



Grit and Foreign Language Enjoyment as Predictors of EFL Learners' Online Engagement: The Mediating Role of Online Learning Self-efficacy

Ali Derakhshan¹ · Jalil Fathi²

Accepted: 9 May 2023
© De La Salle University 2023

Abstract This study examined the relationship among foreign language enjoyment (FLE), second language L2 grit, online learning self-efficacy (OLSE), and online learning engagement among Iranian English as a foreign language (EFL) learners. The study involved 578 Iranian EFL learners who completed self-report measures of the four constructs. Confirmatory factor analysis and structural equation modeling were employed to confirm the validity of the scales and test the hypothesized model. The findings indicate that FLE positively affects online learning engagement and OLSE positively influences online learning engagement. Additionally, the study found that online self-efficacy mediates the relationship between L2 grit and online learning engagement. These results highlight the importance of FLE and OLSE in promoting online learning engagement, and the mediating role of online self-efficacy in the interplay between L2 grit and online learning engagement. This research sheds more light on the understanding of the factors that influence online learning engagement among EFL learners and has important implications for both theory and practice.

Keywords Foreign language enjoyment · L2 grit · Online learning self-efficacy · Online learning engagement · EFL learners

✉ Jalil Fathi
j.fathi@uok.ac.ir

Ali Derakhshan
a.derakhshan@gu.ac.ir

¹ Department of English Language and Literature, Faculty of Humanities and Social Sciences, Golestan University, Gorgan, Iran

² Department of English and Linguistics, Faculty of Language and Literature, University of Kurdistan, Sanandaj, Iran

Introduction

Learning a second/foreign language (L2) is a complex process that involves various factors, including socio-cultural, linguistic, and psycho-emotional factors, which influence language acquisition (Derakhshan, Dewaele, et al., 2022; Derakhshan, Fathi, et al., 2022; Derakhshan, Greenier, et al., 2022; Solhi et al., 2023; Wang et al., 2022). These factors include but are not limited to age, gender, motivation, learning style, language aptitude, proficiency level, and cultural differences, (Dörnyei, 2014; Ehrman et al., 2003). Additionally, recent research has highlighted the significance of psycho-emotional variables in language learning, such as positive and negative emotions, grit, and foreign language enjoyment (FLE) (Derakhshan, 2022; Derakhshan, Solhi, et al., 2023; Derakhshan, Dewaele, et al., 2022; Derakhshan et al., 2021; Gregersen & MacIntyre, 2021; Wang, 2023; Wang et al., 2021). To succeed in L2 education, teachers and students should focus on positive feelings instead of overestimating negative emotions (Gregersen & MacIntyre, 2021). This shift toward positivity helps students manage the inherent challenges of acquiring another language (MacIntyre et al., 2019). Moreover, the way EFL/ESL students diligently try to obtain their goals, makes them gritty and successful (Duckworth, 2016). Grit is a spiritual variable related to intrinsic motivation, which affords the required passion and will to reach goals in academia (Duckworth & Quinn, 2009). It has been found effective in psychology, general education, L2 education, medicine, and business domains (Keegan, 2017).

Furthermore, in online education, students' grit and engagement in the classroom need more consideration by educators (Derakhshan, Dewaele, et al., 2022; Derakhshan, Fathi, et al., 2022; Derakhshan, Greenier, et al., 2022). The sudden shift toward e-education created many challenges

for L2 educators (Derakhshan et al., 2021). Consequently, it is essential to involve students in classroom activities (Dewaele & MacIntyre, 2016). In doing so, the role of FLE is prominent. FLE is a complicated emotion, which pushes learners into action and maximizes their motivation despite difficulties (Dewaele & MacIntyre, 2016). It is obtained when students' needs are satisfied and new things are learned in the class (Dewaele & MacIntyre, 2014). Additionally, students' academic engagement and enjoyment may be affected by technologies and the rate of familiarity with facilities (Bond & Bedenlier, 2019). While research on the role of students' grit and FLE in L2 education is increasing, their predictive power in online learning has been largely unexplored, and other factors may also impact students' grit, enjoyment, and engagement. One such factor is online learning self-efficacy (OLSE), which is crucial in remote education (Han & Geng, 2023; Yavuzalp & Bahcivan, 2020). Self-efficacy is one's judgment of his/her abilities to do a task (Bandura, 1977). In online settings, self-efficacy is significant since students are facing a new mode of education. OLSE has been found to determine students' degree of learning in online learning contexts (Zimmerman & Kulikowich, 2016).

Most of the studies on OLSE have focused on the technology components of the construct (Alqurashi, 2016), its measurement scales (Yavuzalp & Bahcivan, 2020), and its underlying dimensions (Shen et al., 2013). Nevertheless, its interaction with student-related psycho-emotional factors has been overlooked. In an exploratory study, Shen et al. (2013) found that OLSE predicts students' online learning satisfaction. However, the moderating role of this construct in producing positive emotions in students in L2 contexts is left uncharted, to date. To fill this gap, the current study aimed to examine the possible moderating role of OLSE in the interplay of grit, FLE, and online student engagement.

Literature Review

The Concept of Grit

As a non-cognitive factor, grit has a fundamental role in education by driving one to work industriously toward long-term goals with passion and interest (Duckworth et al., 2007). It is a mixture of 'perseverance of effort' and 'consistency of interest' (Duckworth & Quinn, 2009). For Duckworth and Quinn (2009), grit is a personality feature beyond motivation, while Credé et al. (2017) perceive it as conscientiousness. In contrast to many psycho-emotional variables involved in education that are context-specific and evolving, grit hardly changes across contextual shifts (Reed et al., 2013). Grit has two facets, namely *perseverance in*

effort and *persistence of interests*, which have strong correlations with students' academic success and performance (Duckworth et al., 2007).

The Importance of Grit in L2 Education

Grit has a prominent place in L2 education owing to the complexities that feature in learning a foreign language (Derakhshan, Solhi, et al., 2023; Keegan, 2017). Mainstream education and L2 education have shifted from basic reading and writing skills toward more complex abilities such as critical thinking, problem-solving, and effective communication (Horn, 2013). This requires gritty students, who stand against setbacks (Taşpinar & Külekçi, 2018). Teachers are no longer simple presenters of knowledge, but active agents, who produce gritty and tough students (Duckworth et al., 2010). Grit promotes academic performance, hope, trust, learning motivation, resilience, and success rate (Keegan, 2017; Taşpinar & Külekçi, 2018; Xu, 2022). Furthermore, grit is contended to afford persistent energy, passion, motivation, desire, self-discipline, and self-control for L2 learners (Duckworth & Gross, 2014; Li & Yang, 2023). It can also incur achievement and problem-solving skills after graduation (Taşpinar & Külekçi, 2018). Grit may also interact with enjoyment in virtual contexts as explained below.

Foreign Language Enjoyment (FLE)

As a relatively new construct in the field of SLA research, FLE is concerned with the positive emotions and attitudes that learners experience when using or learning a foreign language (Dewaele & MacIntyre, 2014; Dewaele et al., 2018). It is considered an important factor in language learning, as it can lead to higher motivation, willingness to communicate, and ultimately, better learning outcomes (Botes et al., 2022). FLE has two underlying dimensions; private enjoyment (PE) and social enjoyment (SE) (Dewaele & MacIntyre, 2016; Jiang & Dewaele, 2019). PE is concerned with the enjoyment learners experience in private settings, such as reading a book or watching a movie in the target language. SE, on the other hand, pertains to the enjoyment that learners experience when communicating with others in the target language, such as in a conversation or group discussion. FLE has been found to be positively associated with motivation, anxiety, learning achievement, and grit in L2 learning (Botes et al., 2022; Dewaele & MacIntyre, 2016; Fathi & Mohammaddokht, 2021; Jin & Zhang, 2021; Li, 2020). Furthermore, recent studies in the field of EFL learning have shown that teacher factors can be closely related to how learners experience FLE (Derakhshan, Zhang, et al., 2023).

Foreign Language Engagement in Online Settings

After the COVID-19 pandemic, many educational centers shifted toward remote instruction. However, this sharp transition created different challenges for L2 educators (Gao & Zhang, 2020). Other than technological challenges like internet access, technophobia, willingness to participate in virtual contexts, and required platforms to run a new mode of delivery, EFL/ESL students faced several psych-emotional complications (e.g., anxiety, boredom), too (Derakhshan et al., 2021). Another area that this shift could influence was students' engagement in online classrooms (Côté & Gaffney, 2021). In online settings, foreign language engagement is critical because L2 students are physically distant from their classmates and teachers (Dixson, 2015). The concept refers to students' active engagement in L2 classes by thinking about the content of the relevant subject and talking and interacting with others (Dixson, 2015). Research shows that students' planning and perseverance affect their engagement in online classes (Barrett & Liu, 2019; Finn & Zimmer, 2012). Although researching the construct of engagement has recently flourished, its trace in online L2 education is left unaddressed.

Online Learning Self-efficacy

Self-efficacy is a factor that determines students' academic success in varying contexts (Bandura, 1977). Its significance enhances in challenging and new learning contexts like online education (Cho et al., 2010). Since the self-efficacy of students are the cornerstones of their success in online education, in some contexts, low self-efficacy may cause dropout (Lee & Choi, 2011). Self-efficacy is context-sensitive and in online education, three aspects must be considered by educators including technology, learning, and interaction to improve education (Shen et al., 2013).

OLSE includes six dimensions related to (1) online course completion, (2) peer interaction, (3) teacher interaction, (4) self-regulation, (5) course management system, and (6) socialization with peers (Shen et al., 2013). Additionally, Zimmerman and Kulikowich (2016) proposed three dimensions to OLSE, namely time management, online learning, and technology use. Operationally, OLSE is defined as L2 students' perceived ability to learn and accomplish tasks in online settings. It can be affected by several personal, emotional, cognitive, contextual, and social variables (Cho & Kim, 2013).

Related Studies

Given the popularity of PP constructs and online education, several empirical and theoretical studies have been done on their interface. Concerning L2 students' grit,

correlational studies reveal that grit predicts well-being, success, satisfaction, willingness to communicate (WTC), achievement, resilience, engagement, and enthusiasm (Fathi et al., 2021; Jin & Kim, 2017). In a recent study, Xu (2022) argued that L2 students' grit is facilitated by teachers' hope and trust. Furthermore, Wu et al. (2022) identified a positive correlation between grit and EFL students' performance. Similarly, Kiatkeeree and Ruangjaroon (2022) explored the relationship between grit and the online engagement of 563 EFL students. The results demonstrated a positive association between grit and students' achievement and engagement level in online education.

Regarding FLE, research shows that enjoyment produces motivation, WTC, achievement, and grit (Botes et al., 2022; Li, 2020). Moreover, the relationship between grit and engagement can be influenced by students' perceived self-efficacy in online learning (Shen et al., 2013). Along the same line, Womble (2008) found a positive linkage between online self-efficacy and satisfaction in training courses. Moreover, the role of gender, academic status, and previous experiences in determining the OLSE of students has been approved (Artino & Stephens, 2009; Cho & Kim, 2013).

After reviewing the literature, it is clear that several studies have demonstrated the significance of FLE as a predictor of language learning achievement, motivation, and engagement. Similarly, L2 grit has been found to be associated with persistence and resilience in language learning. Additionally, OLSE has been identified as a critical factor in promoting engagement in online learning environments. While the constructs of concern in this study have been explored separately, their interplay in online contexts has been overlooked. Unveiling the role of self-efficacy in shaping other psycho-emotional constructs (e.g., grit, engagement) in online L2 education is also critical to enhance the quality of e-teaching and e-learning. Spurred by these gaps, this study aimed to examine the moderating role of OLSE in the bond among grit, foreign language engagement, and online student engagement. In light of the theoretical and empirical literature, the following hypotheses are formulated:

H1 L2 grit predicts online learning engagement. Since grit is a key factor in determining success in overcoming challenges and maintaining interest in L2 learning (Duckworth et al., 2010; Li & Yang, 2023; Taşpinar & Külekçi, 2018) and online learning can be challenging for many students, we hypothesize that students with higher levels of L2 grit will be more engaged in online learning.

H2 FLE affects online learning engagement. In light of some studies which have found that motivation and

enjoyment are key factors in predicting engagement in online learning activities (Deng et al., 2022; Guo, 2021; Luo et al., 2023), it is warranted to assume that individuals who enjoy learning a foreign language will be more engaged in online learning activities related to that language.

H3 Online learning self-efficacy affects online learning engagement. Empirical studies have found that self-efficacy is a significant predictor of engagement and achievement in online learning (Han & Geng, 2023; Han et al., 2021; Kuo et al., 2021), which supports this hypothesis.

H4 Online learning self-efficacy mediates the relationship between L2 grit and FLE with online learning engagement. The rationale for this hypothesis is that self-efficacy may be a mechanism through which both L2 grit and FLE affect online learning engagement. Specifically, individuals with higher levels of L2 grit and FLE may have higher levels of online learning self-efficacy, which in turn leads to increased engagement in online learning activities. Empirical studies have found that self-efficacy mediates the relationship between various constructs and academic achievement (Neroni et al., 2022), which supports this hypothesis.

Method

Participants

In this study, the participants were 578 intermediate-level EFL learners recruited from two state universities in Iran. The universities offered online English language classes to students at different proficiency levels. The participants were selected based on their proficiency level, which was determined by a placement test. The inclusion criteria for the study were being an intermediate-level EFL learner and currently enrolled in an online English language course.

A convenience sampling method was used to recruit the participants. Announcements were made in online English language classes, and invitation emails were sent to eligible students who met the inclusion criteria. The participants who agreed to participate in the study provided their informed consent before completing the online questionnaire. The sample consisted of 322 females and 256 males with an age range of 18 to 30 years ($M = 22.5$, $SD = 2.8$).

Instruments

FLE Scale

The level of FLE of participants was evaluated using 10 items adapted from Jiang and Dewaele's (2019) scale. This scale measures the private enjoyment (PE) and social enjoyment (SE) aspects of the construct. Respondents rated the items on a 5-point Likert scale ranging from 1 ('not at all') to 5 ('very much so'). An example of an item from this scale is "I enjoy learning English."

L2 Grit

To assess the participants' level of L2 grit, a 10-item scale developed by Lee (2020) was used. The scale measures participants' perseverance of effort (POE) and consistency of interest (COI) in achieving their long-term goals related to learning English. Each item is rated on a 5-point Likert scale, ranging from 1 ('not like me at all') to 5 ('very much like me').

Online Student Engagement

For the present study, a 22-item questionnaire developed by Hoi and Le Hang (2021) was utilized to measure online student engagement. The questionnaire used a five-point Likert scale and consisted of four subscales: Behavioural engagement (BE), Cognitive engagement (CE), Affective engagement (AE), and Social engagement (SE). Four items were used to measure each subscale, with BE measuring students' active participation and positive behaviors, CE measuring cognitive investment, AE measuring emotional reactions, and SE measuring the quality of an effort to maintain relationships with classmates and teachers.

Online Learning Self-Efficacy Scale (OLSS)

For this construct, Tsai et al.'s (2020) scale was used, which consists of 25 items assessing five components: (1) Self-efficacy to complete an online course (S1), (2) Self-efficacy to interact socially with classmates (S2), (3) Self-efficacy to use tools in a Course Management System (CMS) (S3), (4) Self-efficacy to interact with instructors in an online course (S4), and (5) Self-efficacy to interact with classmates for academic purposes (S5). Respondents used a 5-point Likert scale to indicate their level of agreement with each item, ranging from 1 (strongly disagree) to 5 (strongly agree).

Table 1 Measurement model of the latent variables

| | χ^2 | df | χ^2/df | GFI | CFI | RMSEA | TLI | SRMR | Cronbach's α |
|------------|----------|-----|-------------|-----|-----|-------|-----|------|---------------------|
| FLE | 96.76 | 47 | 2.05 | .86 | .92 | .05 | .93 | .06 | .86 |
| L2 grit | 123.67 | 59 | 2.09 | .88 | .93 | .05 | .93 | .06 | .91 |
| OLSE | 58.26 | 31 | 1.87 | .90 | .96 | .04 | .95 | .05 | .84 |
| Engagement | 241.48 | 122 | 1.97 | .91 | .93 | .05 | .92 | .06 | .87 |

Table 2 Factor Loadings, Standard Errors, t-Values, and R^2 for the Measurement Model

| Scales and sub-scales | Unstandardized factor loadings | SE | Standardized factor loadings | t | R^2 |
|-----------------------|--------------------------------|-------|------------------------------|---------|-------|
| FLE | | | | | |
| PE | 1.135 | 0.092 | 0.836 | 11.561* | 0.698 |
| SE | 1.000 | | 0.867 | | 0.751 |
| L2 grit | | | | | |
| POE | 1.000 | | 0.795 | | 0.632 |
| COI | 1.376 | 0.134 | 0.984 | 12.326* | 0.968 |
| OLSE | | | | | |
| S1 | 1.246 | 0.087 | 0.891 | 15.281* | 0.793 |
| S2 | 1.000 | | 0.796 | | 0.633 |
| S3 | 1.168 | 0.089 | 0.814 | 14.687* | 0.662 |
| S4 | 1.232 | 0.128 | 0.768 | 12.035* | 0.589 |
| S5 | 1.291 | 0.098 | 0.802 | 13.921* | 0.643 |
| Engagement | | | | | |
| BE | 0.987 | 0.084 | 0.895 | 12.994* | 0.801 |
| CE | 1.222 | 0.112 | 0.942 | 13.087* | 0.887 |
| AE | 1.000 | | 0.937 | | 0.877 |
| SE | 1.254 | 0.096 | 0.941 | 13.587* | 0.885 |

* $p < .001$

Procedure

During a single session, participants were requested to complete four scales, namely foreign language enjoyment, L2 grit, online learning self-efficacy, and online learning engagement, which took approximately 30 min. A link to the online survey, along with a brief introduction to the study, was sent to the participants via email. The participants were instructed to complete the scales honestly and to the best of their ability. They were informed of the purpose of the study and their right to withdraw from the study at any time without any penalty. To ensure informed consent, written consent forms were obtained from the participants. The researchers assured the participants that their responses would remain confidential and would only be used for research purposes.

Analytic Procedure

SPSS 22 and AMOS 23 were used to conduct data analysis. A two-stage approach for structural equation modeling (SEM) was used, which included testing the measurement and structural models (Kline, 2023). To assess the goodness

Table 3 Descriptive statistics and correlations

| | $M (SD)$ | 1 | 2 | 3 | 4 |
|----------------|-------------|-------|-------|------|------|
| (1) FLE | 3.89 (.88) | 1.00 | | | |
| (2) L2 grit | 3.65 (.76) | .26* | 1.00 | | |
| (3) OLSE | 3.79 (.81) | .36** | .34** | 1.00 | |
| (4) Engagement | 4.21 (1.02) | .41** | .21* | .48* | 1.00 |

* $p < .05$ ** $p < .01$

of fit for the hypothesized model, different fit indices were examined. The researchers also used the Expectation–Maximization algorithm, Z scores, and Mahalanobis D^2 to address missing data and identify outliers, respectively (Tabachnick et al., 2013). Additionally, they examined the skewness and kurtosis indices to identify non-normal data. After conducting the initial screening, 12 cases were excluded from the analysis.

Results

Testing the Measurement Model

The construct validity of the scales was examined by testing the measurement model and goodness of fit indices. Modifications were made to improve the model's fit, including removing certain items with low factor loadings and drawing correlational paths for error terms. The final models showed an acceptable fit to the data (see Tables 1 & 2). The scales demonstrated adequate internal consistency with alpha values greater than 0.70. Descriptive statistics and correlations were calculated for all the constructs (see Table 3).

Testing the Structural Model

After confirming the measurement model, structural models were examined. The hypothesized partial mediation model (Model P) was compared with the full mediation model (Model F) and an alternative direct model (Model D). Table 4 displays the fit indices of all three competing structural models. Based on the SEM values obtained, the fit indices of the partial mediation model (Model P) were significantly better than those of Model F ($\Delta df=3$, $\Delta\chi^2=33.78$,

$p < 0.001$) and Model D ($\Delta df=5$, $\Delta\chi^2=98.85$, $p < 0.001$). Therefore, the partial mediation model (Model P) was selected as the most concise model specifying the connections among latent constructs.

Figure 1 shows the final partial mediation model's path estimates. All path coefficients were significant, except for the path from L2 grit to online engagement. The structural model showed that online engagement was significantly influenced by FLE ($\beta=0.32$, $p < 0.001$), while L2 grit had a significant impact on OLSE ($\beta=0.28$, $p < 0.01$). Additionally, OLSE directly affected online engagement ($\beta=0.55$, $p < 0.001$), and FLE had a significant effect on OLSE ($\beta=0.34$, $p < 0.001$).

The researchers employed Baron and Kenny's (1986) method to investigate whether OLSE acted as a mediator between the constructs. The results from the direct model (see Table 5) revealed significant path coefficients for FLE and L2 grit on online engagement (FLE-engagement: 0.35, $p < 0.001$; L2 grit-engagement: 0.16, $p < 0.05$), indicating the first step of Baron and Kenny's test was met. In the full mediation model, the path coefficient between grit and FLE on OLSE was also found to be significant (FLE-OLSE: 0.37, $p < 0.001$; grit-OLSE: 0.31, $p < 0.001$), satisfying the second requirement of Baron and Kenny's method. Finally, the partial mediation model showed that FLE had a significant

Table 4 Results of fit indices of structural models

| Model | χ^2 | df | χ^2/df | $\Delta\chi^2$ | GFI | CFI | RMSEA | TLI | SRMR |
|-----------------------------|----------|-----|-------------|----------------|-------|-------|-------|-------|-------|
| Direct effect model (D) | 572.12** | 285 | 2.00 | – | 0.862 | 0.921 | 0.056 | 0.929 | 0.142 |
| Full mediation model (F) | 497.32** | 258 | 1.92 | 74.80 | 0.873 | 0.969 | 0.041 | 0.971 | 0.049 |
| Partial mediation model (P) | 467.06** | 249 | 1.87 | 30.26 | 0.889 | 0.971 | 0.039 | 0.974 | 0.043 |

$\Delta\chi^2$ presents differences between the model and the following model

** p -Value < 0.001

Fig. 1 The final mediation model

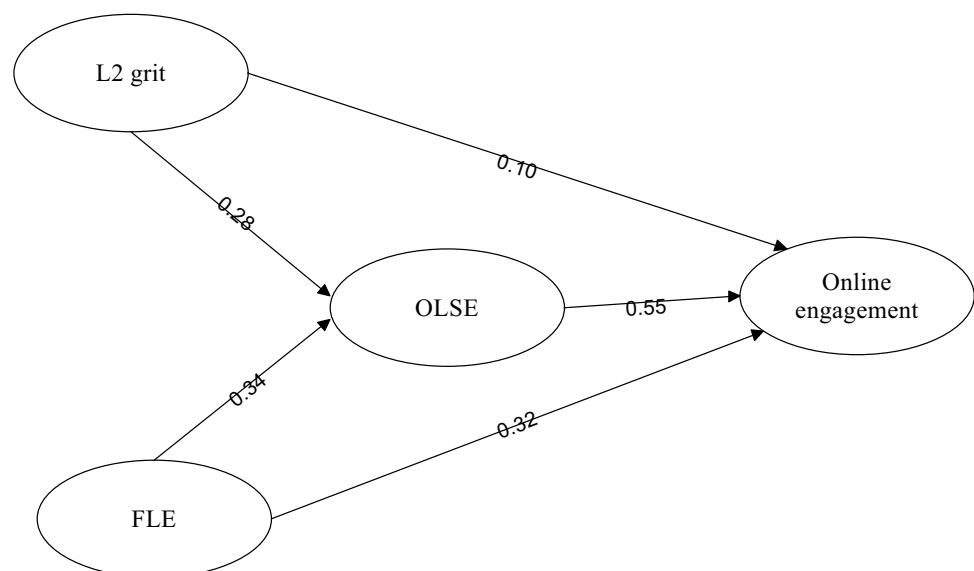


Table 5 Path estimates of the structural model

| | Standardized path coefficients (t-value) | | |
|----------------------|--|----------------------|-------------------------|
| | Direct effects model | Full mediation model | Partial mediation model |
| FLE → Engagement | 0.35 (5.13***) | | 0.32 (4.16***) |
| L2 grit → Engagement | 0.16 (2.79*) | | 0.10 (0.42) |
| FLE → OLSE | | 0.37 (4.96***) | 0.34 (4.49***) |
| L2 grit → OLSE | | 0.31 (4.05***) | 0.28 (3.75***) |
| OLSE → Engagement | | 0.68 (7.85***) | 0.55 (7.84***) |

**p*-Value < 0.05
***p*-Value < 0.01
****p*-Value < 0.001

direct effect on engagement ($\beta = 0.32$, $p < 0.001$). Furthermore, along with the indirect effect of OLSE, FLE significantly influenced engagement—0.16 (0.34×0.55), which was less than the direct effect ($0.18 < 0.32$) of FLE on engagement. This result indicated that OLSE partially mediated the relationship between FLE and engagement. The study also revealed that L2 grit had an insignificant effect on engagement. However, OLSE acted as a full mediator between L2 grit and engagement ($0.28 \times 0.55 = 0.15 > 0.10$). Thus, the impact of L2 grit on OLSE contributed to enhancing online engagement.

Finally, to investigate common method bias, Harman's single factor test was performed as recommended by Podsakoff and Organ (1986). All the indicators of the four constructs (CSE, mindfulness, boredom, and FLE) were included in the maximum likelihood extraction method. Results showed that the first factor explained only 26.17% of the variance, which is lower than the 50% criterion. Thus, it can be inferred that the common method bias was not a significant issue in this study.

Discussion

This study investigated the relationships among FLE, online learning self-efficacy, L2 grit, and online learning engagement among EFL learners. The findings provide insights into the importance of learner motivation and self-efficacy beliefs in online learning settings. Firstly, the results revealed that FLE positively affected online learning engagement. This finding is consistent with previous research that suggests that positive affective factors like enjoyment influence online learning engagement (Artino, 2012; Deng et al., 2022; Guo, 2021; Luo et al., 2023). FLE has been shown to promote language learning motivation and engagement (Dewaele & MacIntyre, 2014), and our study extends this finding to the online learning context. In online learning, FLE may be particularly important since it can counteract some of the negative aspects of online learning, such as isolation, lack of social interaction, and the absence of face-to-face

communication (Simamora, 2020). Students, who enjoy learning a foreign language may be more likely to engage in online learning activities, such as participating in discussion forums, completing online assignments, and seeking out additional learning resources. When learners experience positive emotions and attitudes towards online L2 learning, they are more likely to participate in activities, interact with peers and instructors, and persist in their language learning journey.

Secondly, our study found that online learning self-efficacy positively affects online learning engagement, which is consistent with previous research (Han & Geng, 2023; Han et al., 2021; Kuo et al., 2021). This finding is consistent with Bandura's (1989) social cognitive theory. According to this theory, individuals' beliefs about their capabilities to perform specific tasks, also known as self-efficacy beliefs, influence their behavior, motivation, and learning outcomes. Self-efficacy beliefs are predictors of academic achievement and engagement (Bandura, 1977). They are also essential in online learning contexts (Artino & Stephens, 2009; Zimmerman & Kulikowich, 2016). From this perspective, students, who believe in their ability to succeed in online learning are more likely to engage in learning activities. Therefore, learners should be provided with appropriate resources and training to enhance their online learning self-efficacy beliefs and generate online learning engagement.

Finally, it was found that L2 grit did not have a direct effect on online learning engagement but influenced it through the mediation of online learning self-efficacy. From a social cognitive theory (Bandura, 1989) perspective, individuals with higher levels of self-efficacy tend to have better performance and persistence in the face of challenges. In the online learning setting, learners with high levels of self-efficacy may be more likely to engage in online learning activities and persist in the face of obstacles, leading to heightened engagement. This finding is partially in line with Sukmana et al. (2021) who found that grit indirectly affected learners' academic achievement via the mediation of online learning. Although success in online learning requires consistent interests and perseverant efforts (Lee &

Hsieh, 2019), our findings indicated that a lack of perceived competencies in online contexts might hinder goal accomplishment even among grittier learners. It can be implied that grit may be context-sensitive for EFL learners. That is, gritty EFL learners become more engaged in online learning if they are endowed with self-efficacy perceptions in online learning contexts. EFL learners might face some unexpected challenges in online learning such as role and responsibility changes, unfamiliarity with technology devices, and new interpersonal relations which gritty learners may not overcome unless they possess some online learning self-efficacy.

However, the extracted mediation model suggests that L2 grit can enhance learners' self-efficacy beliefs by fostering their sense of mastery experiences, self-regulation, and perseverance in the face of obstacles. In turn, enhanced self-efficacy beliefs can increase learners' engagement in online learning activities. This is in line with previous research that found self-efficacy mediating between grit and achievement (Jiang et al., 2021; Li & Yang, 2023; Neroni et al., 2022). This finding underscores self-efficacy beliefs in promoting engagement and achievement in online contexts (Alemayehu & Chen, 2021). Greater online self-efficacy helps EFL learners to devote greater efforts, time, and consciousness concerning online learning tasks (Tsai et al., 2020), thereby fostering their online student engagement.

Overall, this study highlights the complex interplay between motivational constructs such as L2 grit, self-efficacy beliefs, and engagement in online language learning. It adds to the existing literature by providing empirical evidence for the role of online learning self-efficacy as a mediator of the relationship between L2 grit and online learning engagement. However, there are some limitations to this study that need to be considered. One limitation of this study is its focus on a specific group of Iranian EFL learners, which may limit the generalizability of the findings to other populations. Future research could aim to replicate this study with different populations and investigate potential cultural differences in the relationships among these variables. A second limitation is a reliance on self-reported measures, which may be susceptible to biases and not accurately reflect participants' actual engagement in online learning activities. Future research could incorporate objective measures, such as tracking participants' online activity and performance, to assess online learning engagement. Finally, this study used a cross-sectional design, which limits the ability to infer causality from the findings. Future studies could employ longitudinal or experimental designs as well as innovative approaches to delve into the complex nature of these variables (Derakhshan, Wang, et al., 2023) to establish causal relationships among FLE, L2 grit, OLSE, and online learning engagement.

Conclusions

This study examined the interplay among FLE, L2 grit, OLSE, and online learning engagement among Iranian EFL learners. The results revealed that FLE and OLSE had a significant positive impact on online learning engagement. Moreover, it found that L2 grit indirectly affected online learning engagement through the mediation of OLSE. However, L2 grit did not affect online learning engagement. Overall, the findings highlight the importance of FLE and OLSE in promoting online learning engagement among EFL learners. Having underscored the significance of creating a positive and enjoyable learning environment, providing learners with resources and training to enhance their online learning self-efficacy beliefs, and promoting L2 grit as a way to enhance online learning engagement, this study provides insights that can inform the development of effective online language learning programs.

Considering theoretical implications, the study extends the literature on the relationships among FLE, L2 grit, OLSE, and online learning engagement by highlighting the indirect effect of L2 grit on online learning engagement through OLSE. Moreover, the study provides insights into the role of FLE and OLSE in promoting online learning engagement. The findings can be used to inform future research on the factors that influence EFL learners' online learning engagement. Practically, the findings have implications for EFL teachers and educators, who design and implement online language learning programs. The study suggests that educators and course designers should focus on creating a positive and enjoyable learning environment, providing learners with resources and training to enhance their online learning self-efficacy beliefs, and promoting L2 grit as a way to enhance online learning engagement. Therefore, educators should consider incorporating these strategies into their online language learning programs to foster a more effective and engaging learning experience for EFL students.

In light of the study's findings, there are several implications for future research to consider. First, although this study explored the relationship between FLE, L2 grit, OLSE, and online learning engagement, future research may investigate the potential influence of other variables, such as motivation or learning styles, on these constructs. Additionally, further research could investigate the effectiveness of specific interventions aimed at enhancing OLSE and promoting L2 grit in online language learning contexts.

Data Availability The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Declarations

Conflict of interest The authors report no conflict of interest regarding this study.

Informed Consent Informed consent was obtained from all the participants in this study.

References

- Alemayehu, L., & Chen, H. L. (2021). The influence of motivation on learning engagement: The mediating role of learning self-efficacy and self-monitoring in online learning environments. *Interactive Learning Environments*. <https://doi.org/10.1080/10494820.2021.1977962>
- Alqurashi, E. (2016). Self-efficacy in online learning environments: A literature review. *Contemporary Issues in Education Research*, 9(1), 45–52. <https://doi.org/10.19030/cier.v9i1.9549>
- Artino, A. R., Jr. (2012). Emotions in online learning environments: Introduction to the special issue. *The Internet and Higher Education*, 15(3), 137–140.
- Artino, A. R., & Stephens, J. M. (2009). Academic motivation and self-regulation: A comparative analysis of undergraduate and graduate students learning online. *Internet and Higher Education*, 12(3), 146–151.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavior change. *Psychological Review*, 84, 191–215. <https://doi.org/10.1037/0033-295X.84.2.191>
- Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist*, 44(9), 1175.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173.
- Barrett, N. E., & Liu, G. Z. (2019). Factors that influence the development and performance of academic oral presentations using a blended learning environment. *Journal of Computer Assisted Learning*, 35(6), 708–720.
- Bond, M., & Bedenlier, S. (2019). Facilitating student engagement through educational technology: Towards a conceptual framework. *Journal of Interactive Media in Education*, 11(1), 1–14. <https://doi.org/10.5334/jime.528>
- Botes, E., Dewaele, J. M., & Greiff, S. (2022). Taking stock: A meta-analysis of the effects of Foreign Language Enjoyment. *Studies in Second Language Learning and Teaching*, 12(2), 205–232.
- Cho, M. H., & Kim, B. J. (2013). Students' self-regulation for interaction with others in online learning environments. *Internet and Higher Education*, 17, 69–75.
- Cho, M. H., Shen, D., & Laffey, J. (2010). The role of metacognitive self-regulation (MSR) on social presence and sense of community in online learning environments. *Journal of Interactive Learning Research*, 21(3), 297–316.
- Côté, S., & Gaffney, C. (2021). The effect of synchronous computer-mediated communication on beginner L2 learners' foreign language anxiety and participation. *The Language Learning Journal*, 49(1), 105–116. <https://doi.org/10.1080/09571736.2018.1484935>
- Credé, M., Tynan, M., & Harms, P. (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>
- Deng, W., Lei, W., Guo, X., Li, X., Ge, W., & Hu, W. (2022). Effects of regulatory focus on online learning engagement of high school students: The mediating role of self-efficacy and academic emotions. *Journal of Computer Assisted Learning*, 38(3), 707–718.
- Derakhshan, A. (2022). Revisiting research on positive psychology in second and foreign language education: Trends and directions. *Language Related Research*, 13(5), 1–43. <https://doi.org/10.52547/LRR.13.5.1>
- Derakhshan, A., Kruk, M., Mehdizadeh, M., & Pawlak, M. (2021). Activity-induced boredom in online EFL classes. *ELT Journal*, 76(1), 58–68. <https://doi.org/10.1093/elt/ccab072>
- Derakhshan, A., Dewaele, J. M., & AzariNoughabi, M. (2022). Modeling the contribution of resilience, well-being, and L2 grit to foreign language teaching enjoyment among Iranian English language teachers. *System*, 109, 102890. <https://doi.org/10.1016/j.system.2022.102890>
- Derakhshan, A., Fathi, J., Pawlak, M., & Kruk, M. (2022). Classroom social climate, growth language mindset, and student engagement: The mediating role of boredom in learning English as a foreign language. *Journal of Multilingual and Multicultural Development*. <https://doi.org/10.1080/01434632.2022.2099407>
- Derakhshan, A., Greenier, V., & Fathi, J. (2022). Exploring the interplay between a loving pedagogy, creativity, and work engagement among EFL/ESL teachers: A multinational study. *Current Psychology*. <https://doi.org/10.1007/s12144-022-03371-w>
- Derakhshan, A., Solhi, M., & Azari Noughabi, M. (2023). An investigation into the association between student-perceived affective teacher variables and students' L2-grit. *Journal of Multilingual and Multicultural Development*. <https://doi.org/10.1080/01434632.2023.2212644>
- Derakhshan, A., Wang, Y. L., Wang, Y. X., & Ortega-Martín, J. L. (2023). Towards innovative research approaches to investigating the role of emotional variables in promoting language teachers' and learners' mental health. *International Journal of Mental Health Promotion*, 25(6), 1–10. <https://doi.org/10.32604/ijmh.2023.029877>
- Derakhshan, A., Zhang, L. J., & Zhaleh, K. (2023). The effects of instructor clarity and non-verbal immediacy on Chinese and Iranian EFL students' affective learning: The mediating role of instructor understanding. *Studies in Second Language Learning and Teaching*, 13(1), 71–100. <https://doi.org/10.14746/ssl.31733>
- 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, 237–274. <https://doi.org/10.14746/ssl.2014.4.2.5>
- Dewaele, J. M., & MacIntyre, P. D. (2016). Foreign language enjoyment and foreign language classroom anxiety: The right and left feet of the language learner. In P. D. MacIntyre, T. Gregersen, & S. Mercer (Eds.), *Positive psychology in SLA* (pp. 215–236). Multilingual Matters.
- 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.
- Dixon, M. D. (2015). Measuring student engagement in the online course: The Online Student Engagement Scale (OSE). *Online Learning*. <https://doi.org/10.24059/olj.v19i4.561>
- Dörnyei, Z. (2014). *The psychology of the language learner: Individual differences in second language acquisition*. Routledge.
- Duckworth, A. (2016). *Grit: The power of passion and perseverance*. Simon and Schuster.
- Duckworth, A., & Gross, J. (2014). Self-control and grit: Related but separable determinants of success. *Current Directions in Psychological Science*, 23(5), 319–325. <https://doi.org/10.1177/0963721414541462>
- Duckworth, A. L., & Quinn, P. D. (2009). Development and validation of the Short Grit Scale (Grit-S). *Journal of Personality Assessment*, 91, 166–174.
- 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>
- Duckworth, A. L., Kirby, T. A., Tsukayama, E., Berstein, H., & Ericsson, K. (2010). Deliberate practice spells success: Why grittier competitors triumph at the National Spelling Bee. *Social Psychological and Personality Science*, 2(2), 174–181. <https://doi.org/10.1177/1948550610385872>
- Ehrman, M. E., Leaver, B. L., & Oxford, R. L. (2003). A brief overview of individual differences in second language learning. *System*, 31(3), 313–330.
- Fathi, J., & Mohammaddokht, F. (2021). Foreign language enjoyment and anxiety as the correlates of the ideal L2 self in the English as a foreign language context. *Frontiers in Psychology*, 12, 790648.
- Fathi, J., Mohammaddokht, F., & Nourzadeh, S. (2021). Grit and foreign language anxiety as predictors of willingness to communicate in the context of foreign language learning: A structural equation modeling approach. *Issues in Language Teaching*, 10(2), 1–30. <https://doi.org/10.22054/ilt.2021.63362.627>
- Finn, J. D., & Zimmer, K. S. (2012). Student Engagement: What is it? Why does it matter? In S. L. Christenson, A. L. Reschly, & C. Wylie (Eds.), *Handbook of research on student engagement* (pp. 97–131). Springer.
- Gao, L. X., & Zhang, L. J. (2020). Teacher learning in difficult times: Examining foreign language teachers' cognitions about online teaching to tide over COVID-19. *Frontiers in Psychology*, 11(49653), 1–14.
- Gregersen, T., & MacIntyre, P. D. (2021). Acting locally to integrate positive psychology and peace: Practical applications for language teaching and learning. In R. Oxford, M. M. Olivero, M. Harrison, & T. Gregersen (Eds.), *Peace-building in language education* (pp. 177–195). Multilingual Matters.
- Guo, Y. (2021). Exploring the dynamic interplay between foreign language enjoyment and learner engagement with regard to EFL achievement and absenteeism: A sequential mixed methods study. *Frontiers in Psychology*, 12, 766058.
- Han, J., & Geng, X. (2023). University students' approaches to online learning technologies: The roles of perceived support, affect/emotion and self-efficacy in technology-enhanced learning. *Computers & Education*, 194, 104695.
- Han, J., Geng, X., & Wang, Q. (2021). Sustainable development of university EFL learners' engagement, satisfaction, and self-efficacy in online learning environments: Chinese experiences. *Sustainability*, 13(21), 11655.
- Hoi, V. N., & Le Hang, H. (2021). The structure of student engagement in online learning: A bi-factor exploratory structural equation modelling approach. *Journal of Computer Assisted Learning*, 37(4), 1141–1153.
- Horn, M. (2013). Building motivation, instilling grit: The necessity of mastery-based, digital learning. *Leadership*, 1–2.
- Jiang, Y., & Dewaele, J. M. (2019). How unique is the foreign language classroom enjoyment and anxiety of Chinese EFL learners? *System*, 82(59), 13–25. <https://doi.org/10.1016/j.system.2019.02.017>
- Jiang, L., Zhang, S., Li, X., & Luo, F. (2021). How grit influences high school students' academic performance and the mediation effect of academic self-efficacy and cognitive learning strategies. *Current Psychology*. <https://doi.org/10.1007/s12144-020-01306-x>
- Jin, B., & Kim, J. (2017). Grit, basic needs satisfaction, and subjective well-being. *Journal of Individual Differences*, 38(1), 29–35. <https://doi.org/10.1027/1614-0001/a000219>
- Jin, Y., & Zhang, L. J. (2021). The dimensions of foreign language classroom enjoyment and their effect on foreign language achievement. *International Journal of Bilingual Education and Bilingualism*, 24(7), 948–962. <https://doi.org/10.1080/13670050.2018.1526253>
- Keegan, K. (2017). Identifying and building grit in language learners. *English Teaching Forum*, 55(3), 2–9.
- Kiatkeeree, J., & Ruangjaroon, S. (2022). Unveiling the relationship between the grit of Thai English language learners, engagement, and language achievement in an online setting. *LEARN Journal: Language Education and Acquisition Research Network*, 15(2), 602–624.
- Kline, R. B. (2023). *Principles and practice of structural equation modeling*. Guilford publications.
- Kuo, T. M., Tsai, C. C., & Wang, J. C. (2021). Linking web-based learning self-efficacy and learning engagement in MOOCs: The role of online academic hardiness. *The Internet and Higher Education*, 51, 100819.
- Lee, J. S. (2020). The role of grit and classroom enjoyment in EFL learners' willingness to communicate. *Journal of Multilingual and Multicultural Development*. <https://doi.org/10.1080/01434632.2020.1746319>
- Lee, Y., & Choi, J. (2011). A review of online course dropout research: Implications for practice and future research. *Educational Technology Research and Development*, 59, 593–618.
- Lee, J. S., & Hsieh, J. C. (2019). Affective variables and willingness to communicate of EFL learners in in-class, out-of-class, and digital contexts. *System*, 82, 63–73.
- Li, C. (2020). A positive psychology perspective on Chinese EFL students' trait emotional intelligence, foreign language enjoyment and EFL learning achievement. *Journal of Multilingual and Multicultural Development*, 41(3), 246–263.
- Li, C., & Yang, Y. (2023). Domain-general grit and domain-specific grit: conceptual structures, measurement, and associations with the achievement of German as a foreign language. *International Review of Applied Linguistics in Language Teaching*. <https://doi.org/10.1515/iral-2022-0196>
- Luo, R., Zhan, Q., & Lyu, C. (2023). Influence of instructor humor on learning engagement in the online learning environment. *Social Behavior and Personality: An International Journal*, 51(2), 1–12. <https://doi.org/10.2224/sbp.12145>
- MacIntyre, P. D., Gregersen, T., & Mercer, S. (2019). Setting an agenda for positive psychology in SLA: Theory, practice, and research. *The Modern Language Journal*, 103(1), 262–274.
- Neroni, J., Meijs, C., Kirschner, P. A., Xu, K. M., & de Groot, R. H. (2022). Academic self-efficacy, self-esteem, and grit in higher online education: Consistency of interests predicts academic success. *Social Psychology of Education*, 25(4), 951–975.
- Reed, J., Pritschet, B. L., & Cutton, D. M. (2013). Grit, conscientiousness, and the trans-theoretical model of change for exercise behavior. *Journal of Health Psychology*, 18(5), 612–619.
- Shen, D., Cho, M. H., Tsai, C. L., & Marra, R. (2013). Unpacking online learning experiences: Online learning self-efficacy and learning satisfaction. *The Internet and Higher Education*, 19, 10–17. <https://doi.org/10.1016/j.iheduc.2013.04.001>
- Simamora, R. M. (2020). The Challenges of online learning during the COVID-19 pandemic: An essay analysis of performing arts education students. *Studies in Learning and Teaching*, 1(2), 86–103.
- Solhi, M., Derakhshan, A., & Ünsal, B. (2023). Associations between EFL students' L2 grit, boredom coping strategies, and emotion regulation strategies: A structural equation modeling approach. *Journal of Multilingual and Multicultural Development*. <https://doi.org/10.1080/01434632.2023.2175834>
- Sukmana, H. T., Kosasi, S., & Sulastris, K. (2021). The influence of grit on students' academic achievement: Mediated by online learning. In: *2021 9th International Conference on Cyber and IT Service Management (CITSM)* (pp. 1–6). IEEE.
- Tabachnick, B. G., Fidell, L. S., & Ullman, J. B. (2013). *Using multivariate statistics* (Vol. 6, pp. 497–516). Pearson.

- Taşpınar, K., & Külekçi, G. (2018). Grit: An essential ingredient of success in the EFL classroom. *International Journal of Languages' Education and Teaching*, 6, 208–226.
- Tsai, C. L., Cho, M. H., Marra, R., & Shen, D. (2020). The self-efficacy questionnaire for online learning (SeQoL). *Distance Education*, 41(4), 472–489. <https://doi.org/10.1080/01587919.2020.1821604>
- Wang, Y. (2023). Probing into the boredom of online instruction among Chinese English language teachers during the Covid-19 pandemic. *Current Psychology*. <https://doi.org/10.1007/s12144-022-04223-3>
- Wang, Y., Derakhshan, A., & Zhang, L. J. (2021). Researching and practicing positive psychology in second/foreign language learning and teaching: the past, current status and future directions. *Frontiers in Psychology*. <https://doi.org/10.3389/fpsyg.2021.731721>
- Wang, Y., Derakhshan, A., & AzariNoughabi, M. (2022). The interplay of EFL teachers' immunity, work engagement, and psychological well-being: Evidence from four Asian countries. *Journal of Multilingual and Multicultural Development*. <https://doi.org/10.1080/01434632.2022.2092625>
- Womble, J. (2008). E-learning: The relationship among learner satisfaction, self-efficacy, and usefulness. *The Business Review*, 10(1), 182–188.
- Wu, Y. T., Foong, L. Y. Y., & Alias, N. (2022). Motivation and grit affects undergraduate students' English language performance. *European Journal of Education Research*, 11(2), 781–794. <https://doi.org/10.12973/eu-jer.11.2.781>
- Xu, Y. (2022). The influence of EFL teachers' hope and trust on their academic grit: a theoretical review. *Frontiers in Psychology*. <https://doi.org/10.3389/fpsyg.2022.929841>
- Yavuzalp, N., & Bahcivan, E. (2020). The online learning self-efficacy scale: Its adaptation into Turkish and interpretation according to various variables. *Turkish Online Journal of Distance Education*, 21(1), 31–44.
- Zimmerman, W. A., & Kulikowich, J. M. (2016). Online learning self-efficacy in students with and without online learning experience. *American Journal of Distance Education*, 30(3), 180–191. <https://doi.org/10.1080/08923647.2016.1193801>

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Springer Nature or its licensor (e.g. a society or other partner) holds exclusive rights to this article under a publishing agreement with the author(s) or other rightsholder(s); author self-archiving of the accepted manuscript version of this article is solely governed by the terms of such publishing agreement and applicable law.