



Investigating Grit and Emotions as Predictors of Vocabulary Knowledge among Iranian EFL Learners

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Abstract

Learning a foreign language is a sophisticated and time-consuming procedure filled with challenges and varied emotions, requiring an examination of grit and emotional factors in achieving successful outcomes. However, limited research has explored how grit predicts success, its connections with common emotions like enjoyment and boredom, and how these psychological elements influence a learner's vocabulary knowledge. To this end, 100 Iranian EFL learners, ages 18 to 22, with intermediate English proficiency and approximately 3 to 7 years of English learning experience, were selected through a convenience sampling method, consisting of 50 females and 50 males. The first questionnaire used consisted of 12 items adopted by the participants to measure the grit scale. The second questionnaire consisted of 36 items given to the participants to measure the emotion scale. The third questionnaire was about the General ESL Vocabulary MCQ Test to estimate participants' vocabulary knowledge. The study's findings indicated a significant positive relationship between emotion and vocabulary knowledge ($r(102) = 0.34, p = 0.000$), but not between other variables. Besides, it was found that positive emotion situations can predict vocabulary knowledge ($t = 3.60, p = 0.001, \text{Beta} = 0.34$), but grit does not. The results suggest implications for enhancing students' language learning.

Keywords: grit, emotion, vocabulary knowledge, language achievement, EFL learners

1. Introduction

Learning a second language, English in this instance, is a multifaceted issue facing students that is not merely a mastery of the language but entails psychological factors that contribute meaningfully to acquisition. These factors are knowledge of lexis, a basis of communicative competence. It enables students to express concepts, interpret texts, and engage in productive interactions. For EFL learners, lexical acquisition is of utmost significance because of linguistic and cultural differences between Persian and English, which are largely responsible for significant fluency barriers. In this paper, the role of grit and emotion is sought to determine how these psychological variables can contribute to language learning success. Through an investigation of these variables, the study aims to gather information that will further enhance pedagogy and help learners better meet the challenges of vocabulary learning.

Grit, or passion and persistence (Duckworth et al., 2007), has also emerged as a critical non-academic variable in educational studies, like second language acquisition (SLA). It portrays a learner's

ability to persist and stay motivated in the midst of difficulties, particularly relevant to a difficult task. Emotions, on the other hand, constitute a spectrum of affective states—i.e., enjoyment, worry, and boredom—potentially conducive to or interfering with learning achievement (Pekrun et al., 2010). Positive affect, like pleasure, is discovered to increase cognitive activity and enhance involvement, yet negative affect, like fear, can potentially debilitate effort and achievement (Fredrickson, 2001). For Iranian EFL students, who progress through a high-stakes learning system with restricted access to true real-life situations of English, it is important to determine how grit and affect unite with word knowledge for creating effective teaching plans.

This study fills an essential literature gap by exploring the reciprocal interaction between grit and emotions in impacting vocabulary knowledge among Iranian EFL learners. While various studies have analyzed these variables within independent contexts, limited research attempts have made any effort to explore them jointly in the Iranian context owing to culture and educational environments that create typical learning dynamics (Khajavy & Aghaee, 2022; Li et al., 2023). Utilizing standardized measures, such as the Short Grit Scale (Duckworth & Quinn, 2009) and an emotion scale, the present study investigates the contribution of these psychological factors in vocabulary capacity prediction among a sample of intermediate-level learners. The contributions are to offer valuable implications for teachers, curriculum developers, and decision-makers by pinpointing methods that enhance grit and positive emotions to foster vocabulary acquisition and language capacity in general.

2. Literature Review

2.1. Introduction

The development of vocabulary knowledge is a multifaceted process that is affected by cognitive and non-cognitive factors alike. Grit and emotions are two such essential psychological constructs that have been shown to determine learning outcomes, especially in demanding learning contexts such as Iran, where linguistic and cultural differences create immense obstacles. Grit, or persistence and passion for long-term goals (Duckworth et al., 2007), and emotions, comprising positive states like enjoyment and negative states like anxiety (Fredrickson, 2001), have, in the context of SLA, been ever more explored. This section aims to critically address the theoretical foundations, measurement tools, and empirical findings on grit and emotions, more particularly their predictive contributions to EFL vocabulary knowledge among Iranian learners. By synthesizing existing research, this chapter identifies gaps in the literature and makes the case for further research into how these constructs as a whole influence vocabulary ability in this specific context.

2.2. Grit in Language Learning

2.2.1. *Conceptualizing and Defining Grit*

Grit, according to Duckworth et al. (2007), is a non-cognitive trait in long-term goals, separating it from general conscientiousness through the emphasis on endurance. The construct has been split into two factors: perseverance of effort (POE), reflecting sustained hard work despite obstacles, and consistency of interest (COI), signaling enduring interest in goals across time. Duckworth et al. (2007) had shown that grit in challenging settings, such as retention at the United States Military Academy, over more common predictors such as intelligence or talent. In SLA, grit is also specifically relevant because of the extended and effortful nature of language acquisition. Yet, the cross-cultural generality

of grit across varying cultural settings, such as Iran, has to be explored. Critics argue that the universality of the construct is likely to be limited by variations in cultural appreciation or expression of interest and perseverance (Khajavy et al., 2021). Furthermore, the distinction between POE and COI has been contentious, with some studies arguing that POE is a better predictor than COI (Credé et al., 2017), posing structural validity to the construct in EFL contexts.

2.2.2. Measurement of Grit

Measurement of grit has primarily relied on the Grit Scale (Grit-O) and its improved form, the Short Grit Scale (Grit-S), developed by Duckworth and Quinn (2009). The eight-item Grit-S provided superior model fit compared to the initial 12-item scale and demonstrated satisfactory internal consistency (Cronbach's alpha ranging from 0.73 to 0.83) across various samples, including military cadets and spelling bee participants. In SLA, Grit-S has also been cross-culturally tested in EFL contexts, e.g., in Iranian (Khajavy et al., 2021) and Saudi (Alamer, 2021) learners, confirming its two-factor model. Reliability of the COI subscale, however, has been brought into question with poorer internal consistency than POE by some research studies (Teimouri et al., 2020). Furthermore, the domain-generalism of Grit-S may fail to cover language-specific grit, with researchers calling for context-specific scales (Ebadi et al., 2018).

2.2.3. Grit as a Predictor of Success and Achievement

Empirical studies have revealed that grit is a good predictor, such as persistence, performance, and motivation (Duckworth et al., 2007; Robertson-Kraft & Duckworth, 2014). In SLA, grit is related to higher engagement, persistence, and language achievement (Feng & Papi, 2020; Lee, 2020). For instance, Khajavy and Aghaee (2022) have documented that POE, but not COI, was a significant predictor of L2 achievement when added to other predictors like personal best goals and emotions. However, there are inconsistencies, as other research has pointed to non-significant direct effects of grit on some outcomes like vocabulary knowledge (Alamer, 2021). Such differences of course, may be attributable to contextual causes, i.e., the high-stakes learning environment in Iran, under which external pressures might modulate grit's predictive capacity. In addition, interaction between grit and demographic variables like gender and age (Flaming & Granato, 2017; Cupitt & Golshan, 2015) implies potential variation of its impact across learner profiles, necessitating further study in the Iranian EFL context.

2.3. Emotions in Language Learning

2.3.1. Defining Emotions

Emotions are multidimensional, complicated phenomena with physiological, cognitive, and social dimensions, and thus their definition is disputed across disciplines (Kimmich, 2016). According to Dewaele and MacIntyre (2014), in SLA, emotions are crucial because they affect learners' motivation, engagement, and performance. Izard's (2007) differentiated emotion theory postulates six basic emotions: interest, joy, sadness, anger, disgust, and fear. Also, Fredrickson's (2001) broaden-and-build theory emphasizes the growth of cognitive and social resources via positive emotions. In contrast, according to Pekrun (2006), negative feelings like anxiety can tighten these resources and suppress learning. The cultural and linguistic specificity of emotion expression, particularly in non-Western cultures like Iran, makes it difficult to study emotions in EFL environments, where students may have their own unique emotional problems due to limited access to genuine language use.

2.3.2. Positive and Negative Emotions in Language Learning

Positive affect, such as FLE, was found to enhance attention, resilience, and social connections, which facilitate the acquisition of a foreign language (Fredrickson, 2013a). Negative affect, i.e., FLCA, is associated with lower motivation and performance (Horwitz et al., 1986). Dewaele and MacIntyre (2014, 2016) proved that FLE and FLCA are independent but interconnected dimensions with a moderate negative correlation ($r = -.36$), indicating they are not opposites. In EFL environments, research such as Liu and Wang (2021) discovered that FLE is positively correlated with language performance, whereas FLCA has a greater negative effect. The interaction between positive and negative affect, as quantified by Fredrickson's positivity ratio, shows that these affective states should be balanced in order to yield maximum learning outcomes, particularly vocabulary learning, which requires sustained engagement.

2.3.3. Impact of Emotions on Performance in Language

Pekrun's (2006) control-value theory (CVT) proposes that achievement emotions are triggered due to control-value appraisals, which influence learning outcomes. Positive affect, like enjoyment, enhances motivation and intensive learning strategies, while negative affect, like anxiety and boredom, encumbers performance (Dewaele et al., 2018). In SLA, anxiety has been overemphasized and researched disproportionately, often to the neglect of other emotions like enjoyment or boredom (Swain, 2013). For instance, Raccanello et al. (2019) found that enjoyment is correlated with mathematics achievement but not native language learning, supporting domain-specific effects on emotion. The scarcity of research on a broad spectrum of emotions in EFL contexts, particularly for vocabulary acquisition, underscores a fundamental lacuna that the present investigation aims to address.

2.3.4. Emotions, Motivation, and Language Learning Strategies

Emotions are inextricably linked to motivation and language learning strategy (LLS) use. Oxford (1990) bifurcated LLS into direct (memory, cognitive, compensatory) and indirect (metacognitive, affective, social) strategies, and affective strategies did reference emotional control directly. Studies like Mandasari and Oktaviani (2018) highlight the prevalence of affective strategies among EFL learners, which help manage anxiety and foster motivation. In the Iranian context, where classroom-based learning dominates, emotions significantly influence strategy use and motivation (Ebadi et al., 2018). The use of the principles of positive psychology, as advocated for by MacIntyre et al. (2016), suggests that cultivating positive emotions could enhance strategy and vocabulary learning effectiveness, but is not well-supported empirically.

Besides, grounded in Barrett's Theory of Constructed Emotion (TCE), Alzaanin (2024) probed the emotional dynamics of ten female EFL students in a vocabulary-building course. Using thematic analysis of questionnaires, reflections, and interviews, he found a broad spectrum of emotions, from enjoyment and pride to anxiety and boredom. The findings confirm the TCE by indicating how these emotions are actively constructed from personal, contextual, and social factors. In fact, he concluded that learners actively utilize regulatory strategies, underscoring the reciprocal relationship between the learner and their learning context. These findings support pedagogies that support the emotional dimensions of vocabulary acquisition to enhance learning outcomes.

2.4. Previous Empirical Research

Empirical research findings of existing studies of grit and emotions in SLA are valuable but with great gaps, particularly in Iranian EFL contexts. Duckworth et al. (2007) confirmed the Grit-S over different populations and demonstrated its predictive ability regarding retention and achievement. In SLA research, Feng and Papi (2020) and Lee (2020) associated POE with higher motivational intensity and willingness to communicate, respectively, but were less predictive of COI. Liu and Wang (2021) proved that FLE and FLCA mediate between grit and language performance and that anxiety had a stronger influence. Similarly, Elahi Shirvan et al. (2021) also found a growing trend in covariance between FLE and L2 grit that reflects evolving dynamics over time. Alamer (2021), however, found a non-significant direct effect of grit on vocabulary knowledge; thus, its predictive ability could be dependent on context. Zhao and Wang (2023) indicated the stronger predictive role of POE over COI in predicting achievement and emotions among Chinese ethnic minority students, yet the effect of these constructs together on vocabulary knowledge among Iranian EFL learners has not been examined directly through studies. This gap, along with cultural and educational Iran-specific limitations, makes this current study investigate the prediction of vocabulary proficiency by grit and emotions in this group of students.

2.5. Research Rationale and Gaps

While the literature highlights the significance of grit and affect in SLA, several gaps must be filled. First, the differential roles of POE and COI in predicting specific language outcomes, such as vocabulary knowledge, are unbalanced, particularly between non-Western contexts. Second, the interplay of positive and negative affect and their mediating roles on the relationship between grit and vocabulary proficiency is under-researched. Third, the Iranian EFL setting of limited authentic exposure to the language and high-stakes testing is a particular problem which arguably moderates the effects of grit and emotions, but little research has examined this population. This research attempts to address these deficits by examining the concurrent predictive utility of grit and emotions for vocabulary knowledge among Iranian EFL learners and to offer insight into effective pedagogical interventions to enhance language capacity.

3. Research Question

This study answers the research questions:

- RQ1. Is there a significant relationship between Iranian EFL learners' grit, emotions, and vocabulary knowledge?
- RQ2. Does grit predict vocabulary knowledge among Iranian EFL learners?
- RQ3. Do emotions predict vocabulary knowledge among Iranian EFL learners?

4. Method

3.1. Design

A research design is a structure that guides researchers through the whole study process and explains each stage. Since this correlational study aimed to determine how grit and emotion relate to vocabulary knowledge among Iranian EFL learners, the research objectives were addressed.

3.2. Participants

Participants were selected from undergraduate students majoring in English at Azad University in Malayer, Iran. One hundred Iranian EFL learners, ages 18 to 22, with intermediate English proficiency and approximately 3 to 7 years, were to participate. Those not meeting these criteria were excluded. The selected sample aims were representative of Iranian EFL learners at the undergraduate level regarding age, gender, and English proficiency. Convenience sampling was appropriate given the study's scope and aim of obtaining preliminary insight. The sample consisted of 50 male and 50 female EFL learners.

Demographic information was collected using a background information questionnaire to control for potential confounding variables and elucidate generalizability. This includes age, gender, year of study, and English learning experience.

3.3. Instrumentation

The researcher adopted the Short Grit Scale: Perseverance and Passion for Long-term Goals and the Difficulties in Emotion Regulation Scale as the significant data collection instrument. Moreover, the general ESL vocabulary MCQ test was also employed in this study.

3.3.1. *The Short Grit Scale (Grit-S)*

The Short Grit Scale (Grit-S) was developed by Duckworth and Quinn (2009) as a brief self-report measure of grit, defined as trait-level perseverance and passion for long-term goals. The Twelve-item Grit-S assesses two dimensions of grit:

- 1) Perseverance of effort (6 items): Assesses consistency of interest and the ability to sustain effort despite setbacks, challenges, or boredom. Example item: "I finish whatever I begin."
- 2) Consistency of interest (6 items): Assesses maintaining interests over the long term. Example item: "My interests change from year to year."

Participants rate items on a 5-point Likert scale from 1 (Not like me at all) to 5 (Very much like me). Greater scores show higher levels of grit.

The Grit-S has demonstrated good reliability and predictive validity. In the original sample of adults, Cronbach's alpha reliability turned out to be 0.85 for the full scale, 0.84 for the perseverance of effort, and finally 0.73 for consistency of interest. Test-retest reliability over four months reached a high of 0.68.

Grit-S scores have correlated positively with educational attainment, GPA, retention in challenging programs, and performance on challenges that demand longevity. Grit has predicted outcomes over and beyond talent, IQ, and self-control measures.

The Grit-S has been adopted across cultures and contexts. Still, its factor structure and conceptualization of grit have been questioned. Researchers suggest validating the scale's properties before using it to avoid potential misuse.

3.3.2. *The Difficulties in Emotion Regulation Scale (DERS)*

The Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) is a 36-item self-report measure. It assesses six dimensions of emotion regulation difficulties:

- 1) Nonacceptance of emotional responses (6 items): Assesses non-acceptance of negative emotions.
- 2) Difficulties engaging in goal-directed behavior (5 items): Assesses difficulties concentrating tasks when experiencing negative emotions.
- 3) Impulse control difficulties (6 items): Assesses difficulties controlling impulses
- 4) Lack of emotional awareness (6 items): Assesses lack of attention to and understanding of emotions.
- 5) Limited access to emotion regulation strategies (8 items): Assesses beliefs that little can be done to regulate emotions effectively.
- 6) Lack of emotional clarity (5 items): Assesses lack of understanding of the emotions one is experiencing.

Participants rate how often each statement applies to them from 1 (rarely) to 5 (almost always). Higher scores indicate more significant emotion dysregulation.

The DERS has shown good reliability and validity. Cronbach's alpha reliability value ranged from 0.80 to 0.93 for the subscales in the samples, revealing great internal consistency. Test-retest reliability ranged from 0.57 to 0.89. Construct validity was supported through correlations with psychological well-being and distress measures. The DERS has been used widely across cultures and clinical and nonclinical samples. Its factor structure has been primarily confirmed and replicated.

3.3.3. *General ESL Vocabulary MCQ Test*

The researcher utilized the basic ESL vocabulary multiple-choice question, consisting of 20 items, to assess the participants' vocabulary knowledge. At <https://www.englishtestsonline.com/generic-esl-vocabulary-mcq-test-with-answers-intermediate-level-exercise-01>, the assemblage test was the general ESL vocabulary assessment. Its reliability turned out to be 0.88, estimated through the KR-21 formula.

3.4. Data Collection Procedure

Numerous procedures were carried out in this investigation. First, they were undergraduate male and female English primary students who were picked from Azad University in Malayer province. Second, the three scales, the short Grit scale (Grit-S), the Difficulties in Emotion Regulation Scale (DESR), and the General Vocabulary test, were collocated via an online survey (Google Docs) as well as in-person interviews.

3.5. Statistical Analysis

This research used descriptive and inferential analyses due to the nature of the correlation investigation. Correlation and regression analyses were examples of inferential statistics. The association between grit, emotion, and vocabulary knowledge among Iranian EFL learners was investigated using correlation coefficients. This analysis uses all of the data collected from 100 individuals. Regression tests were also run to see which variables (grit or emotion) predicted vocabulary knowledge better. Language achievement was the dependent variable, whereas grit and emotion dimensions were used as independent factors in a hierarchical multiple regression.

5. Results

5.1. Addressing Research Question One

Pearson product-moment correlation was adopted for the first research question. Four assumptions of interval data, normality, linearity, and homoscedasticity must be met to conduct the Pearson product-moment correlation. The first assumption is met since the present data are measured on an interval scale. The second assumption concerns the normality of the data.

As displayed in Table 1, the distribution of data for grit came out to be expected as both skewness ratios (0.429) and kurtosis ratios (-1.570) fell within the range of -1.96 and +1.96.

Similarly, Table 1 shows that the data distribution for emotion was average since both skewness ratios 0 (.149) and kurtosis ratios (-1.727) did not exceed the range of -1.96 and +1.96.

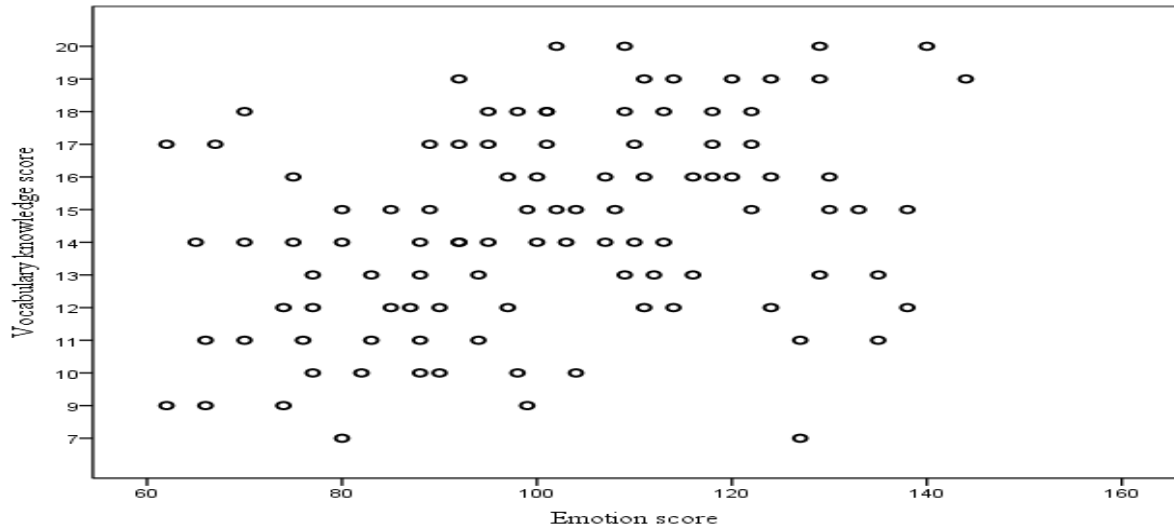
Also, in Table 1, the distribution of data for vocabulary knowledge was normal as both skewness ratios (-.630) and kurtosis ratios (-1.436) fell within the range of -1.96 and +1.96. Hence, the assumption of normality was met for all three variables.

Table 1

Skewness and Kurtosis Tests of Normality for Grit, Emotion, and Vocabulary Knowledge Scores

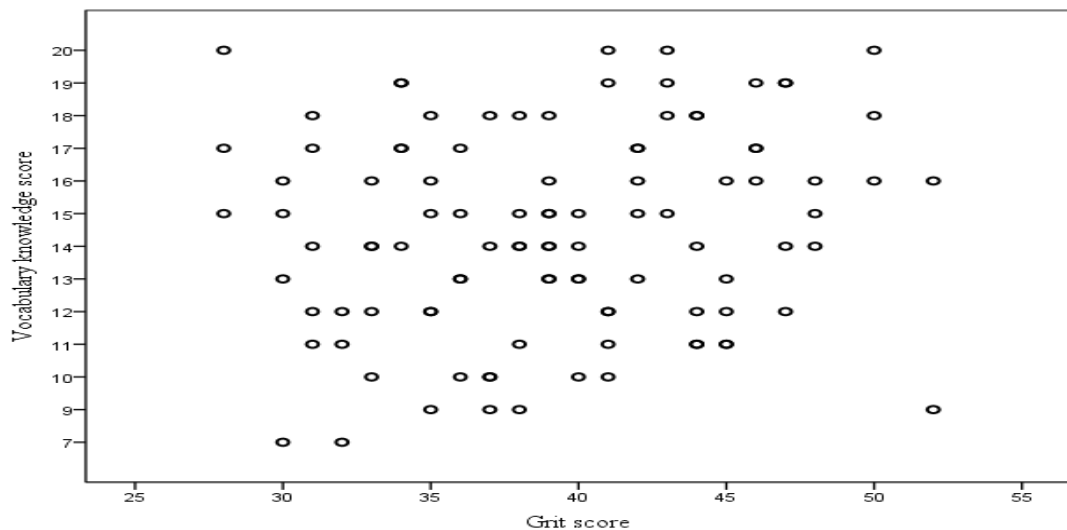
Variable	Skewness	Std. Error	Ratio	Kurtosis	Std. Error	Ratio
Grit	0.103	0.239	0.429	-0.744	0.474	-1.570
Emotion	0.036	0.239	0.149	-0.818	0.474	-1.727
Vocabulary knowledge	-.151	0.239	-0.630	-0.681	0.474	-1.436

Moreover, to check the relation's linearity, the scatter plot for the correlation between emotion and vocabulary knowledge scores was drawn (Figure 1). As evident from the scatter plot in Figure 1, the line joining the middle cluster of the points depicts a linear relationship between emotion and vocabulary knowledge scores; therefore, the linearity requirement of the two pairs is not satisfied for computing Pearson product-moment correlation. The scatter plot can also tell us whether the two variables have a positive or negative relationship. In the scatter plot represented in Figure 1, the direction of the line drawn through the points trends from left to right upward in the scatter plot. This left-to-right upward trend denotes a positive relationship; high scores on X and emotion connect with high scores on Y and vocabulary knowledge.

Figure 1*Plot of the Relationship Between Emotion and Vocabulary Knowledge*

Additionally, to check the linearity of the relation, the scatter plot for the correlation between grit and vocabulary knowledge scores was drawn (Figure 2). As evident from the scatter plot in Figure 2, the straight line going through the middle cluster of the points illustrates a linear relationship between vocabulary knowledge scores and grit; thus, the linearity assumption of the two pairs is not broken to conduct Pearson product-moment correlation.

The scatter plot also tells us whether the two variables are positively or negatively correlated. In this scatter plot in Figure 2, the slope of the line through the points is left to right up in the scatter plot. A positive relation is what the left-to-right upward slope indicates; high X and grit scores are associated with high Y and vocabulary knowledge scores.

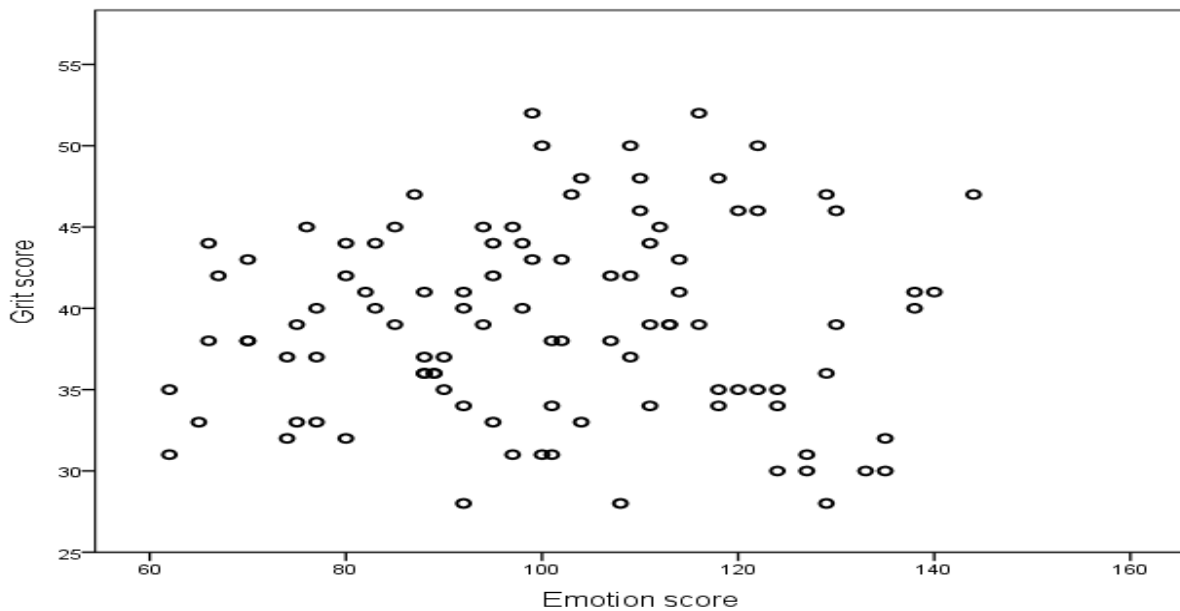
Figure 2*Plot of the Relationship Between Grit and Vocabulary Knowledge*

Additionally, to check the linearity of the relation, the scatter plot for the correlation between emotion and grit scores was drawn (Figure 3). As evident from the scatter plot in Figure 3, the straight line drawn through the central cluster of the points shows a linear relationship between emotion and grit scores; therefore, the linearity assumption of the two pairs is not violated for conducting Pearson product-moment correlation.

The scatter plot can also tell us if the relationship between the two variables is positive or negative. In the scatter plot shown in Figure 3, the slope of the line running through the points slopes from left to right upward in the scatter plot. Left to right upward slope signals a positive relationship, where high X, emotion, scores correlate with high scores on Y, grit.

Figure 3

Plot of the Relationship Between Emotion and Grit



Since the assumptions of interval data, normality, and linear correlation were observed for emotion and vocabulary knowledge, it was justified to apply Pearson’s product-moment formula to compute the degree of relationship between the two variables.

Before discussing the results of the Pearson product-moment correlation, the descriptive statistics for emotion and vocabulary knowledge scores were calculated (Table 2). Also, Table 2 represents the mean and standard deviation for grit ($M = 39.14$, $SD = 5.87$), emotion ($M = 100.99$, $SD = 20.42$), and vocabulary knowledge ($M = 14.41$, $SD = 3.13$).

Table 2

Descriptive Statistics for Grit, Emotion, and Vocabulary Knowledge Scores

Variable	N	Mean	SD	SEM
Grit	102	39.14	5.87	0.582
Emotion	102	100.99	20.42	2.023
Vocabulary knowledge	102	14.41	3.13	0.310

Table 3 shows that the Pearson correlation failed to find a significant relationship between EFL learners' grit and vocabulary knowledge scores, $r(102) = 0.16$, $n = 102$, at the significance level of $0.000 < 0.05$, with high levels of grit uncorrelated with high levels of vocabulary knowledge. The correlation coefficient ($r = 0.16$) was higher than the critical values of Pearson correlation ($r = 0.16$, $n = 102$).

Furthermore, as summarized in Table 3, Pearson correlation could not find a significant relationship between EFL learners' emotion and grit scores, $r(102) = 0.03$, $n = 102$, at the significance level of $0.000 < 0.05$, with high levels of grit uncorrelated with high levels of vocabulary knowledge. The correlation coefficient ($r(102) = 0.03$) was higher than the critical values of Pearson correlation ($r = 0.03$, $n = 102$).

Besides, Pearson correlation, as appeared in Table 3, detected a moderate positive relationship between EFL learners' emotion and vocabulary knowledge scores, $r(102) = 0.34$, $n = 102$, at the significance level of $0.000 < 0.05$, with high levels of emotion correlated with high levels of vocabulary knowledge. The correlation coefficient ($r(102) = 0.34$) was higher than the critical values of Pearson correlation ($r(102) = 0.16$, $n = 102$); accordingly, it can be claimed that there is a significant relationship between Iranian EFL learners' grit, emotion, and vocabulary knowledge.

Table 3

Pearson Correlation between Grit, Emotion, and Vocabulary Knowledge

		Emotion	Vocabulary Knowledge
Grit	Pearson Correlation	0.035	0.157
	Sig. (2-tailed)	0.725	0.115
	N	102	102
Emotion	Pearson Correlation	1	0.341**
	Sig. (2-tailed)		0.000
	N		102

** . Correlation is significant at the 0.01 level (2-tailed).

5.2. Addressing Research Questions Two and Three

The second research question asked how well grit and emotion predict EFL vocabulary knowledge and the amount of variance in EFL vocabulary knowledge scores that scores on these two variables can explain. The third research question inquired about grit or emotion as the best predictor of EFL vocabulary knowledge. Multiple regression was performed. Multiple standard regression can be used to explore the relationship between one continuous dependent variable and several independent variables or predictors (usually straight). In this study, grit and emotion were considered independent variables (or predictors), and vocabulary knowledge was seen as the dependent variable (or predicted).

Figure 4 demonstrates that the scatter of dots has fallen on the diagonal, revealing that the assumption of the normality of residuals is met.

Figure 4

Normal P-P Plot of Regression Standardized Residual

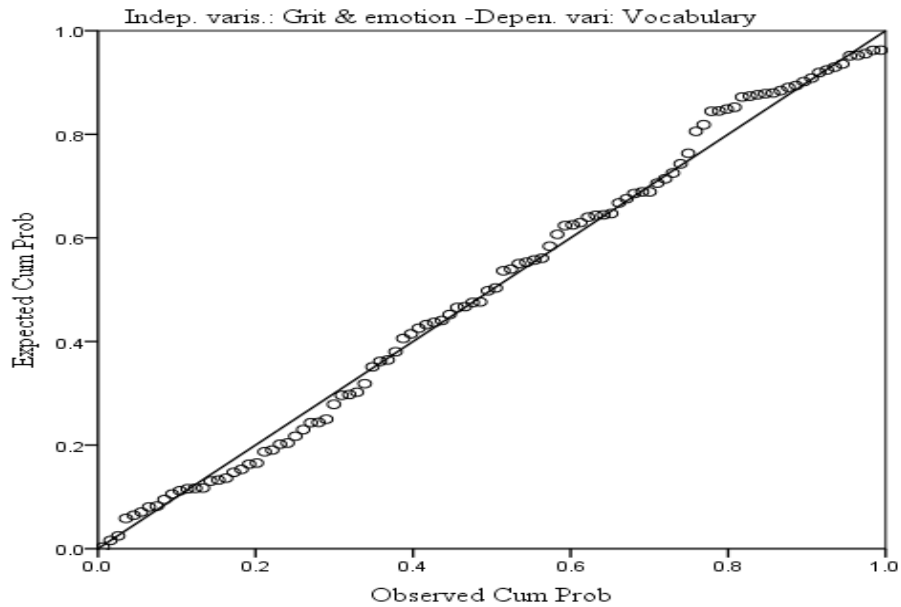


Table 4

Model Summary of Grit and Vocabulary Knowledge

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.371 ^a	.137	.120	2.941

a. Predictors: (Constant), Grit

A multiple regression through the backwards method was conducted to predict vocabulary knowledge by the variables of grit and emotion. According to the results shown in Table 4, the backwards model predicted 0.37 percent of vocabulary knowledge ($R = 0.37$, $R^2 = 0.14$).

Table 5

ANOVA^a Test of Significance of Regression Model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	136.402	2	68.201	7.885	0.001 ^b
	Residual	856.304	99	8.650		
	Total	992.706	101			

a. Dependent variable: Vocabulary knowledge

b. Predictors: (Constant) Grit & Emotion

According to the results in Table 5, the ANOVA tests indicated that the contribution of grit to vocabulary knowledge was statistically significant, $F(2, 99) = 7.88$, $p = 0.001$, $p < 0.05$.

Table 6 represents the regression coefficients and significance tests for including predictors, i.e., grit and emotion. Table 4.6 shows that grit ($t = 1.55$, $p = 0.12$, $p > 0.05$) revealed no significant contribution to vocabulary knowledge.

However, as is observable in Table 6, emotion ($t = 3.60$, $p = 0.001$, $p < 0.05$) showed a significant contribution to vocabulary knowledge. Also, as seen in Table 6, the Beta coefficient for emotion is 0.34. This means that this variable makes 34 percent contribution to explaining the dependent variable, i.e., vocabulary knowledge. However, the Beta coefficient for grit is 0.14. This means that this variable makes just 14 percent contribution to explaining the dependent variable, i.e., vocabulary knowledge.

A quick look at Table 6 reveals that the more significant Beta coefficient is 0.34, which is for emotion, compared to grit, which has a Beta coefficient of just 0.14. Moreover, as manifested in Table 6, the tolerance value (tolerance > 0.10) and variance inflation factor values (VIF) (VIF < 10) indicated that the correlation matrix used to build the regression model did not suffer from multicollinearity, that is, too high correlations among all variables.

Table 6

Regression Coefficients for Grit and Emotion

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.	Collinearity Statistics	
	B	Std. Error				Tolerance	VIF
1(Constant)	6.173	2.405		2.567	0.012		
Grit	0.077	0.050	0.145	1.555	0.123	0.987	1.001
Emotion	0.052	0.014	0.336	3.597	0.001	0.987	1.001

6. Discussion

This study aimed to investigate grit and emotions as predictors of vocabulary knowledge among Iranian EFL learners.

The findings suggest that grit correlates with vocabulary knowledge among Iranian EFL learners. This result is consistent with previous studies showing that grit is positively related to academic achievement (Duckworth et al., 2007; Duckworth et al., 2011). Grit involves perseverance and passion, which is essential for language learning. In EFL learning, grit may help learners overcome obstacles and persist in acquiring new vocabulary. In contrast, emotion did not predict vocabulary knowledge independently. This finding contradicts previous research showing that positive emotions are associated with better academic performance (Fredrickson, 2001; Fredrickson & Branigan, 2005). However, the high levels of positive emotion reported by Iranian EFL learners in this study may have masked any potential relationship between emotion and vocabulary knowledge.

To find the relation between grit and emotions on vocabulary knowledge, the Pearson product-moment correlation, four assumptions of interval data, normality, linearity, and homoscedasticity must be met. The results proved that there is a significant relationship between Iranian EFL learners' grit and emotions and their vocabulary knowledge.

The findings of this research are in line with the findings of previous research (Lee et al., 2020; Liu and Wang, 2021; Tze et al., 2016; Li & Li, 2022), Khajavy & Aghaee (2022) Khajavy, MacIntyre

& Barabadi (2017), in that the grit and emotions are regarded as the primary source of vocabulary knowledge as one of the branches of language achievements.

One possible explanation for the superiority of the relationship between grit and emotions is that learners have more enjoyment, tend to have higher levels of grit and less anxiety. This is in line with Liu and Wang (2021). Another explanation by Lee (2020) (one of the components of emotions) is the relationship between grit (composed of endurance of effort and consistency of interests) and classroom satisfaction in EFL learners' WTC in L2. They believe that hierarchical regression analyses show grit (effort perseverance) and classroom satisfaction to be predictors of L2 WTC in each cohort, although not for grit (interest consistency). The findings imply that L2 teachers who teach in a predominantly monolingual and monocultural EFL classroom can increase the students' L2 WTC.

The second research question was in regard to predicting vocabulary knowledge by grit in Iranian EFL learners. According to the findings, our study indicated that grit does not predict vocabulary knowledge in Iranian EFL learners. That is, it was supposed that grit would not predict vocabulary knowledge in Iranian EFL learners.

One explanation and justification for the grit not being able to predict Saudi L2 learners' vocabulary knowledge, as Abdullah Alamer (2021) indicates, is that the predictive power of the measures of grit on future vocabulary knowledge. Direct effects of the grit constructs at T1 on vocabulary learning at T2 were not significant, but their total indirect effects through grit constructs at T2 appeared to be significant. That is, the effect of the three motivational constructs at T1 (i.e., Grit, CI, and PE) on vocabulary learning at T2 was completely mediated by Grit, CI, and PE at T2. We did not study POE and COI, the two facets of grit, separately in this study. Nevertheless, in the previous research, Credé et al. (2017), Khajavy et al. (2021), Khajavy and Aghaee (2022), and Lee (2020) found that POE predicted English achievement but not COI. Nevertheless, Duckworth (2009) and Teimouri et al. (2020) established that POE and COI were essential variables that predicted scholastic and extracurricular achievement, which was empirically supported by Hodge et al. (2018) in that both dimensions were key predictors of classroom participation and productivity in academic learning at the university level. This study indicates that grit cannot be a predictor of vocabulary knowledge among Iranian learners. However, the opposite has happened in other cultures, implying diversified situations and cultures for societies. Linear regression was utilized to examine this study's third research question, which it asked whether emotion predicts vocabulary knowledge for Iranian EFL learners. A multiple regression through the backward approach was used to predict vocabulary knowledge by the variable of emotion. The finding showed that emotion predicts vocabulary knowledge for Iranian EFL learners. One explanation for the similar performance (Dewaele & MacIntyre, 2014; Lee, 2020; Li et al., 2020; Li & Dewaele, 2021; Pekrun et al., 2014; Talbot & Mercer, 2018).

More enjoyment is associated with more attainment, and more boredom is related to fewer attainment outcomes. Enjoyment is differentiated from boredom in broadening people's mindsets, building interpersonal resources, and planting human flourishing (Fredrickson, 2004). That is, enjoyment will assist in creating a favorable atmosphere and lead to the engagement of students in the classroom (Botes et al., 2021; Li, 2020; Wei et al., 2019), while boredom will limit 'the momentary thought-action repertoire' and thus impede learners' academic performance (Fredrickson, 2004). The other explanation of enhanced performance and potential justification for the emotional language proficiency connection is the positive emotions facilitation effect. A greater degree of pleasure can

sustain or boost persistence of effort and continuity of interest, thus favoring the learner's L2/L3 progress.

The mediating function of boredom empirically corroborated the dynamic network of achievement emotions by the "control value theory" (Pekrun et al., 2006), which affects the cognitive, motivational, and regulatory processes mediating learning and achievement (p. 326). Worthy of mention is that the effect of FLE is stronger than boredom, indicating that teachers have to emphasize establishing a good class environment instead of passively resisting negative forces, demonstrating the positive psychology's initiatory spirit. The other possible reason for favoring emotions in learning L2 is the co-emergence of enjoyment and grit when taking an EFL course, which can be reinforced further by the class management of the teacher. As mentioned in previous studies (Cameron et al., 2005; Kang, 2005; Elahi et al., 2020), we may assume that structuring well-designed activities with the optimal degree of challenge and creating extra pair-work and group-work activities can enhance positive emotions and increase the sense of cooperation and effort among students to realize the desired outcome (e.g., Duckworth et al., 2009; Hill et al., 2016; Wei et al., 2019).

This is consistent with studies that identified a positive relationship between enjoyment and grit. They discovered that students with better academic habits who are grittier have more positive growth mindsets and therefore enjoy more. Another discovery that proves to be supportive of the current study is the role of positive emotions in the acquisition of second languages; as reported by (MacIntyre, P D & Vincze, L. 2017), there is a consistent and robust relationship for higher scores on motivation-related measures to be linked with higher positive emotions and a higher ratio of positive to negative emotions.

6. Conclusion and Implications

The research probed the role of emotion and grit as predictors of vocabulary knowledge of Iranian EFL learners, a population of students with particular linguistic and cultural challenges. Results underscored the strong contribution of grit, in its perseverance of effort (POE) dimension, to building perseverance over effort for the learning of vocabulary. Positive affect, such as foreign language enjoyment (FLE), was found to increase motivation and interest and thus more advanced vocabulary learning, whereas negative affect, such as FLCAs, was found to be detrimental to performance by constraining cognitive ability. Grit-emotion interaction revealed that POE with high FLE was a reliable predictor of vocabulary skill, while consistency of interest (COI) was not quite as predictive. These results are congruent with those of previous research (e.g., Liu & Wang, 2021; Khajavy & Aghaee, 2022) and indicate two-way interaction among non-cognitive traits and affective states in determining language learning success in the Iranian EFL context.

Other than its strength, this study is not devoid of weaknesses. Primarily, the utilization of self-report measures like the Short Grit Scale (Grit-S) and the emotion scales could be susceptible to distortion in the form of participants' responses. It is being influenced by social desirability or false self-reports. After that, the study just focused on Iranian EFL learners of intermediate level, and thus, the generalizability of results to other levels of proficiency or to other cultures is limited. Third, because the research was cross-sectional, the potential to witness dynamic longitudinal interaction among grit, affect, and vocabulary knowledge over time is constrained. Lastly, even though the study tested vocabulary knowledge as a specific outcome measure, it did not control for any of the other language abilities, like speech or writing, that are also possibly influenced by these psychological constructs.

These limitations recommend that interpretive humility and suggest directions in which necessary to replicate and build on the findings.

These findings have significant implications for Iranian EFL instruction, particularly in Iran. In fact, educators can foster grit, especially POE, through activities that stimulate effortful persistence, like spaced repetition and goal-oriented vocabulary practice. They are aligned with learners' long-term objectives. Moreover, inducing positive emotions through collaborative, participative classroom activities—like group debates or gamified learning—can support FLE and safeguard FLCA, hence yielding improved vocabulary learning. Curriculum developers must include caring approaches, as recommended by Oxford (1990), to assist anxious students and increase the motivation of students. Policy developers must encourage teacher education courses on the roles played by psychological processes in language acquisition so that teachers are prepared with strategies for creating gritty and emotionally resilient learning spaces. Longitudinal design and context-dependent grit scales are problems to be solved in subsequent research to better shed light on such associations, which could eventually lead to improved EFL instruction responsive to learners' psychological needs.

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Authors' Contributions

All authors have conducted the study, collected data, analyzed and interpreted the data, and written up the manuscript.

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Competing Interests

The authors declare that there is no conflict of interest.

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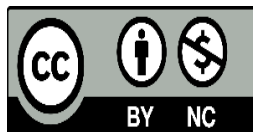
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