

# The Mediating Effect of Academic Engagement on the Relationship between Second Language Grit and Language Proficiency

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**Abstract.** This study aims to explore the relationships and mediating effects among second language grit, academic engagement, and English proficiency based on a quantitative research survey of 103 Chinese non-English major students. The results revealed that: (1) Students exhibit moderate to high levels of second language grit and academic engagement; (2) There are significant positive correlations among second language grit, academic engagement, and English proficiency; (3) Academic engagement has a complete mediating effect on the relationship between second language grit and English proficiency. The findings offer valuable insights and practical guidance for enhancing English education quality and are conducive to improving Chinese students' English achievement.

**Keywords:** second language grit, academic engagement, English proficiency; non-English major students.

## 1. Introduction

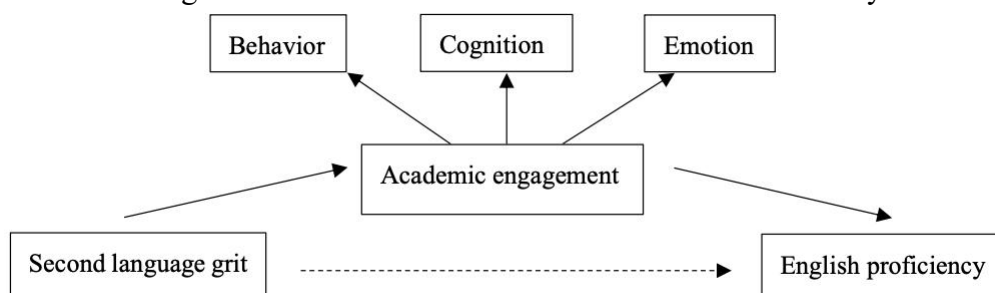
Grit is one of the essential personality traits associated with better academic performance in difficult situations, which relates to “perseverance of effort” and “consistency of interest” in a second-language context [1-3]. There are studies to develop and validate measurement tools and explore grit in different populations, but Teimouri et al. queried the use of generic grit measurement tools and advocated using customized second-language grit measurement instruments [4-7]. Furthermore, academic engagement is one of the most critical indicators of learning achievement and language proficiency [9, 10] and may accurately reflect the current state of students during learning [11]. Academic engagement can be divided into three dimensions: behavioral, cognitive, and emotional [12, 13], and studies have studied the level of participation of university students based on these three dimensions [14]. However, previous research on student academic participation has focused on general academic engagement, with limited research on specific subjects such as English language learning and excessive focus on English majors, neglecting the Chinese non-English major student population.

A pairwise positive causal relationship exists between second language grit, academic engagement, and language proficiency. Firstly, some studies have demonstrated a positive correlation between second language grit and language proficiency, as well as the existence of mediating factors, such as motivational variables (e.g., self-efficacy) and emotional variables (e.g., enjoyment and anxiety) [6-8]. However, few studies have examined how academic engagement mediates the relationship between grit and language proficiency. Secondly, although there are relatively limited studies linking academic engagement and second language grit, some studies indicated a strong and positive correlation between them, particularly specific academic engagements such as the ability to read and write in foreign languages [11, 15, 16]. Consequently, second language grit has the potential to influence learners' levels of engagement, with learners demonstrating higher levels of grit demonstrating higher levels of academic engagement. Thirdly, some studies have shown a strong positive correlation between students' academic engagement and language ability; specifically, students with high engagement excel academically in language through adequate time and environment management, while students with low behavioral and

emotional engagement may face challenges due to insufficient resource and information support [9, 10].

Although there is a pairwise positive causal relationship among second language grit, academic engagement, and language proficiency, few scholars have established a model illustrating the interplay among these three factors. For instance, a study has indicated that engagement among university students has a partial mediation effect on the relationship between grit and academic productivity [17]. Moreover, while most research investigates the interaction between grit, engagement, and academic productivity in general studies [15, 17], there is limited attention given to these relationships within the context of second language acquisition, particularly when examining Chinese non-English major university students as research subjects. Therefore, this study aims to construct a parallel mediation model (Figure 1) concerning the parallel mediating role of academic engagement between second language grit and language proficiency among Chinese non-English major students. The significance of this study is to investigate the influence of the personality trait of grit on students' positive emotions and psychological states based on higher education to improve students' academic achievement and learning happiness, as well as the quality and effectiveness of their English learning in foreign language teaching practice.

Figure 1. The Parallel Mediation Model in Present Study



Based on this model, this study sequentially examines two hypotheses:

H1: Second language grit positively predicts English proficiency.

H2: Second language grit predicts English proficiency through the parallel mediation of academic engagement.

## 2. Methodology

### 2.1 Participants

After receiving the participants' informed agreement, this study selected a sample of 101 Chinese non-English major university students as valid cases. Participants ranged in age from 18 to 29 years ( $M = 22.46$ ), with 42 (41.6%) male participants and 59 (56.1%) female participants. In terms of educational background, 58 (57.4%) participants had a bachelor's or specialist degree, and 43 (42.6%) had a master's degree or higher.

### 2.2 Instruments

This research employed the Questionnaire platform Wenjuanxing to distribute and collect surveys. A five-point Likert scale with the options "Strongly Disagree" (1 point) and "Strongly Agree" (5 points) was used to collect the data for the present study. The questionnaire consists of three sections intended to capture basic information, assess second language grit, and evaluate academic engagement. The Second Language Learning Grit Scale [6] was applied to measure second language grit, demonstrating favorable overall internal consistency reliability (Cronbach's  $\alpha = 0.726$ ;  $N = 9$ ). In addition, this study employed the Academic Engagement Scale [13], demonstrating favorable overall internal consistency reliability (Cronbach's  $\alpha = 0.869$ ,  $N = 14$ ). Specifically, this scale consists of three components: behavioral and emotional engagement scales

from the Engagement Versus Disaffection with Learning measure [18], and cognitive engagement scales adapted from the Metacognitive Strategies Questionnaire [19]. Furthermore, this study utilized the Chinese College English Test Band 4 (CET-4) scores as a measure of English proficiency.

### 2.3 Data collection procedure

Data on students' background information, second language grit and academic engagement information were extracted with IBM SPSS Statistics 26.0. In this study, 36 students were selected to distribute and test questionnaires before the formal test to test the reliability and validity of the scale. The researcher distributed the questionnaire, informing the participants that all the data collected were for research purposes only. This study then collected 101 valid questionnaires for data analysis. In the data analysis procedure, three steps were constructed. Firstly, this study descriptively calculated the data and revealed the difference among second language grit, academic engagement, and English proficiency, presenting the mean, standard deviation, maximum, and minimum. Secondly, this study examines the correlation between the three variables to comprehend their internal relationships. Thirdly, this study explores the mediating effect to confirm the role of academic engagement as a mediator between second language perseverance and English proficiency. The PROCESS 4.0 macro program developed by Hayes was used in this step, specifically Model 4, using a non-parametric bootstrapping method for percentile confidence intervals with a 95% confidence level.

## 3. Results

### 3.1 Descriptive statistics of second language grit, academic engagement, and English proficiency

As Table 1 indicates, the participants' second language grit exhibited a moderately high overall level, with a mean of 3.24, a minimum of 1.78, and a maximum of 5.00. In comparison, the participants' academic engagement displayed a slightly higher overall level than second language grit, with a mean of 3.75, a minimum of 2.00, and a maximum of 5.00. The scores for the behavioral and cognitive dimensions of academic engagement were slightly higher than those for the emotional dimension. Nevertheless, all three dimensions were above an intermediate level. The average English proficiency score on the CET-4 was 511.36, with a range of 348 to 624, showing wide variation.

Table 1. Descriptive statistics of key variables (N=101)

	Min	Max	M	SD
Second language grit	1.78	5.00	3.24	0.64
Academic engagement	2.00	5.00	3.75	0.59
Behavior	2.00	5.00	3.83	0.69
Cognition	2.00	5.00	3.81	0.65
Emotion	1.60	5.00	3.61	0.81
English proficiency	348	624	511.36	59.14

### 3.2 Correlation analysis of second language grit, academic engagement, and English proficiency

This study conducted a correlation analysis on the variables to examine the correlations between second language grit, academic engagement, and English proficiency. As presented in Table 4, the results reveal significant positive correlations between pairs of these three variables. Specifically, there is a strong positive link between second language grit and academic engagement ( $r = 0.639$ ) as well as between second language grit and English proficiency ( $r = 0.291$ ). Moreover, a significant

positive correlation is observed between academic engagement and English proficiency ( $r = 0.415$ ). Additionally, all three aspects of academic engagement, namely behavioral, cognitive, and emotional, are positively related to proficiency in English and grit in a second language. This underscores the close interconnection among second language grit, academic engagement, and English proficiency.

Table 2: Correlations among second language grit, academic engagement, and English proficiency

	Second language grit	Academic engagement	Behavior	Cognition	Emotion	English proficiency
Second language grit	1					
Academic engagement	.639**	1				
Behavior	.577**	.845**	1			
Cognition	.430**	.776**	.522**	1		
Emotion	.562**	.847**	.579**	.452**	1	
English proficiency	.291**	.415**	.380**	.435**	.236*	1

Note: \*indicates  $p < 0.05$ ; \*\*indicates  $p < 0.01$

### 3.3 The mediating effect of academic engagement in the relationship between second language grit and English proficiency

The correlation analysis results among the variables indicate a significantly positive correlation among second language grit, academic engagement, and English proficiency. In this validation, second language grit is assigned as the independent variable (X), academic engagement as the mediating variable (M), and English proficiency as the dependent variable (Y). As presented in Table 5, the direct paths from second language grit to English proficiency ( $t = 3.03$ ,  $p < 0.01$ ) demonstrate that second language grit can effectively predict tendencies in English proficiency, which indicates the confirmation of H1. However, when the mediating variable of academic engagement is introduced, second language grit no longer maintains its predictive capacity for English proficiency ( $t = 0.37$ ,  $p > 0.05$ ). On the other hand, the predictive effect of second language grit on academic engagement remains significant ( $t = 8.26$ ,  $p < 0.001$ ), and academic engagement also significantly predicts English proficiency ( $t = 3.24$ ,  $p < 0.01$ ).


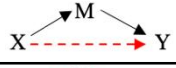

Table 3: Results of testing the mediation model of academic engagement between second language grit and English proficiency

N=101	English proficiency (Y)		English proficiency (Y)		Academic engagement (M)	
	t	p	t	p	t	p
Second language grit (X)	0.37	$p > 0.05$	3.03	$p < 0.01$	8.26	$p < 0.001$
Academic engagement (M)	3.24	$p < 0.01$				
R	0.41		0.29		0.64	
F	10.27		9.17		68.21	

According to the results of the 95% bootstrap confidence intervals in Table 6, the mediation effect of academic engagement is 0.25 ( $CI = [0.06-0.43]$ ), with the confidence interval not including 0, signifying a significant mediation effect of academic engagement. This implies that second language grit can indirectly predict English proficiency through the mediating role of academic engagement. Additionally, the direct effect of second language grit on English proficiency within the mediation model is ( $CI = [-0.19-0.28]$ ). Since the confidence interval includes 0, it indicates that

the direct effect of English Proficiency in the mediation role is not significant. Consequently, these data illustrate that academic engagement serves as a complete mediator in the relationship between second language grit and English proficiency, thereby confirming the validity of H2.

Table 4: Mediation Effects Decomposition Table

	Effects	BootSE	BootLLCI	BootULCI
Indirect effect 	0.25	0.09	0.06	0.43
Direct effect 	0.04	0.12	-0.19	0.28
Total effect 	0.29	0.10	0.10	0.48

#### 4. Discussion and Conclusion

The present study investigated the relationship between second language grit, academic engagement, and English proficiency among Chinese non-English major students, and delved into the underlying mechanism of academic engagement as a mediator. According to the results, firstly, the mean values of students' overall second language grit quality, which were slightly higher than the theoretical midpoint of 3, indicate that students' foreign language grit is generally at a moderate level and relatively stable, aligning with the research by Liu and Wang concerning Chinese high school students [8]. Thus, the non-English major university students in this study possess a moderately high level of grit, remain resilient in the face of failure and setbacks, and can effectively leverage their concentration and abilities [20]. Secondly, regarding the academic engagement levels, this study indicates that Chinese non-English major students' engagement in English learning is relatively high to moderate, with mean scores exceeding the midpoint of 3, which is slightly higher than the findings of [14], indicating a disparity. The emotional dimension of academic engagement is comparatively lower than the behavioral and cognitive dimensions, aligning with the findings of [14]. This suggests that there is still room for improvement in the emotional engagement of Chinese non-English major university students, even though most employ learning strategies and demonstrate strong learning motivation in their English learning process. Therefore, it is essential to emphasize the emotional engagement of English language learners. Based on emotional strategies and adaptive teaching strategies, teachers can guide students to regulate their learning emotions, maintain a positive attitude toward learning, and provide appropriate positive encouragement.

The results of the correlation analysis revealed significant positive relationships among secondary school students' grit quality, English learning engagement, and English proficiency. Firstly, according to the correlation analysis, there is a positive correlation between grit and English proficiency, consistent with the results of [6, 7, 8]. This indicates that students with higher grit quality tend to exhibit persistent determination and a stronger interest in English learning. They are usually more likely to complete English academic tasks with high quality, even when facing challenging learning assignments, thereby achieving a higher level of English proficiency [21]. Secondly, there is a positive link between second language grit and English learning engagement, consistent with the findings of [11, 16]. This suggests that individuals with higher levels of grit are better equipped to utilize their learning abilities effectively. They are less likely to be distracted by external matters and less prone to discouragement from failures and setbacks, leading to increased engagement in English learning [17]. Thirdly, academic engagement and its three specific dimensions are positively correlated with English proficiency, which mirrors the conclusions of [9, 10]. It illustrates that academic engagement signifies students' motivation and the use of learning strategies during their English learning process. In essence, mastering efficient learning methods is essential for ensuring high-quality English learning outcomes [22].

Although the correlation analysis revealed significant relationships among second language grit, academic engagement, and English proficiency, the mediation analysis demonstrated that when

academic engagement was introduced into the model of grit and English proficiency, the direct effect of second language grit on English proficiency became less evident. This indicates that academic engagement completely mediates the relationship between second language grit and English proficiency, in contrast to the partial mediation effect reported in [17]. In other words, English learning engagement can influence English proficiency indirectly through the mediating role of second language grit.

In conclusion, this study expands the underlying mechanisms of the relationship between second language grit and English proficiency through academic engagement. It demonstrates that academic engagement, particularly in the cognitive, behavioral, and emotional dimensions, serves as a crucial explanatory variable in enhancing the English proficiency of Chinese non-English major students with a certain level of second language grit. The study suggests that teachers can integrate the concept of grit into second language education by designing engaging classroom activities to stimulate students' interest in English learning. They can also implement resilience education to foster a growth mindset, cultivate positive teacher-student relationships, inspire students to set long-term learning goals, provide regular positive feedback, and pay attention to students' emotional experiences in English learning. However, it should be acknowledged that this study has some limitations. In terms of sample selection, the sample size and scope were limited; only the participants' scores in the CET-4 were collected, which might not fully represent their current English proficiency. The cross-sectional design used in the study did not allow for longitudinal tracking of the dynamic changes in second language grit, academic engagement, and English proficiency.

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