besides, the predictive effects of Chinese college students’ expectancy and value to their engagement in FL learning were different. Unlike Meece et al. (1990) work that emphasizes the importance of expectancy to educational outcomes, we found that high attainment value would compensate for low expectancy to a certain extent. This implies that the associations between expectancy and attainment value could be both interactive (e.g., Nagengast et al., 2011; Trautwein et al., 2012) and additive (Eccles, 2009; Eccles(Parsons) et al., 1983).

The finding that behavioral engagement predicted the ensuing academic achievement, supports previous research using samples of university students (De Clercq et al., 2013; Hu & McCormick, 2012; King & Gaerlan, 2014). Moreover, our results indicate that expectancy, attainment value, and their interaction have an indirect positive predictive effect on FL achievement through the mediator of behavioral engagement (see Figure 2). Taken together, our results support H1.

**Limitation and Future Directions**

The current study has certain limitations that can be used to clarify directions for future research. First, we adopted a
cross-sectional design to examine the joint influence of ESs and AV on FL performance via behavioral engagement. A prospective longitudinal design that measures all variables at several waves is preferable to draw a firmer conclusion concerning the moderated-mediation mechanisms. Second, we only investigated the attainment value that is deemed to be the most germane one for Chinese foreign language learners. However, the other two types of value, namely intrinsic and utility, may also interact with expectancy to affect behavioral engagement and FL performance. Third, the proportion of female participants in the present study is high. Although the gender ratio reflects the actual situation of the current gender ratio of normal university students in China, the gender distribution will be more balanced if participants were chosen from multiple types of universities such as the polytechnic university, finance universities, comprehensive universities. Moreover, we highly relied on self-reported surveys. Self-report is a nigh ubiquitous data collection method in the field of education research, but this data gathering method is prone to pose the problem of common method variance (Podsakoff & Organ, 1986). Future research should also utilize the methods of peer or teacher assessments rather than self-reported data during the data collection phase (Conway & Lance, 2010).

Implications for Educational Practice

This study has potential educational implications, especially for those students with low expectancy or attainment value. That is, college students’ expectancy and attainment values could complement each other in the context of foreign language learning. More specifically, high ESs can buffer the adverse effects of low attainment value on FL achievement and high attainment value can also buffer the adverse effects of low ESs on FL achievement. Therefore, it is advised that focusing on raising attainment value would be an effective way to improve FL achievement of low-expectation students. Analogously, efforts to cultivate students’ ESs could be a resultful strategy to better students’ low level of attainment value and in turn improve their FL achievement. In view of Priniski et al. (2018), both students’ motivation and educational outcomes can be improved via building a connection between academic tasks (e.g., lesson activities) and personal relevance. To achieve this goal, Acee et al. (2018) argued that students could achieve personal significance once they combine the academic activities with task-value messages, and thereby they are more motivated to engage in the learning activities and obtain good grades.

Conclusion

To conclude, the present study provides evidence for the effect mechanism of expectancy and value on the subsequent behavioral engagement, and achievement in the process of Chinese college students’ English learning. Expectancy has both a direct and indirect relationship with subsequent achievement through the mediational role of behavioral engagement. The theoretical significance of this study is to clarify the synergies between research on expectancy and value, that is, expectancy and attainment value in the field of expectancy-value theory can operate both additively and interactively. In addition to clarifying the additive effect between expectancy and value on foreign language achievement via the mediator of behavioral engagement, this study also elucidated the interactive relationship between these two variables that the negative effect of students’ low expectancy for foreign language achievement can be ameliorated by high attainment value. These findings indicate that attainment value would be considered as a target goal of foreign language education intervention given its protective effect on low expectancy. That is, for those students with low expectancy for foreign language achievement, improving their attainment value and motivating them to engage more in foreign language learning activities may be an effective way to solve the problem.

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References

Arens, A. K., Schmidt, I., & Preckel, F. (2019). Longitudinal relations among self-concept, intrinsic value, and attainment value across secondary school years in three academic domains. Journal of Education & Psychology, 111(4), 663–684. https://doi.org/10.1037/edu0000313

Arens, A. K., Yeung, A. S., Craven, R. G., & Hasselhorn, M. (2011). The twofold multidimensionality of academic self-concept: Domain specificity and separation between competence and affect components. Journal of Education & Psychology, 103(4), 970–981. https://doi.org/10.1037/a0025047

Atkinson, J. W. (1957). Motivational determinants of risk-taking behavior. Psychological Review, 64, Part 1(6), 359–372. https://doi.org/10.1037/0033-295X-64-1-359

Bollen, K. A. (1989). Structural equations with latent variables. Wiley.
Bolton, K., & Botha, W. (2015). Researching English in contemporary China. *World Englishes*, 34(2), 169–174. https://doi.org/10.1111/weng.12131

Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. *Structural Equation Modeling: A Multidisciplinary Journal*, 14(3), 464–504.

Cheng, L. (2008). The key to success: English language testing in China. *Language Testing*, 25(1), 15–37. https://doi.org/10.1177/0265532207083743

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2013). *Applied multiple regression/correlation analysis for the behavioral sciences*. Routledge.

Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. *Structured Equation Modeling: A Multidisciplinary Journal*, 14(3), 464–504.

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research*, 74(1), 59–109. https://doi.org/10.3102/00346543074001059

Fredricks, J. A., & Eccles, J. S. (2002). Children’s competence and value beliefs from childhood through adolescence: Growth trajectories in two male-sex-typed domains. *Developmental Psychology*, 38(4), 519–533. https://doi.org/10.1037/0012-1649.38.4.519

Frenzel, A. C., Pekrun, R., & Goetz, T. (2007). Girls and mathematics—A “hopeless” issue? A control-value approach to gender differences in emotions towards mathematics. *European Journal of Psychology of Education*, 22(4), 497–514.

Fryer, L. K. (2019). Getting interested: Developing a sustainable source of motivation to learn a new language at school. *System*, 86, 102120. https://doi.org/10.1016/j.system.2019.102120

Galla, B. M., Amemiya, J., & Wang, M. T. (2018). Using expectancy-value theory to understand academic self-control. *Learning and Instruction*, 58, 22–33. https://doi.org/10.1016/j.learninstruc.2018.04.004

González, A., Paoloni, P. V., Donolo, D., & Rinaudo, C. (2015). Behavioral engagement and disaffection in school activities: Exploring a model of motivational facilitators and performance outcomes. *Amer. Psychologist*, 31(3), 869–878. https://doi.org/10.6018/analesps.32.1176981

Griffiths, C., Oxford, R. L., Kawai, Y., Kawai, C., Park, Y. Y., Ma, X., Meng, Y., & Yang, N. D. (2014). Focus on context: Narratives from East Asia. *System*, 43(1), 50–63.

Gu (Michelle), M. (2009). College English learners’ discursive motivation construction in China. *System*, 37(2), 300–312. https://doi.org/10.1016/j.system.2008.11.006

Guiltherme, M. (2007). English as a global language and education for cosmopolitan citizenship. *Language and Intercultural Communication*, 7(1), 72–90. https://doi.org/10.2167/laic184.0

Guo, J., Marsh, H. W., Parker, P. D., Morin, A. J. S., & Dicke, T. (2017). Extending expectancy-value theory predictions of achievement and aspirations in science: Dimensional comparison processes and expectancy-by-value interactions. *Learning and Instruction*, 49, 81–91. https://doi.org/10.1016/j.learninstruc.2016.12.007

Guo, J., Marsh, H. W., Parker, P. D., Morin, A. J. S., & Yeung, A. S. (2015). Expectancy-value in mathematics, gender and socioeconomic background as predictors of achievement and aspirations: A multi-cohort study. *Learning and Individual Differences*, 37, 161–168. https://doi.org/10.1016/j.lindif.2015.01.008

Guo, J., Nangenast, B., Marsh, H. W., Kelava, A., Gaspard, H., Brandt, H., Cambria, J., Flunger, B., Dicke, A.-L., Häfner, I., Brissin, B., & Trautwein, U. (2016). Probing the unique contributions of self-concept, task values, and their interactions using multiple value facets and multiple academic outcomes. *AERA Open*, 2(1), 1–20. https://doi.org/10.1177/2332858415626884

Guo, J., Parker, P. D., Marsh, H. W., & Morin, A. J. (2015). Achievement, motivation, and educational choices: A longitudinal study of expectancy and value using a multiplicative perspective. *Developmental Psychology*, 51(8), 1163–1176. https://doi.org/10.1037/a0039440

He, Q. (2001). English language education in China. In S. J. Baker (Ed.), *Language policy: Lessons from global models* (pp. 225–231). Monterey Institute of International Studies.

Huang, H. T., Hsu, C. C., & Chen, S. W. (2015). Identification with social role obligations, possible selves, and L2 motivation in foreign language learning. *System*, 51, 28–38. https://doi.org/10.1016/j.system.2015.03.003

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1–55.
Safavian, N. (2019). What makes them persist? Expectancy-value beliefs and the math participation, performance, and preparedness of Hispanic youth. *AERA Open, 5*(3), 1–17. https://doi.org/10.1177/2332858419869342

Salandona, M., Schaufeli, W., Martinez, I., & Breso, E. (2010). How obstacles and facilitators predict academic performance: The mediating role of study burnout and engagement. *Anxiety, Stress, and Coping, 23*(1), 53–70. https://doi.org/10.1080/10615800802609965

Sardeshmukh, S. R., & Vandenberg, R. J. (2017). Integrating expectancy-value theory in cross-cultural perspective: What have we learned about modern expectancy–value theory: A latent interaction modeling approach. *Organizational Research Methods, 20*(4), 721–745. https://doi.org/10.1177/1094428116671568

Shao, K., Pekrun, R., Marsh, H. W., & Loderer, K. (2020). Control-value appraisals, achievement emotions, and foreign language performance: A latent interaction analysis. *Learning and Instruction, 69*, 101–356.

Skinner, E. A., & Chi, U. (2012). Intrinsic motivation and engagement as “active ingredients” in garden-based education: Examining models and measures derived from self-determination theory. *The Journal of Environmental Education, 43*(1), 16–36. https://doi.org/10.1080/00958964.2011.596856

Skinner, E. A., Kindermann, T. A., & Furrer, C. J. (2009). A motivational perspective on engagement and disaffection: Conceptualization and assessment of children’s behavioral and emotional participation in academic activities in the classroom. *Educational and Psychological Measurement, 69*(3), 493–525.

Tan, J. B., & Yates, S. (2011). Academic expectations as sources of stress in Asian students. *Social Psychology of Education, 14*(3), 389–407. https://doi.org/10.1007/s11218-010-9146-7

Televantou, I., Marsh, H. W., Dicke, T., & Nicolaides, C. (2021). Phantom and big-fish-little-pond-effects on academic self-concept and academic achievement: Evidence from English early primary schools. *Learning and Instruction, 71*, 101399. https://doi.org/10.1016/j.learninstruc.2020.101399

Tong, L. (2006). *Findings and documents of the survey of language situation in China*. Language & Culture Press.

Tonks, S. M., Wigfield, A., & Eccles, J. S. (2018). Expectancy-value theory in cross-cultural perspective: What have we learned in the last 15 years? In G. A. D. Liem & D. M. Macintyre (Eds.), *Big Theories Revisited* (pp. 91–115). Information Age Publishing.

Tran, T. T. (2013). Is the learning approach of students from the Confucian heritage culture problematic? *Educational Research for Policy and Practice, 12*(1), 57–65. https://doi.org/10.1007/s10671-012-9131-3

Trautwein, U., Lüdtke, O., Kastens, C., & Köller, O. (2006). Effort on homework in grades 5–9: Development, motivational antecedents, and the association with effort on classwork. *Child Development, 77*(4), 1094–1111. https://doi.org/10.1111/j.1467-8624.2006.00921.x

Trautwein, U., Marsh, H. W., Nagengast, B., Lüdtke, O., Nagy, G., & Jonkmann, K. (2012). Probing for the multiplicative term in modern expectancy–value theory: A latent interaction modeling study. *Journal of Education & Psychology, 104*(3), 763–777. https://doi.org/10.1037/a0027470

Turner, J. E., & Schallert, D. L. (2001). Expectancy–value relationships of shame reactions and shame resiliency. *Journal of Education & Psychology, 93*(2), 320–329.

Wang, J. (2015). On the sex-labeling of teaching occupation: Discussing the gender imbalance of normal universities. *The Journal of Higher Education, 36*(6), 65–72.

Wang, M. T., & Eccles, J. S. (2013). School context, achievement motivation, and academic engagement: A longitudinal study of school engagement using a multidimensional perspective. *Learning and Instruction, 28*, 12–23. https://doi.org/10.1016/j.learninstruc.2013.04.002

Wigfield, A. (1994). Expectancy-value theory of achievement motivation: A developmental perspective. *Educational Psychology Review, 6*(1), 49–78. https://doi.org/10.1007/bf02209024

Wigfield, A., & Cambria, J. (2010). Expectancy-value theory: Retrospective and prospective. In T. C. Urdan & S. A. Karabenick (Eds.), *The decade ahead: Theoretical perspectives on motivation and achievement* (pp. 35–70). Emerald Group Publishing Limited.

Wigfield, A., & Eccles, J. S. (1992). The development of achievement task values: A theoretical analysis. *Developmental Review, 12*(3), 265–310.

Wigfield, A., & Eccles, J. S. (2000). Expectancy-value theory of achievement motivation. *Contemporary Educational Psychology, 25*(1), 68–81. https://doi.org/10.1006/ceps.1999.1015

Wigfield, A., & Wagner, A. L. (2005). Competence, motivation, and identity development during adolescence. In A. J. Elliot & C. S. Dweck (Eds.), *Handbook of competence and motivation* (pp. 222–239). The Guilford Press.

Wu, F., & Fan, W. (2017). Academic procrastination in linking motivation and achievement-related behaviours: A perspective of expectancy-value theory. *Educational Psychologist, 37*(6), 695–711. https://doi.org/10.1080/01443410.2016.1202901

Yli-Piipari, S., & Kokkonen, J. (2014). An application of the expectancy-value model to understand adolescents’ performance and engagement in physical education. *Journal of Teaching in Physical Education, 33*(2), 250–268. https://doi.org/10.1123/jtpe.2013-0067