

The Relationship between Chinese First-Generation College Students' Motivation for Learning English and Their English Academic Achievement: A Moderated Mediation Model

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Abstract: Self-Determination Theory proposed that motivation refers to one's motives to perform an action, including both autonomous motivation and controlled motivation. Based on SDT, this study aimed at examining Chinese first-generation college students' motivation for learning English as a second language and its impacts on English academic achievement. We further looked at the potential mediating role of learning engagement between the relationship of first-generation college students' motivation for learning and their English academic performance. Parental autonomy support was viewed as a moderator among the relationships of motivation, learning engagement, and academic achievement. Results of the current study showed that students' learning engagement partially mediated the relationship between autonomous motivation for learning English and their English academic achievement, and fully mediated the relationship between controlled motivation for learning English and English academic achievement. Potential moderating effects of perceived parental autonomy support was not identified in the current study.

Keywords: Self-Determination Theory; Motivation; Learning Engagement; Academic Achievement; English Learning; First-Generation College Students

1. Introduction

Motivation, a psychological construct, is used to explain people's desire to or motive to perform an action^[1], as it often influences what, when, and how people learn^[2]. In school settings, students' motivation for learning plays a critical role in predicting their learning outcomes. Compared with students who have low motivation for learning, students with heightened motivation for learning are likely to display greater interest in learning, show better self-regulatory ability in learning, learn more, and achieve better academic results. In the field of second language acquisition, students' motivation for learning a language has also turned out to be one of the important factors for predicting their language learning outcomes^[3-4]. For example, Comanaru and Noels found that for both heritage and non-heritage language learners, students who felt internally motivated to study Chinese as a second/foreign language tended to display better engagement in Chinese study than students who were regulated by externally-controlled reasons, such as obtaining tangible rewards.

It is still worthwhile to note that the relationship between students' motivation for learning and their academic achievement is not straightforward. Specifically, motivation is "not synonymous with other achievement outcomes such as learning, performance, and self-regulation". Therefore, it may be more reliable and valid to examine the predictive power of students' motivation for learning than directly looking at the relationship between students' motivation and their academic achievement^[5].

Prior studies have provided much information about students' motivation for learning a language, but less is known about Chinese first-generation college student (FGS) motivation for learning English as a second/foreign language in China. Billson and Terry first empirically analyzed the concept of FGS in their study on college student attrition, and defined the construct as "new students" from families where neither parent experienced a college education^[6]. According to the statistics reported by Chinese College Students Survey (CCSS), from 2011 to 2015, FGS accounted for more than 70% of the student body, and thus formed a large sub-population in higher education. Some features characterizing FGS include low family income, ethnic minority, female, and for example, FGS are likely to come from families with

lower household incomes^[7]. As a matter of fact, higher education expansion did not contribute much to educational equality in which students from disadvantaged backgrounds can have equal or even more opportunities to have access to higher-educational institutions^[8]. Therefore, investigating English learning motivation of first-generation college students may help educators and policymakers establish policies that address academic preparedness, navigate college processes, offer financial aid, and foster a sense of belonging.

Based on self-determination theory, this study was to investigate how Chinese first-generation college students' learning engagement (i.e., behavioral engagement, emotional engagement, and cognitive engagement) contributed to explaining the relationship between students' motivation for learning a language and their language achievement. Especially, we looked at whether or not FGS learning engagement might mediate the relationship between their motivation for learning English and English academic achievement. Additionally, we further investigated the moderating effects of FGS perceived parental autonomy support on the association between motivation for learning and academic achievement.

2. Theoretical Background: Self-Determination Theory

The present study is built upon self-determination theory (SDT) and its assumptions about intrinsic and extrinsic motivational regulations and three basic psychological needs^{[9][10]}.

2.1 Autonomous Motivation

Based on SDT, motivation differs in dimensions of regulatory styles, loci of causality, and relevant regulatory processes. Moreover, "varied types of motivation can be characterized in terms of the extent to which they represent autonomous versus controlled regulations"^[11]. According to Ryan and Deci, autonomous motivation (i.e., identified regulation, integrated regulation, intrinsic motivation) involve more autonomy and self-determination than controlled motivational regulations. When people are motivated by identified regulation, they tend to perform a task as it is important to them. Integrated regulation reflects moving into an intrinsic regulation but it is still considered as extrinsic motivation. When people have intrinsic motivation, they perform a task out of enjoyment (e.g., students enjoy learning English as a foreign language) contrary to external rewards.

Prior studies have suggested that students' autonomous motivation is often related to heightened levels of academic performance and other positive character strength and learning outcomes such as greater persistence and effort^{[12][13]}, heightened learning engagement^[14], and better academic achievement^[15]. In the field of second language acquisition, students' who are motivated by autonomous motivation for learning a language are likely to achieve positive learning outcomes including better learning engagement^[16], and higher levels of language proficiency^[17]. For example, Noels and her colleagues investigated the extent to which students' perceptions of teachers' communicative style were associated with their autonomous and controlled motivational regulations in second language learning; meanwhile, they looked at the relations between students' motivational regulations and their other learning outcomes such as effort, anxiety, and language competence. They found that compared with students who were regulated by controlled motivation, students who were motivated by autonomous motivation for learning a language were likely to achieve positive learning outcomes including greater persistence and effort, better perceived language competence, and less anxiety.

2.2 Controlled Motivation

Controlled motivation is less autonomous and self-determined than autonomous motivation. In SDT, controlled motivation consists of external motivational regulation and introjected motivational regulation. When people are externally motivated, they perform a task in order to obtain external rewards or benefits. Put differently, at this stage, people feel least autonomous and self-determined. In terms of introjected motivational regulation, people may feel shamed or guilty if they do not perform a task. For example, students may feel guilty or anxious if they do not take their parents' advice. Even though the source of the pressure or force is internal, at this phase, people still feel less self-determined and cannot see the value of performing a task.

When people perform a task for externally-controlled reasons, they may feel a sense of obligation and pressure, and consequently, are less likely to persist with the task if the externally-controlled reasons (e.g., rewards, feeling of being guilty) are removed. In other words, people are likely to have their autonomy thwarted if they tend to apply external and introjected types of regulations. For example,

students' controlled motivational regulations are often associated with negative learning outcomes such as higher levels of drop-out^[18], and lower levels of progress toward academic goals^[19].

2.3 Parental Autonomy Support

Social context can either enhance or thwart children's intrinsic motivation and internalization of external regulations. Parenting and family context is a critical predictor of children's development and learning outcomes. When children's psychological need for autonomy is well supported by parents and teachers, they are likely to develop intrinsic motivation and internalize external regulations as their own. At this point, parental autonomy support refers to the extent to which parents encourage children to independently solve problems, make choice, and participate in decision-making processes^[20]. The construct demonstrates "a practice whereby parents encourage a child's initiative, offer choice, respond to a child's needs, provide a rationale for rules, and acknowledge a child's perspective"^[21].

Parental autonomy support is considered to be a key component of successful parenting^[22]. Prior studies have suggested that parental autonomy support is associated with positive academic outcomes in many ways^[23], including greater academic achievement^[24], more autonomous forms of motivation for school^[25], psychological health^[26], higher levels of perceived competence^[27], increased engagement^{[28][29]}, and more positive attitude toward school^[30]. Especially, extensive literature has shown that parents' support for autonomy is beneficial to students' autonomous forms of motivation for learning. For example, a qualitative case study of 7 low-income, first-generation college students showed that parental support for autonomy (encouragement, providing choices, supporting independent decision-making, fostering a sense of career volition) could enhance students' self-determined forms of motivation for school. As for the relationship between parental autonomy support and student learning engagement, research further specifies that parental autonomy support is associated with students' learning Engagement, but the relationship is not straightforward. For example, Martinez-Pons investigated parental influence on children's development of self-regulatory behavior, and found that parental encouragement and rewarding for their children's self-regulation could directly help children develop a sense of responsibility in homework completion, and thereby enhanced their cognitive engagement and improved their academic achievement.

By and large, the relationship between perceived parental autonomy support and students' learning engagement and their academic achievement might not be straightforward, as satisfaction of basic psychological needs for autonomy, competence, and relatedness could elicit and sustain intrinsic motivation^[31]. Although parental autonomy support, as a positive parenting practice, is predictive of students' elevated behavioral and emotional outcomes, yet less is known about the moderating effect of parental autonomy support on the relationship between first-generation college students' motivation for learning English and their English academic achievement. Therefore, in the current study, parental autonomy support was viewed as a potential moderator in the relationships among students' motivation for learning, learning engagement, and their academic achievement.

3. The Mediating Role of Learning engagement between Students' Motivation for Learning English and Their English Achievement

Engagement refers to the degree of a person's active involvement in a task^[32]. In literature, student engagement has turned out to be an important and well-studied educational construct^[33]. Many scholars have suggested that students' learning engagement is an important learning outcome in its own as it reflects learners' positive functioning, and that it can also predict other learning outcomes such as academic achievement and growth^{[34][35]}. Engagement is a multidimensional construct consisting of three "intercorrelated and mutually supportive"^[36] concepts of behavioral engagement (i.e., students' participation and involvement in instructional activities), emotional engagement (i.e., students' emotional reactions to teachers, classmates, and classroom climate), and cognitive engagement (i.e., students' motives and willingness to tackle difficult learning problems).

As for the relation between student motivation for learning and their classroom engagement, even though students' motivation is an unobservable experience, there are still observable manifestations of motivation including "behavior, engagement, psychophysiology, brain activation, and self-report". What's more, students' learning engagement incorporates various related forms of motivation such as autonomous motivation and self-determined controlled motivation^[37]. As to the influence of students' autonomous motivation on student learning engagement in second/foreign language research, studies have also shown that the more students feel autonomous in learning a language, the better they will

engage in language learning^[38].

With respect to the relation between students' learning engagement and their academic achievement, students' learning engagement has turned out to be significantly and positively related to students' academic achievement^[39]. For example, Ladd and Dinella found that students who demonstrated higher levels of behavioral and emotional engagement during early elementary school years were likely to achieve better academic outcomes than those who manifested lower levels of learning engagement.

A review of literature has showed that potential relationships among the constructs (i.e., students' autonomous motivation, students' controlled motivation, perceived parental autonomy support, students' learning engagement, and students' academic achievement) of interest in this study. Based on the above-mentioned literature review results, we proposed the following research questions and the postulated a conceptual model (figure 1) to be tested in this quantitative study.

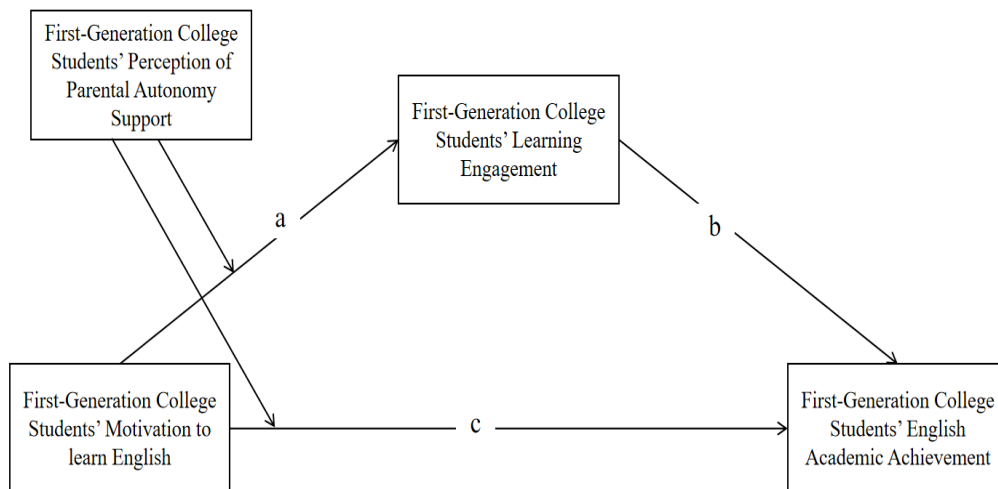


Figure 1: the proposed relationship between first-generation college students' motivation for learning English and their English academic achievement: students' learning Engagement as the mediator and perceived parental autonomy support as the moderator

Research questions that we addressed in this study were:

- 1) Does first-generation college students' autonomous motivation directly predict their English academic achievement?
- 2) Does first-generation college students' learning Engagement mediate the relationship between students' autonomous motivation for learning English and their academic achievement?
- 3) Does first-generation college students' learning Engagement mediate the relationship between students' controlled motivation for learning English and their academic achievement?
- 4) Does first-generation college students' perceived parental autonomy support moderate the relationship between their motivation for learning English (i.e., autonomous motivation and controlled motivation) and learning Engagement?
- 5) Does first-generation college students' perceived parental autonomy support moderate the relationship between their motivation for learning English (i.e., autonomous motivation and controlled motivation) and English academic achievement?

4. Methods

4.1 Participants and Procedures

This study was conducted in two national public universities located in the southeast of China. Surveys were created by using an online survey tool of Qualtrics. A total of 559 first-generation undergraduate English learners completed the survey. 259 (46.33%) were male students, and the student participants were 18 to 21 years old (78 participants were 18 years old; 226 participants were 19 years old; 100 participants were 20 years old; 155 participants were 21 years old; $M = 19.59$ years, $SD = 1.04$). 466 (75.16%) participants' homes were located in rural areas.

4.2 Instruments

The surveys consisted of statements that elaborated students' perceptions, feelings, and beliefs about their English learning experience. Participants were asked to respond to each statement with their level of agreement based on five-point Likert scale from "1 = Not at All True for Me" to "5 = Extremely True for Me".

Autonomous and controlled motivation. Students were asked to complete an adapted version of Noels et al.'s^[40] Language Learning Orientation Scale–Intrinsic Motivation, Extrinsic Motivation, and Amotivation Subscales (LLOS-IEA) and Wong and Liu's^[41] survey of students' perceived parental supports for a hospitality and tourism (H&T) career. Based on our pilot study on Chinese undergraduate English learners' motivation for learning English as a foreign/second language, Chinese undergraduate English learners valued parental involvement in students' learning process, and parental involvement turned out to be an important motivational factor for predicting students' academic achievement^[42]. Therefore, we adapted Wong and Liu's survey to further investigate students' introjected motivational regulation for learning English in China. The associated reliability of the scales were 0.93 for autonomous motivation and 0.93 for controlled motivation in this study.

Students' Learning Engagement. Students' learning engagement scale was adapted from Reeve and Tseng's^[43] study on high school students' engagement during learning activities. It consisted of three subscales to measure Chinese English language learners' behavioral engagement, cognitive engagement, and emotional engagement during instructional activities. The associated reliability of this scale was 0.97 in this study.

Parental Autonomy Support. Parental autonomy support was measured using Mageau et al.'s Perceived Parental Autonomy Support Scale (P-PASS). The associated reliability of the scale was 0.92. As parental autonomy support was the moderator in this study, based on the mean score ($M = 3.21$) of this scale, we divided all 559 students into two groups: group 1 (i.e., higher levels of perceived parental autonomy support; $n = 245$) and group 2 (i.e., lower levels of perceived parental autonomy support; $n = 314$).

Students' English Academic Achievement. To assess students' academic achievement, we asked students to report their course-specific final grades on an 11-point scale.

4.3 Data Analysis

The SPSS version 26.0 and R studio were used for hypotheses testing. To examine the general tendency of the measured variables, we conducted a descriptive data analysis (i.e., mean score and standard deviation for each variable) and analyzed Pearson correlation coefficients between the variables with SPSS. Then, we used R studio to conduct mediation and moderation analysis.

5. Results

Before conducting the mediation and moderation effects, we examined the descriptive statistics and correlation matrix of the observed variables. As shown in Table 1, students' autonomous motivation had a relatively low variance ($SD = 0.59$) with a mean of 3.82. Similarly, students' learning engagement also lacked variance ($SD = 0.62$) with a mean of 3.17. The low variance of these variables may influence the interpretation of the results of the mediating and moderating effects in the hypothesized model. With respect to the Cronbach's alphas (variables with more than three items), alphas ranged from 0.92 to 0.97.

Table 1: Descriptive Statistics of Variables

Variables	Min	Max	Mean	SD	Skew.	Kurt.	Cronbach's Alpha	Number of Items
Autonomous Motivation	2.00	5.00	3.82	0.59	0.09	-0.25	0.93	12
Controlled Motivation	1.00	5.00	3.03	0.73	0.18	0.36	0.93	15
Perceived Parental Autonomy Support	1.00	5.00	3.21	0.91	0.07	-0.24	0.92	12
Learning Engagement	1.45	5.00	3.17	0.62	0.07	0.17	0.97	17
English Academic Achievement	2.00	11.00	6.90	1.45	-0.23	0.46	--	--

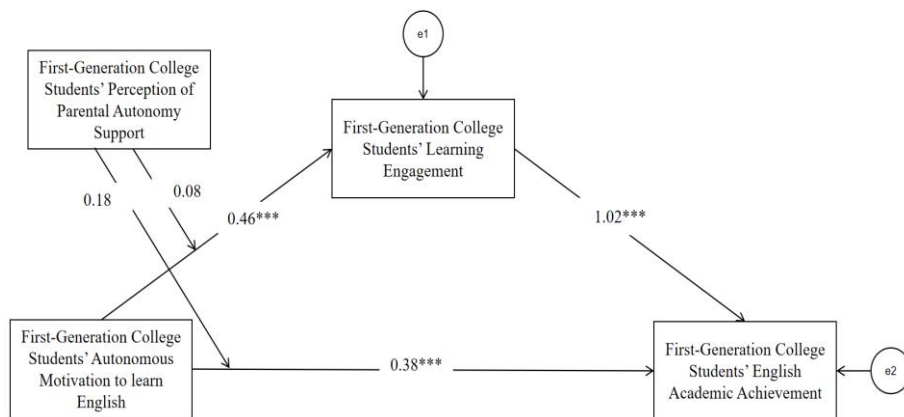
As shown in Table 2, Pearson bivariate correlations ranged from $r = 0.15$ (controlled motivation and learning engagement) to $r = 0.67$ (learning engagement and English academic achievement). All bivariate correlations were positive and statistically significant ($p < 0.01$). Furthermore, among the significant relationships, the correlations between controlled motivation and learning engagement ($r = 0.15$, $p < 0.01$) and between perceived parental autonomy support and learning engagement ($r = 0.21$, $p < 0.01$) were the smallest. The correlations between learning engagement and English academic achievement ($r = 0.67$, $p < 0.01$) and between autonomous motivation and learning engagement ($r = 0.50$, $p < 0.01$) were the largest. Other variables were moderately correlated with each other ranging from $r = 0.23$ to $r = 0.45$.

Table 2: Correlation Matrix of Variables

Variables	1	2	3	4	5
1) Autonomous Motivation	1.00				
2) Controlled Motivation	0.45**	1.00			
3) Perceived Parental Autonomy Support	0.34**	0.22**	1.00		
4) Learning Engagement	0.50**	0.15**	0.21**	1.00	
5) English Academic Achievement	0.23**	0.24**	0.32**	0.67**	1.00

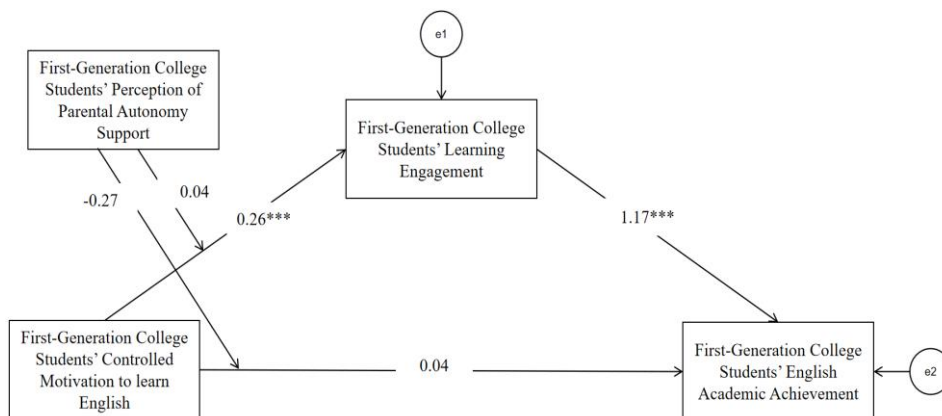
Notes: ** $p < 0.01$

To test mediation effect of students' learning engagement, we constructed confidence intervals using bootstrap methods. Bootstrap methods are techniques to get the distribution of a quantity of interest when the theoretical distribution of a statistic is complicated or unknown. Bootstrap is a method to investigate the sampling distribution of a certain statistic using the given sample; in this method, one samples data with the equal size as the sample and obtains the statistic of interest. By repeatedly resampling the data, we could form a distribution of the statistic. The distribution is then used to determine the features of the statistic.



Notes: *** $p < 0.001$

Figure 2: the mediation effect of students' learning engagement on the relationship between students' autonomous motivation and their English academic achievement with perceived parental autonomy as the moderator



Notes: *** $p < 0.001$

Figure 3: the mediation effect of students' learning engagement on the relationship between students' controlled motivation and their English academic achievement with perceived parental autonomy as the moderator

the moderator

Data analysis results in figure 2 showed that students' learning engagement partially mediated the relation between students' autonomous motivation and their English academic achievement. When students' autonomous motivation was considered as predictor, c path or the relationship between students' motivation and their English academic achievement was significant, as the associated confidence interval was [0.19, 0.57]. The relationship between students' autonomous motivation and their learning engagement or a path was also significant, as the confidence interval was [0.39, 0.54]. Similarly, b path or the relationship between students' learning engagement and their English academic achievement was also significant, as the associated confidence interval was [0.84, 1.21]. Moreover, as $a*b$ was 0.47 and the associated confidence interval was [0.36, 0.59], there was a significant mediation effect.

In contrast, data analysis results in figure 3 showed that students' controlled motivational regulations fully mediated the relation between students' controlled motivational regulations and their English academic achievement. The relationship between students' controlled motivational regulations and their English academic achievement or c path was not significant, as the associated confidence interval was [-0.11, 0.19]. The relationship between students' controlled motivational regulations and their learning engagement or a path was significant, as the associated confidence interval was [0.19, 0.33]. Similarly, b path or the relationship between students' learning engagement and their English academic achievement was also significant, as the associated confidence interval was [1.00, 1.35]. As the associated confidence interval of $a*b$ was [0.21, 0.40], there was a significant mediation effect.

As for the moderation effect of first-generation college students' perceived parental autonomy support, we compared moderating effects on the path from students' motivation and students' English academic achievement and the path from students' motivation and students' learning engagement. Moderation analysis results have indicated that perceived parental autonomy support did not moderate the relationship between students' motivational regulations (i.e., autonomous motivation and controlled motivation) and their learning engagement as well as the relationship between students' motivational regulations (i.e., autonomous motivation and controlled motivation) and their English academic achievement.

6. Conclusion

The current study investigated the relationship between first-generation college students' motivational regulations for learning English as a foreign language and their English academic achievement. As the association between motivation and academic performance is not straightforward, we further examined the mediation effects of students' learning engagement within the relationship. In recent decades, parental involvement in college students' lives has increased significantly because of the rising cost of higher education, the desire to support children's academic success, and the evolving definition of adulthood. Therefore, we continuously examined the moderating effects of perceived parental autonomy support on the relationships among first-generation college students' motivation for learning English, learning engagement, and their English academic achievement. Results suggested that there was a significant mediating role of first-generation college students' learning engagement between their motivation for learning English and English academic achievement. However, the moderating effects of perceived parental autonomy support was not identified.

The above data analysis results showed that first-generation college students' learning engagement could mediate the relationship between students' motivation for learning English and their English academic achievement. This finding was aligned with literature, as motivation suggests the antecedent of actions rather than academic achievement itself^[44]. However, in this study, compared with students' controlled motivational regulations, students' autonomous motivational regulations were directly and significantly related to students' academic achievement. In other words, first-generation college students' learning engagement was partially mediated the relationship between students' controlled motivation and English academic achievement.

In this study, first-generation college students' autonomous motivation was directly associated students' learning engagement and learning outcomes. The findings supported literature that students who are motivated by autonomous motivation are more likely to achieve positive academic outcomes including better learning engagement and higher grades than students who are regulated by controlled motivation. However, not aligned with previous studies, the current study showed that students' controlled motivation was also positively associated with first-generation college students' learning engagement. This is because students in Chinese collectivist culture may view the introjected

motivational regulation of parental expectation and pressure as an important externally-controlled reason or a value for learning English as a foreign language. In other words, Chinese first-generation undergraduate English learners who learned English primarily because of controlled motivation, especially parental expectation and pressure, may also actively engage in instructional activities, and consequently, achieve academic success.

It is worthwhile to note that the moderating effects of perceived parenting autonomy support on the relationships among motivation, learning engagement, and English academic achievement was not identified in the current study. On one hand, in the current study, only student academic-related emotional and behavioral variables were investigated without considering the potential impacts of personality variables. Translation of motivation into optimal engagement might rely on successfully catalyzing a chain of personal positive characteristics of a student such as grit (i.e., effort and persistence, sustained interest), self-regulation, thoughtfulness, and willingness to exert effort. Parenting variables might influence students' engagement through the mediating effects of personality variables. On the other hand, engagement is closely related to motivation, but in reality, students might be motivated but still disengaged^[45]. This is because motivation indicates an intent, whereas engagement denotes an action^[46]. Satisfying students' psychological need for autonomy may well enhance their internal motivation for learning English, but satisfaction of the need for autonomy may not automatically sustain learning engagement. In other words, students need to feel motivated and eager to engage, but the next step is if they are able to actually translate that eagerness into vigorous and sustained engagement.

Self-Determination Theory provided the theoretical framework for this study to examine Chinese first-generation college students' motivation for learning English and the associated learning outcomes. Findings of this study deepened our understanding of students' motivation for learning a language by showing how students' initial reasons for learning a language may affect their psychological process of learning and language proficiency. However, there are some limitations with this study. First, we failed to verify the moderating effects of parental autonomy support in the relationship between first-generation college students' motivation and their academic performance. Second, in large part, the analysis of the characteristics of first-generation college students is usually based on delineating and comparing features of non-first-generation college students^[47]. The sample we used in the current study was only first-generation college students, and thereby there was lack of comparison and contrast with non-first-generation college students' motivation and learning outcomes. Third, we did not consider potential collegiate factors that may influence first-generation college students' motivation for learning English. As a matter of fact, due to their lack of first-hand knowledge of college experience, parents of first-generation college students typically could not directly get involved in collegiate tasks. Therefore, they may help indirectly with their college tasks via conveying educational expectations and providing encouragement and emotional support.

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