

Exploring the Relationship between L2 Grit and Learning Engagement among Chinese Science and Engineering Majors: The Mediating Effect of Academic Emotions

Jiahao Tan

College of Foreign Languages, University of Shanghai for Science and Technology, Shanghai, China

How to cite this paper: Tan, J. H. (2025). Exploring the Relationship between L2 Grit and Learning Engagement among Chinese Science and Engineering Majors: The Mediating Effect of Academic Emotions. *Literature, Language and Cultural Studies*, 2(1), 118-130. ISSN Print: 3079-5095; ISSN Online: 3079-5109.
<https://doi.org/10.63313/LLCS.9066>
Published: 2025-07-22

Copyright © 2025 by author(s) and Erytis Publishing Limited.
This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Abstract

Based on a questionnaire of 312 Chinese Science and Engineering majors (SEMs), this study explored the predictive effect of L2 grit on foreign language learning engagement and the mediating roles of foreign language enjoyment and boredom. The results indicate that Chinese SEMs exhibited moderately high levels of L2 grit, foreign language enjoyment, and learning engagement. L2 grit not only directly predicted learning engagement but also indirectly predicted it through the mediating pathways of both foreign language enjoyment and boredom. Specifically, enjoyment and boredom acted as positive and negative mediators respectively. This demonstrates the existence of the mediating chain “L2 Grit → Academic Emotions → Learning Engagement.” This research aims to provide deeper insights into Chinese SEMs emotional tendencies and psychological characteristics during foreign language learning, thereby offering implications for enhancing their foreign language instruction.

Keywords

Chinese SEMs; L2 Grit; Learning Engagement; Academic Emotions

1. Introduction

Foreign language proficiency among science and engineering students has become particularly vital. Strong foreign language skills are crucial for promoting the internationalization of China’s engineering education and enhancing its global competitiveness. Proficient foreign language ability is especially critical for their academic research and career development. Second Language Acquisition (SLA) research has long emphasized the importance of individual differences in learners’ internal characteristics (Wen & Wang, 2004; Dörnyei, 2005; Skehan, 1991). In recent years, influenced by Positive Psychology, greater attention has been paid to learners’ non-cognitive abilities, including affective factors (Li, 2021; Dewaele, 2020; Dewaele

& MacIntyre, 2014; Wei et al., 2020).

Grit is defined as perseverance and passion for long-term goals (Duckworth et al., 2007). Research suggests grit is positively associated with students' academic achievement, learning motivation, and willingness to communicate in a second language (Wang, 2023; Wei et al., 2024; Teimouri et al., 2020). However, studies specifically examining the relationship between L2 grit and learning engagement remain relatively scarce (Wu et al., 2024). While existing research has shed some light on the influence of L2 grit on engagement, most studies have focused on single factors or macro-level analyses (Wu et al., 2024). Only a limited number have investigated the complex mediating roles of learners' internal psychological states, such as foreign language emotions (Sun et al., 2023). Furthermore, many studies are based on Western educational contexts, paying insufficient attention to the specific context of Chinese students. Research targeting the distinct Chinese SEMs, whose unique learning characteristics and disciplinary backgrounds likely exert specific influences on learning engagement, is particularly lacking, which is an aspect often overlooked in previous work. This study aims to investigate the relationship between L2 grit and learning engagement among Chinese SEMs and, crucially, to reveal the mediating effects of foreign language enjoyment and boredom. The findings are intended to offer practical guidance for enhancing the learning outcomes of this group and promoting personalized teaching approaches.

2. Literature Review

Learning engagement represents a positive, fulfilling psychological state associated with learning. Specifically, it encompasses three dimensions: behavioral engagement, emotional engagement, and cognitive engagement (Fredricks et al., 2004). Behavioral engagement refers to students' participation levels in class activities and extracurricular tasks; emotional engagement involves students' attitudes and affective responses towards learning activities; and cognitive engagement denotes students' investment in deep thinking and the strategic application of learning approaches during the learning process (Fredricks et al., 2004). Relevant research indicates that learning engagement is a key predictor of student academic success (Carini, Kuh, & Klein, 2006). High levels of learning engagement are associated not only with improved academic achievement but also with enhanced learning motivation and satisfaction (Kahu, 2013).

In the field of education, Duckworth et al. (2007) pioneered the concept of grit, defining it as "perseverance and passion for long-term goals." Grit consists of two core components: consistency of interests and persistence of effort (Duckworth et al., 2007). Research has established grit as a significant influence on students' academic achievement, impacting learning motivation, academic strategy use, and psychological well-being (Credé et al., 2017; Tang et al., 2019). Recognizing its importance in education, scholars have subsequently introduced the grit construct into the domain

of SLA (e.g., Lake, 2013; Sun et al., 2023). L2 grit specifically refers to the perseverance and passion demonstrated by learners during their second language learning journey. Learners possessing high levels of L2 grit are more likely to maintain a positive attitude in the face of difficulties and achieve better academic outcomes through sustained effort (Dörnyei & Ryan, 2015). Studies have revealed a significant positive correlation between grit and learning engagement (Sun et al., 2023; Wu et al., 2024). Learners characterized by grit tend to sustain proactive learning attitudes and behaviors when confronted with linguistic obstacles and learning pressures. This persistence enables them to navigate challenges more effectively, leading to enhanced learning outcomes.

Affective factors also play significant roles in the learning process. Beyond the extensively studied emotion of anxiety, other academic emotions such as enjoyment, boredom, burnout, and hope have gained increasing research attention in recent years (Benesch, 2012; Dewaele & MacIntyre, 2014; Jia & Cheng, 2024; Rand et al., 2020; Shao et al., 2019). Fredrickson's (2013) Broaden-and-build theory of positive emotions emphasizes the crucial function of such emotions in expanding individuals' cognitive and behavioral repertoires. This broadening effect is thought to help build enduring psychological and social resources, ultimately enhancing overall well-being and life quality. Among foreign language learners, Foreign Language Enjoyment (FLE) and Foreign Language Boredom (FLB) are common experiential emotions. FLE, the enjoyment learners derive from foreign language learning (Dewaele & MacIntyre, 2014), is recognized as a positive, high-arousal process emotion (Han & Xu, 2020). The experience of enjoyment signals the fulfillment of psychological needs (Reeve & Tseng, 2011), consequently fostering academic achievement. Conversely, boredom, characterized by low control and low arousal, negatively impacts learner motivation, cognitive resources, self-regulation, and learning engagement, thereby constraining academic success (Macklem, 2015; Pekrun et al., 2010). Research indicates that positive emotions like FLE can enhance learning engagement by fostering a more supportive and stimulating learning environment (Dewaele et al., 2023; Dewaele & MacIntyre, 2014). Conversely, negative emotions such as FLB diminish engagement by inducing learner disinterest and disengagement (Li et al., 2023; Pekrun et al., 2010). Furthermore, foreign language emotions have been shown to act as mediators in the relationship between L2 grit and academic outcomes like foreign language achievement and willingness to communicate (Wang, 2023; Wei et al., 2024; Wei et al., 2019). Consequently, it is hypothesized that foreign language emotions may play significant mediating roles in the relationship between L2 grit and learning engagement.

3. Hypothesized Model

Based on the preceding literature review, this study established a parallel mediation model (see Figure 1) to explore the pathways through which L2 grit, FLE, and FLB in-

fluence L2 engagement. The research hypotheses are as follows:

H1: L2 grit has a positive predictive effect on learning engagement.

H2: Both FLE and FLB mediate the relationship between L2 grit and learning engagement.

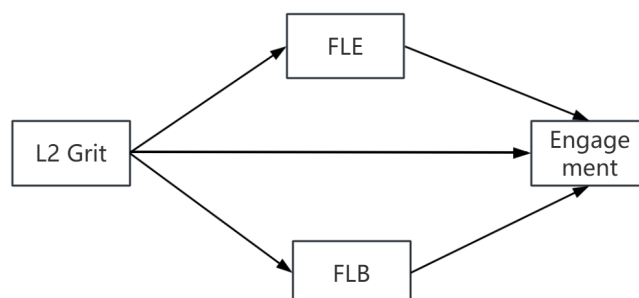


Figure. 1 Hypothesized Model

4. Research Methods

4.1. Participants

This study employed convenience sampling, recruiting students from 16 English classes at a science and engineering university in Shanghai. With instructor and participant consent, 410 individuals completed the survey. After excluding other majors and invalid data (completion time <120 seconds; trap-question error rate >80%), 312 valid questionnaires were retained. Participants represented more than 20 Science and Engineering disciplines (e.g., Applied Mathematics, Applied Physics, Electronic Information, Intelligent Manufacturing, Materials Science). The final sample comprised 232 males (74.36%) and 80 females (25.64%), with a mean age of 18.92 years.

4.2. Instruments

Questionnaires were distributed and collected via Wenjuanxing (Questionnaire Star). The instrument included two sections: participant demographics and composite scales. All scales used 5-point Likert items. Four reverse-scored items for the Consistency of Interest dimension (L2 grit construct) were formed from Strongly Disagree (5 points) to Strongly Agree (1 point); all other items ranged from Strongly Disagree (1 point) to Strongly Agree (5 points). Bilingual versions of Chinese and English were item phrasing ensured participant comprehension. Translations for the FLE, FLB, and learning engagement scales were sourced directly from original publications (Li et al., 2018; Li et al., 2021; Eerdemutu et al., 2024) to maintain conceptual accuracy. The L2 Grit Scale translation was conducted by this study's first author and rigorously reviewed by an applied linguistics professor to eliminate ambiguities, ensuring semantic precision and academic rigor.

L2 grit was assessed using the L2 Grit Scale developed by Teimouri et al. (2020),

specifically designed to evaluate the grit trait of second language learners across two dimensions: perseverance of effort and consistency of interest, with an internal consistency reliability of $\alpha = 0.79$ in this study.

FLE was measured via Li et al.'s (2018) Chinese Foreign Language Enjoyment Scale (CFLES), adapted from Dewaele and MacIntyre (2014) and validated on Chinese high school samples. This instrument assesses students' enjoyment experiences during English learning through three dimensions: private FLE, teacher-related FLE, and atmosphere-related FLE, demonstrating $\alpha = 0.87$ reliability herein.

FLB was gauged using the Foreign Language Classroom Boredom Scale (FLCBS), an eight-item sub-scale of the Foreign Language Boredom Scale (FLBS; Li et al., 2021), which measures students' recurrent boredom states in foreign language classrooms, yielding $\alpha = 0.94$ in this research.

Learning engagement was evaluated with the Language Classroom Engagement Scale (LCES) adapted by Eerdemutu et al. (2024) from Hiver et al.'s (2020) Language Engagement Scale (LES). Validated among Chinese high school and university students, the LCES comprises three dimensions—behavioral engagement, emotional engagement, and cognitive engagement (each with three items)—and achieved $\alpha = 0.92$ reliability in this investigation.

4.3. Data Analysis

Using SPSS 27.0, this study sequentially conducted common method bias tests, descriptive statistics, reliability analysis (Cronbach's α), normality tests, correlation analyses, and regression analyses. Following Hayes' (2013) analytical procedures for mediation models, multiple regression analyses were performed in these steps: (1) designating L2 grit as the predictor variable and learning engagement as the outcome variable; (2) specifying L2 grit as the predictor variable, with FLE and FLB as respective outcome variables; (3) treating L2 grit, FLE, and FLB jointly as predictor variables and learning engagement as the outcome variable; (4) formally testing mediation effects via PROCESS v4.1 (Model 4), with L2 grit as the predictor, FLE and FLB as parallel mediators, and learning engagement as the outcome variable.

5. Results

5.1. Overall Levels of L2 Grit, Learning Engagement, FLE, and FLB among SEMs

Common method bias was tested using Harman's single-factor test. Results indicated that seven factors exhibited eigenvalues greater than 1. The first unrotated principal factor accounted for 42.17% of the variance, below the critical threshold of 50%. Thus, no significant common method bias was identified in this study (Hair et al., 1998). Table 1 presents descriptive statistics and normality test results. The skewness and kurtosis values for all variables were less than 2, confirming a normal distribution (Bachman, 2004), thereby supporting the use of parametric tests. Chi-

nese SEMs demonstrated moderately high levels of L2 grit ($M = 3.249$), FLE ($M = 3.768$), and learning engagement ($M = 3.548$), while reporting moderately low levels of foreign language boredom (FLB; $M = 2.499$).

Table 1. Descriptive Analysis

Variable	Mean	Mode	Median	SD	Skewness (SE)	Kurtosis (SE)
L2 Grit	3.249	3.000	3.222	.653	.119 (.138)	-.209 (.275)
FLE	3.768	3.360	3.812	.631	-.014 (.138)	-.219 (.275)
LFB	2.499	3.000	2.500	.897	.226 (.138)	-.084 (.275)
Engagement	3.548	3.780	3.556	.756	-.491 (.138)	1.182 (.275)

5.2. Correlation between L2 Grit, Academic Emotions, and Learning Engagement among SEMs

Pearson correlation analysis results (Table 2) revealed significant intercorrelations among all four variables. According to Plonsky and Oswald's (2014) L2-specific correlation benchmarks, SEMs exhibited a moderate-to-high positive correlation between L2 grit and FLE ($r=.576$, $p<.01$) and a moderate-to-high negative correlation between L2 grit and FLB ($r=-.550$, $p<.01$). This indicates that students with higher L2 grit experience greater enjoyment and less boredom in English learning. Learning engagement showed high positive correlations with L2 grit ($r=.654$, $p<.01$) and FLE ($r=.733$, $p<.01$), and a high negative correlation with FLB ($r=-.671$, $p<.01$). Thus, higher engagement aligns with elevated L2 grit and FLE levels but reduced FLB levels. Consequently, students with stronger grit tend to experience more enjoyment, less boredom, and deeper learning investment.

Table 2. Pearson Correlations

Variable	1	2	3	4
L2 Grit	1			
FLE	.576**	1		
FLB	-.550**	-.655**	1	

Engagement	.654**	.733**	-.671**	1
------------	--------	--------	---------	---

5.3. Mediating Effects of FLE and FLB on the L2 Grit–Learning Engagement Relationship

Mediation analysis results are summarized in Table 3 and Figure 2: (1) L2 grit significantly predicted learning engagement ($\beta=.654$, $p<.001$); (2) L2 grit positively predicted FLE ($\beta=.557$, $p<.001$) and negatively predicted FLB ($\beta=-.550$, $p<.001$); (3) When simultaneously regressing engagement onto L2 grit, FLE, and FLB, both mediators retained significant predictive power: FLE ($\beta=.4408$, $p<.001$) and FLB ($\beta=-.248$, $p<.001$). L2 grit's direct effect remained significant ($\beta=.283$, $p<.001$), with the model explaining 60.5% of variance ($R=.605$, $F(3,308)=190.805$, $p<.001$). Multicollinearity diagnostics showed tolerance values >0.2 and VIFs <2 , indicating minimal collinearity concerns.

Table 3. Regression Model Analysis

		Fit index			Coefficient			Collinearity	
Predictor	Outcome	R	R ²	F	β	B	T	Tolerance	VIF
1.L2 Grit	Engagement	.6	.42	232.123**	.654	.758	15.236**		
2.L2 Grit	FLE	.5	.33	154.060**	.576	.557	12.412**		
3.L2 Grit	FLB	.5	0.3	134.609**	-.55	-.75	-11.602**		
4.L2 Grit	Engagement	.8	.65	190.805**	.283	.32	6.595***	.616	1.624

FLE					.408	.489	8.586***	.504	1.984
FLB					-.24	-.20	-5.330***	.526	1.901

Bootstrapping analysis (5,000 samples) confirmed significant direct and indirect effects (95% CIs excluding zero). The total mediation effect was 0.430, accounting for 56.728% of the total effect. Specifically, the indirect effects via FLE (effect=0.272) and FLB (effect=0.158) contributed 35.884% and 20.884% to the total effect, respectively (Table 4 and Figure 2).

Table 4. Pathway Analysis

Pathway	Effect size	SE	95% CI	Proportion of effect size
Total Effect: L2 Grit → Engagement	.758	.050	[.660, .856]	1
Direct Effect: L2 Grit → Learning Engagement	.328	.050	[.230, .426]	43.272
Total Indirect Effect	.430	.049	[.339, .5285]	56.728
L2G → FLE → Engagement	.272	.056	[.167, .387]	35.884
L2G → FLB → Engagement	.158	.051	[.062, .260]	20.844

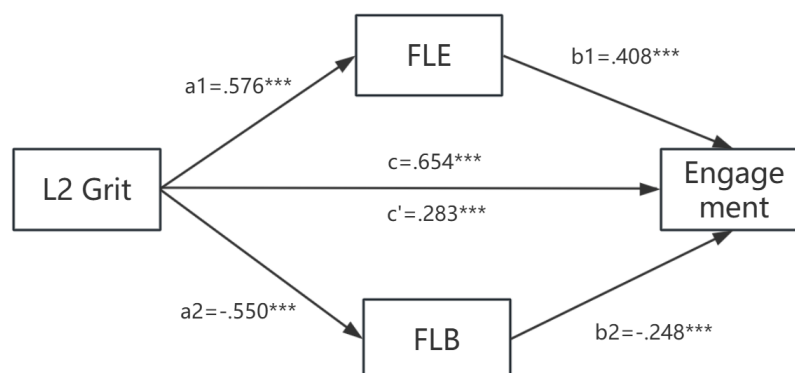


Figure 2. FLE and FLB Parallel Mediation Model Path Diagram

6. Discussion

6.1. Overall Levels of L2 Grit and Learning Engagement among SEMs

This study revealed moderately high L2 grit levels in Chinese SEMs ($M = 3.249$), aligning with prior research on non-SEMs (Jiang et al., 2018; Wang, 2024; Wang, 2023). However, SEMs exhibited lower grit than English majors ($M = 3.727$; Wang, 2023), likely due to the latter's intrinsic interest in language and culture, whereas SEMs' primary focus remains science and technology, potentially diminishing their motivation for L2 learning. Conversely, SEMs demonstrated higher grit than non-English major postgraduates ($M = 3.056$), possibly attributable to postgraduate demands (e.g., thesis writing) limiting L2 investment; SEMs' discipline-developed self-regulation may transfer to enhance L2 persistence despite rigorous coursework. L2 learning necessitates sustained effort—grit enables learners to pursue long-term goals amid setbacks.

SEMs' learning engagement ($M = 3.548$) was also moderately high, consistent with existing studies (Jiang et al., 2018; Zhang et al., 2022), yet lower than school students ($M = 3.740$) and non-S&E undergraduates ($M = 3.972$). Early learners' high engagement may reflect initial enthusiasm, while SEMs' intensive STEM workload likely constrains L2 investment. Additionally, SEMs' analytical thinking may conflict with L2 learning's emphasis on memorization and cultural interpretation, reducing cognitive engagement.

6.2. Direct Predictive Effect of L2 Grit on Learning Engagement

L2 grit significantly predicted SEMs' learning engagement, confirming Hypothesis 1 and supporting prior work (Jiang et al., 2018; O'Neal et al., 2018; Wu et al., 2024; Zhang et al., 2022). As a positive psychological trait, L2 grit sustains effort and interest through challenges. Sustained interest fuels motivation despite STEM pressures, while perseverance—cultivated through demanding majors—facilitates incremental L2 progress. Gritty learners invest extra time and effort when confronting L2 obstacles, bolstering engagement.

6.3. Mediating Roles of FLE and FLB

FLE and FLB mediated the L2 grit-engagement relationship, which confirmed Hypothesis 2, and validated the emotion co-occurrence perspective (MacIntyre & Gregersen, 2012). First, FLE's positive mediation aligns with Fredrickson's (2013) broaden-and-build theory: enjoyment expands cognitive-behavioral repertoires, promoting active participation and strategy use (Dewaele et al., 2018), thereby sustaining engagement and satisfaction. Conversely, FLB's negative mediation reflects Pekrun's (2010) control-value theory: boredom diminishes motivation and self-regulation, triggering disengagement (Macklem, 2015). These pathways are best explained through Complex Dynamic Systems Theory (Larsen-Freeman, 2007), where grit-emotion-cognition-behavior interactions shape learning outcomes.

7. Conclusion

This study demonstrated that L2 grit directly predicts learning engagement among Chinese SEMs, with FLE and FLB serving significant parallel mediating roles. Findings highlight that perseverance and sustained interest promote L2 investment. Pedagogically, instructors could: (1) integrate STEM-related materials to illustrate L2's professional relevance; (2) encourage resilience via achievable sub-goals and progress assessments; (3) diversify teaching methods (collaborative tasks, simulations) to enhance enjoyment and participation.

Admittedly, this study has several limitations. First, the sample was drawn from students at a single university, limiting its representativeness; future research should expand the sampling scope to include SEMs from diverse regions and institutional tiers. Second, the cross-sectional survey method used cannot establish causal relationships; longitudinal designs should be adopted in future work to comprehensively unveil causal links between variables. Additionally, the data primarily stemmed from self-reported scales, which may introduce certain biases; subsequent studies could incorporate multi-method approaches (e.g., behavioral observations and physiological measures) to obtain more objective and authentic data.

References

- [1] Bachman, L. F. (2004). *Statistical Analyses for Language Assessment Book*. Cambridge: Cambridge University Press.
- [2] Benesch, S. (2012). *Considering Emotions in Critical English Language Teaching: Theories and Praxis* (1st ed.). Routledge. <https://doi.org/10.4324/9780203848135>
- [3] Carini, R.M., Kuh, G.D. & Klein, S.P. Student Engagement and Student Learning: Testing the Linkages. *Res High Educ* 47, 1 – 32 (2006). <https://doi.org/10.1007/s11162-005-8150-9>
- [4] Credé, M., Tynan, M. C., & Harms, P. D. (2017). Much ado about grit: A meta-analytic synthesis of the grit literature. *Journal of Personality and Social Psychology*, 113(3), 492-511. <https://doi.org/10.1037/pspp0000102>
- [5] Jean-Marc Dewaele, & Chengchen Li. (2020). Emotions in second language acquisition: a critical review and research agenda. *Foreign Language World*(1), 16.
- [6] Dewaele, J.-M., & MacIntyre, P. D. (2014). The two faces of Janus? Anxiety and enjoyment in the foreign language classroom. *Studies in Second Language Learning and Teaching*, 4(2), 237 – 274. <https://doi.org/10.14746/sslt.2014.4.2.5>
- [7] Dewaele, J.-M., Saito, K., & Halimi, F. (2023). How Foreign Language Enjoyment Acts as a Buoy for Sagging Motivation: A Longitudinal Investigation. *Applied Linguistics*, 44(1), 22 – 45. <https://doi.org/10.1093/applin/amac033>
- [8] Dewaele, J.-M., Witney, J., Saito, K., & Dewaele, L. (2018). Foreign language enjoyment and anxiety: The effect of teacher and learner variables. *Language Teaching Research*, 22(6), 676 – 697. <https://doi.org/10.1177/1362168817692161>
- [9] Dörnyei, Z. (2005). *The Psychology of the Language Learner: Individual Differences in Second Language Acquisition*. Routledge. <https://doi.org/10.4324/9781410613349>
- [10] Dörnyei, Z., & Ryan, S. (2015). *The Psychology of the Language Learner Revisited* (1st ed.). Routledge. <https://doi.org/10.4324/9781315779553>
- [11] Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology*, 92(6),

- 1087 – 1101. <https://doi.org/10.1037/0022-3514.92.6.1087>
- [12] Eerdemutu, L., Dewaele, J.-M., & Wang, J. (2024). Developing a short language classroom engagement scale (LCES) and linking it with needs satisfaction and achievement. *System*, 120, 103189. <https://doi.org/10.1016/j.system.2023.103189>
- [13] Fredrickson, B. L. (2013). Chapter One—Positive Emotions Broaden and Build. In P. Devine & A. Plant (Ed.), *Advances in Experimental Social Psychology* (47, p 1 – 53). Academic Press. <https://doi.org/10.1016/B978-0-12-407236-7.00001-2>
- [14] Fredrickson, B. L. 2001. The role of positive emotions in positive psychology: The broaden-and build theory of positive emotions. *American Psychologist* 56(3): 218-226. <https://doi.org/10.1037//0003-066x.56.3.218>
- [15] Fredricks, J., Blumenfeld, P., & Paris, A. (2004). School Engagement: Potential of the Concept, State of the Evidence. *Review of Educational Research - REV EDUC RES*, 74, 59 – 109. <https://doi.org/10.3102/00346543074001059>
- [16] Hair J F, Tatham R L, Anderson R E, et al. *Multivariate Data Analysis*, [M] .Prentice Hall, 1998: 648-650
- [17] Hayes, Andrew F.(2013). *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*. New York, NY: The Guilford Press
- [18] Hiver, P., Al-Hoorie, A. H., & Mercer, S. (Eds.). (2020). Student Engagement in the Language Classroom. *Multilingual Matters*. <https://doi.org/10.21832/HIVER3606>
- [19] Jia, M., & Cheng, J. (2024). Effect of teacher social support on students' emotions and learning engagement: A U.S.-Chinese classroom investigation. *Humanities and Social Sciences Communications*, 11(1), 158. <https://doi.org/10.1057/s41599-024-02634-0>
- [20] Kahu, E. R. (2011). Framing student engagement in higher education. *Studies in Higher Education*, 38(5), 758 – 773. <https://doi.org/10.1080/03075079.2011.598505>
- [21] Lake, J. (2013). 13. Positive L2 Self: Linking Positive Psychology with L2 Motivation. In M. T. Apple, D. Da Silva, & T. Fellner (Ed.), *Language Learning Motivation in Japan* (p. 225 – 244). *Multilingual Matters*. <https://doi.org/10.21832/9781783090518-015>
- [22] Larsen-Freeman, D. (2007). On the complementarity of Chaos/Complexity Theory and Dynamic Systems Theory in understanding the second language acquisition process. *Bilingualism: Language and Cognition*, 10(01), 35. <https://doi.org/10.1017/S136672890600277X>
- [23] Li, C. (2021). A Control – Value Theory Approach to Boredom in English Classes Among University Students in China. *The Modern Language Journal*, 105(1), 317 – 334. <https://doi.org/10.1111/modl.12693>
- [24] Li, C., Dewaele, J.-M., & Hu, Y. (2023). Foreign language learning boredom: Conceptualization and measurement. *Applied Linguistics Review*, 14(2), 223 – 249. <https://doi.org/10.1515/applirev-2020-0124>
- [25] Li, J., Zhao, Y., Kong, F., Du, S., Yang, S., & Wang, S. (2018). Psychometric Assessment of the Short Grit Scale Among Chinese Adolescents. *Journal of Psychoeducational Assessment*, 36(3), 291 – 296. <https://doi.org/10.1177/0734282916674858>
- [26] MacIntyre, P., & Gregersen, T. (2012). Emotions that facilitate language learning: The positive-broadening power of the imagination. *Studies in Second Language Learning and Teaching*, II(2), 193 – 213.
- [27] Macklem, G. L. (2015). *Boredom in the Classroom: Addressing Student Motivation, Self-Regulation, and Engagement in Learning* (1). Springer International Publishing. <https://doi.org/10.1007/978-3-319-13120-7>
- [28] O'Neal, C. R., Goldthrite, A., Weston Riley, L., & Atapattu, R. K. (2018). A reciprocal, moderated mediation model of grit, engagement, and literacy achievement among dual language learners. *Social Development*, 27(3), 665 – 680. <https://doi.org/10.1111/sode.12288>
- [29] Pekrun, R., Goetz, T., Daniels, L. M., Stupnisky, R. H., & Perry, R. P. (2010). Boredom in

- achievement settings: Exploring control – value antecedents and performance outcomes of a neglected emotion. *Journal of Educational Psychology*, 102(3), 531 – 549. <https://doi.org/10.1037/a0019243>
- [30] Plonsky, L., & Oswald, F. L. (2014). How Big Is “Big”? Interpreting Effect Sizes in L2 Research. *Language Learning*, 64(4), 878 – 912. <https://doi.org/10.1111/lang.12079>
- [31] Rand, K. L., Shanahan, M. L., Fischer, I. C., & Fortney, S. K. (2020). Hope and optimism as predictors of academic performance and subjective well-being in college students. *Learning and Individual Differences*, 81, 101906. <https://doi.org/10.1016/j.lindif.2020.101906>
- [32] Reeve, J., & Tseng, C.-M. (2011). Agency as a fourth aspect of students’ engagement during learning activities. *Fuel and Energy Abstracts*, 36, 257 – 267. <https://doi.org/10.1016/j.cedpsych.2011.05.002>
- [33] Shao, K., Pekrun, R., & Nicholson, L. J. (2019). Emotions in classroom language learning: What can we learn from achievement emotion research? *System*, 86, 102121. <https://doi.org/10.1016/j.system.2019.102121>
- [34] Skehan, P. (1991). Individual Differences in Second Language Learning. *Studies in Second Language Acquisition*, 13(2), 275 – 298. <https://doi.org/10.1017/S0272263100009979>
- [35] Sun, W., Shi, H., & Yan, Y. (2023). Contributions of Ideal L2 Self, Grit, and Boredom to Engagement in an EFL Context: A Structural Equation Modeling Approach. *The Asia-Pacific Education Researcher*. <https://doi.org/10.1007/s40299-023-00786-2>
- [36] Tang, X., Wang, M. T., Guo, J., & Salmela-Aro, K. (2019). Building grit: The longitudinal pathways between mindset, commitment, grit, and academic outcomes. *Journal of Youth and Adolescence*, 48(5), 850-863
- [37] Teimouri, Y., Plonsky, L., & Tabandeh, F. (2020). L2 grit: Passion and perseverance for second-language learning. *Language Teaching Research*, 26(5), 893 – 918. <https://doi.org/10.1177/1362168820921895>
- [38] Wei, H., Gao, K., & Wang, W. (2019). Understanding the Relationship Between Grit and Foreign Language Performance Among Middle School Students: The Roles of Foreign Language Enjoyment and Classroom Environment. *Frontiers in Psychology*, 10, 1508. <https://doi.org/10.3389/fpsyg.2019.01508>
- [39] Wei, R., Liu, H., & Wang, S. (2020). Exploring L2 grit in the Chinese EFL context. *System*, 93, 102295. <https://doi.org/10.1016/j.system.2020.102295>
- [40] Wu, C., Tian, X., & Jin, H. (2024). Grit and Second Language Learning Engagement: The Mediating Role of Affect Balance. *Behavioral Sciences*, 14(3), Article 3. <https://doi.org/10.3390/bs14030184>
- [41] Zhang, C., Mao, L., Li, N., & Gu, X. (2022). Chinese EFL Students’ Social-Emotional Competence, Grit, and Academic Engagement. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.914759>
- [42] Han, Y., & Xu, Y. T. (2020). A study on emotional experiences and emotion regulation strategies in L2 writing learning from the perspective of positive psychology: Taking written corrective feedback as an example. *Foreign Language World*, 1, 50 – 59.
- [43] Jiang, W., Jiang, J., Du, X. P., Gu, D., & Sun, Y. (2018). The relationship between grit and academic achievement: The mediating role of learning engagement. *Chinese Journal of Special Education*, 4, 91 – 96.
- [44] Li, C. C. (2021). Research on second language acquisition from the perspective of positive psychology: Retrospect and prospects (2012 – 2021). *Foreign Language Education*, 42(4), 57 – 63. <https://doi.org/10.16362/j.cnki.cn61-1023/h.2021.04.010>
- [45] Wang, Y. K. (2024). The influence of L2 grit and academic buoyancy on learning engagement. *Modern Foreign Languages*, 47(3), 370 – 382.
- [46] Wang, Y. Q. (2023). Exploring the relationship between L2 grit and willingness to communicate: The mediating effects of foreign language enjoyment and anxiety. *Modern*

Foreign Languages, 46(1), 42 – 55.

- [47] Wei, X. B., Peng, J. E., Qin, L. L., & Yang, L. R. (2024). The relationship between classroom environment, L2 grit, and English achievement: The mediating role of academic emotions. *Modern Foreign Languages*, 47(1), 89 – 100.
- [48] Wen, Q. F., & Wang, L. F. (2004). Thirty-five years of research methods in second language acquisition: Retrospection and reflection. *Journal of Foreign Languages*, (4), 18 – 25.