

# Acquisition of Vocabulary Among Arab ESL Learners: An Empirical Analysis of Affective Factors

Jamilah Maflah Alharbi<sup>1</sup>

<sup>1</sup>Department of English, Majmaah University, AL-Majmaah 11952, Saudi Arabia

Correspondence: Jamilah Maflah Alharbi, Department of English, Majmaah University, AL-Majmaah 11952, Saudi Arabia. E-mail: jm.alharbi@mu.edu.sa

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## Abstract

This research investigates the multifaceted impact of affective factors on English vocabulary acquisition among Arab learners of English as a Second Language (ESL). A quantitative, cross-sectional research design was employed, involving 165 Arab ESL learners enrolled at a language center in Kuala Lumpur. Data were collected using a systematic questionnaire and vocabulary tests and analyzed through Structural Equation Modeling (SEM) with Smart PLS software (Version 4.0). The methodology validated constructs and tested hypothesized relationships. Results demonstrated that intrinsic motivation, self-confidence, and attitudes significantly enhance vocabulary size and depth, while anxiety had a negligible negative effect. Attitudes toward the target language showed the strongest influence, followed by intrinsic motivation and self-confidence. Together, these affective factors explained a significant variance in vocabulary acquisition. This study highlights the importance of creating supportive, culturally relevant learning environments tailored to Arab learners. By addressing affective dimensions, educators and policymakers can foster more effective vocabulary acquisition strategies. These findings contribute to theoretical advancements in second language acquisition (SLA) and offer practical insights for ESL pedagogy.

**Keywords:** ESL vocabulary acquisition, affective factors, motivation, structural equation modeling, Arab Learners

## 1. Introduction

Vocabulary acquisition is acknowledged as a fundamental aspect of second language acquisition (SLA), essential for effective communication and understanding. Vocabulary is a crucial element in achieving proficiency in a second language (L2) and significantly impacts overall language mastery and communicative competence (Nation & Coxhead, 2022; Sun et al., 2023). Notwithstanding its importance, vocabulary acquisition is a complex and arduous process, especially for learners in English as a Foreign Language (EFL) and English as a Second Language (ESL) environments. In these settings, insufficient vocabulary knowledge often hinders learners' ability to progress academically and engage in meaningful communication (Milton & Masrai, 2020; Szabo et al., 2020). Research consistently underscores that fostering positive emotional states not only enhances learner engagement but also facilitates meaningful vocabulary retention (Lee, 2023).

For Arab learners of English, vocabulary acquisition presents additional challenges that go beyond cognitive processes. Emotional and psychological factors such as motivation, anxiety, self-confidence, and attitudes play a critical role in shaping their ability to engage with and retain new vocabulary (Al Ghazali, 2017; Midraj et al., 2007; AbuSahyon et al., 2023; MacIntyre & Gregersen, 2021; Al-Ahdal & Alharbi, 2021). These affective dimensions necessitate culturally and contextually sensitive pedagogical approaches to foster effective vocabulary learning. Motivation, in particular, has been identified as a powerful driver of EFL proficiency, while anxiety poses significant obstacles to progress (Alrabai, 2022). Studies suggest that interventions targeting motivation and anxiety reduction are particularly effective in enhancing language learning outcomes.

Additionally, Arab ESL students encounter distinct cultural and language obstacles. Vocabulary acquisition is impeded by the structural differences between Arabic and English, which include phonology, syntax, and morphology (Alrasheedi, 2020; AbuSahyon et al., 2023). Learning English can be further complicated by cultural attitudes towards the language, which are influenced by historical, educational, and societal contexts (Midraj et al., 2007; Alrabai, 2016a). According to studies conducted among Saudi English majors (Alharbi, 2021; Alqahtani, 2019), these difficulties frequently show up as deficiencies in both the quantity and quality of words known.

Motivation, whether intrinsic or extrinsic, plays a pivotal role in vocabulary acquisition. Intrinsic motivation, driven by personal satisfaction and interest, fosters deeper engagement with language tasks, while extrinsic motivation, linked to external rewards, provides tangible goals for learners (Midraj et al., 2007; Alrabai, 2016b). Conversely, anxiety—stemming from fear of failure or negative evaluation—can impede vocabulary acquisition by undermining learners' confidence and willingness to participate (Al Ghazali, 2017; Alrasheedi, 2020). In contrast, self-confidence empowers learners to take risks and actively engage in language tasks, promoting growth in both vocabulary size and depth (Midraj et al., 2007; AbuSahyon et al., 2023). These affective factors interact dynamically, with high

motivation and positive attitudes often buffering the negative effects of anxiety on learning outcomes (Gardner, 1985; Bandura, 1997; Zayed & Al-Ghamdi, 2019).

Despite the importance of these affective factors, much existing research on vocabulary acquisition has taken a fragmented approach, often examining motivation, self-confidence, attitudes, and anxiety in isolation. Such studies have largely emphasized descriptive and experimental strategies while neglecting the combined and interactive effects of these factors (Nation & Laufer, 2020). Moreover, while vocabulary breadth has been extensively studied, vocabulary depth—encompassing nuanced meanings and word relationships—has received comparatively less attention, despite its critical importance for advanced language proficiency (Lee & Macaro, 2022).

The interplay of cognitive, emotional, and cultural factors underscores the need for comprehensive research to address these challenges. Educators must consider the collective impact of affective dimensions when designing curricula and instructional strategies, especially for Arab learners in multicultural educational contexts like Malaysia. Without a holistic understanding of these factors, it is challenging to create supportive learning environments that foster positive attitudes, reduce anxiety, and build confidence.

This study seeks to address these gaps by employing a robust methodological framework to examine the multifaceted impact of affective factors—intrinsic motivation, self-confidence, attitudes, and anxiety—on vocabulary acquisition among Arab ESL learners. Using Structural Equation Modeling (SEM), this research explores the interactive relationships among these factors and their effects on both vocabulary size and depth. The findings aim to contribute to theoretical advancements in SLA and offer practical recommendations for culturally sensitive teaching strategies to improve vocabulary learning outcomes for Arab ESL learners.

### 1.1 Study Objectives

This study aims to

- 1- identify the dominant affective factors (e.g., motivation, anxiety, self-confidence, attitudes) experienced by Arab ESL learners in the process of English vocabulary acquisition.
- 2- examine the relationship between different types and levels of motivation (e.g., intrinsic, extrinsic, integrative, instrumental) and the English vocabulary acquisition outcomes of Arab ESL learners.
- 3- Determine the correlation between various dimensions of language anxiety (e.g., speaking anxiety, listening anxiety, test anxiety).
- 4- To assess the influence of self-confidence in learning English on English vocabulary acquisition among Arab ESL learners.

### 1.2 Study Questions

- 1- What are the most dominant affective factors (e.g., motivation, anxiety, self-confidence, attitudes) experienced by Arab ESL learners during English vocabulary acquisition?
- 2- What is the correlation between various dimensions of language anxiety (e.g., speaking anxiety, listening anxiety, test anxiety) ?
- 3- To what extent does self-confidence in learning English influence English vocabulary acquisition among Arab ESL learners?
- 4- How do Arab ESL learners' attitudes towards the English language and its speakers affect their engagement with and acquisition of English vocabulary?

### 1.3 Study hypotheses

The study tries to either accept or reject the following hypotheses

- 1- **Hypothesis 1 (H1):** Positive attitudes toward English significantly enhance ESL vocabulary acquisition in terms of (a) vocabulary breadth and (b) vocabulary depth.
- 2- **Hypothesis 2 (H2):** Higher self-confidence positively impacts ESL vocabulary acquisition in terms of (a) vocabulary breadth and (b) vocabulary depth.
- 3- **Hypothesis 3 (H3):** Higher levels of anxiety negatively affect ESL vocabulary acquisition in terms of (a) vocabulary breadth and (b) vocabulary depth.
- 4- **Hypothesis 4 (H4):** Higher levels of intrinsic motivation positively influence ESL vocabulary acquisition in terms of (a) vocabulary breadth and (b) vocabulary depth.
- 5- **Hypothesis 5 (H5):** Higher levels of extrinsic motivation positively impact ESL vocabulary acquisition in terms of (a) vocabulary breadth and (b) vocabulary depth.

## 2. Conceptual Framework for ESL Vocabulary Acquisition

The acquisition of vocabulary in English as a Second Language (ESL) is shaped by affective factors such as motivation, self-confidence, attitudes, and anxiety (Gardner, 2019; Horwitz et al., 1986; Bandura, 1997). Motivation—both intrinsic and extrinsic—drives effort and persistence (Deci & Ryan, 1985a; Dörnyei, 2020), while self-confidence supports risk-taking and participation. Positive attitudes sustain engagement, whereas anxiety hinders learning by reducing focus and participation (MacIntyre & Gardner, 1994; Young, 1991). Interactionist theory further highlights the role of teacher-learner dynamics and collaboration in vocabulary acquisition (Alharbi, 2023;

Alahdal & Al Ahdal, 2019).

This framework emphasizes two dimensions of vocabulary learning: breadth (vocabulary size) and depth (nuances, associations, and contextual use) (Mansoor, 2023; Nation, 2001; Qian, 1999). Positive affective factors enhance both dimensions, while negative states like anxiety impede progress. Addressing these emotional needs within supportive environments is essential for fostering effective ESL vocabulary acquisition.

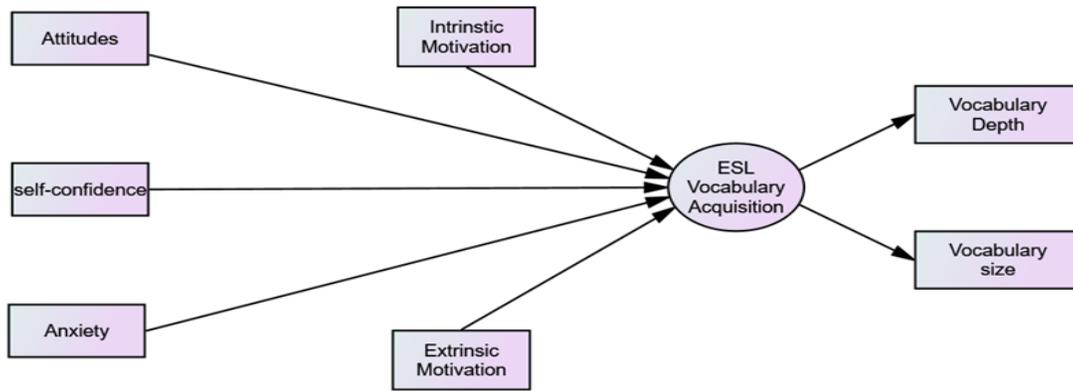


Figure 1. ESL Vocabulary Acquisition Conceptual Framework

### 3. Literature Review

#### 3.1 Vocabulary Acquisition (The Dependent Variable)

Studies on second language (L2) vocabulary knowledge consistently emphasize two critical dimensions: vocabulary breadth (VB) and vocabulary depth (VD). The dimensions, though separate, are interconnected and collectively offer a thorough comprehension of L2 lexical knowledge (Qian, 1999, 2002; Schmitt, 2014). VB denotes the quantity of words a learner possesses, regardless of the profundity of comprehension. Vocabulary is generally classified into four subcategories: (1) active recall (retrieving a word’s form), (2) passive recall (recalling its meaning), (3) active recognition (identifying its form), and (4) passive recognition (recognizing its meaning) (Nation, 2001, 2006; Laufer & Goldstein, 2004; Schmitt, 2014). These classifications offer detailed insights into the methods by which L2 learners can acquire and utilize vocabulary.

VD refers to the qualitative dimensions of lexical knowledge. It encompasses comprehending subtle meanings, lexical associations, and the intricate framework of the mental lexicon (Read, 1998). Vocabulary depth is evaluated through tasks that necessitate learners to discern semantic or collocational relationships among words. Instruments such as Read’s Word Associates Format (WAF) and the Word Association Test (Qian & Schedl, 2004) illustrate these assessments. Supplementary assessments, including evaluations of collocational knowledge (Gyllstad, 2009) and word part comprehension (Sasao & Webb, 2017; Mizumoto et al., 2019), further elucidate the complexities of vocabulary development and the depth of lexical knowledge.

Research indicates significant gaps in vocabulary breadth and depth among Saudi English majors, necessitating targeted vocabulary instruction (Alharbi, 2021). Similar gaps in lexical knowledge have been observed in other studies of Saudi English majors (Alharbi, 2021).

The multifaceted nature of L2 vocabulary acquisition is reflected in the diverse methods through which vocabulary is learned. Learners studying English as a foreign language (EFL) enhance their vocabulary through activities like reading, listening, and engaging with multimedia content (Feng & Webb, 2020). Research demonstrates that incidental vocabulary learning often occurs through varied input modes. For instance, Teng (2018) compared the effects of reading-only and reading-while-listening on EFL learners’ vocabulary acquisition, finding that the latter was particularly effective for understanding word forms and grammatical features. These findings underscore the significance of exposure frequency and deep processing in vocabulary learning.

#### 3.2 Independent Variables

The process of acquiring vocabulary in English as a second language (ESL) is influenced by several affective factors that shape learners’ engagement, processing, and retention of new words. Drawing on prior research and theoretical frameworks, this section explores the relationships between key affective factors—attitudes, self-confidence, anxiety, intrinsic motivation, and extrinsic motivation—and ESL vocabulary acquisition.

#### 3.3 Attitudes and ESL Vocabulary Acquisition

Learners’ attitudes toward English, its speakers, and its cultural contexts play a pivotal role in vocabulary learning. Gardner’s (1985) socio-educational model of second language acquisition suggests that positive attitudes bolster motivation and effort, thereby enhancing

language acquisition. Conversely, negative attitudes hinder engagement and persistence. Learners with favorable attitudes are more likely to approach vocabulary tasks enthusiastically, fostering both VB and VD.

Recent studies corroborate the critical role of attitudes in English vocabulary acquisition. Dandapat and Al Farabi (2023) emphasize that engaging methods, such as using memes and clickers, enhance vocabulary retention among secondary-level English Language Learners (ELLs) by fostering positive attitudes toward learning. Similarly, Santi et al. (2021) found a positive relationship between reading interest and vocabulary acquisition among EFL learners, suggesting that increased reading interest improves vocabulary learning. Mulatu and Mulatu (2023) also report a significant relationship between students' attitudes toward vocabulary learning and their English proficiency levels. Positive attitudes also predict significant variances in vocabulary breadth and depth, as evidenced by research exploring the cognitive and affective dimensions of language learning (Kassa et al., 2022).

### 3.4 Self-Confidence and ESL Vocabulary Acquisition

Self-confidence, closely linked to self-efficacy (Bandura, 1997), reflects a learner's belief in their ability to succeed in specific tasks, such as vocabulary acquisition. According to Horwitz et al. (1986), self-confident learners are more inclined to take risks and actively participate in communicative activities, which are essential for vocabulary retention and application.

Recent studies support the link between self-confidence and language learning success. For instance, Ghafar (2023) found that self-confidence positively correlates with linguistic performance, including vocabulary acquisition, grammar, and pronunciation skills. Similarly, Zayed and Al-Ghamdi (2019) highlight the predictive role of self-confidence in fostering positive attitudes and mitigating anxiety, creating a conducive environment for ESL learning.

### 3.5 Anxiety and ESL Vocabulary Acquisition

Anxiety is a well-documented barrier to effective vocabulary acquisition, impeding cognitive processing and retention (Horwitz et al., 1986; MacIntyre & Gardner, 1994). However, targeted interventions that focus on reducing anxiety and fostering motivation have been shown to improve learning outcomes (Alrabai, 2022) significantly. These interventions are particularly effective in environments where learners feel supported and valued (MacIntyre & Gregersen, 2021).

The negative effects of anxiety can be mitigated through engaging and interactive learning methods. For example, game-enhanced environments that foster intrinsic motivation and interest can reduce anxiety and encourage greater learner participation, leading to improved vocabulary retention (Lee, 2023). Tan et al. (2024) found that foreign language enjoyment, anxiety, and boredom mediated the relationships between L2 motivational self-system, L2 proficiency, and ICC. Similarly, Zhou et al. (2022) highlighted a negative correlation between FLA and self-efficacy, suggesting that anxiety undermines learners' confidence in their language abilities.

### 3.6 Intrinsic Motivation and ESL Vocabulary Acquisition

Intrinsic motivation, the internal drive to learn for personal interest or satisfaction, is essential for effective language learning. Deci and Ryan's (1985b) Self-Determination Theory (SDT) posits that intrinsically motivated learners engage deeply with language tasks, leading to better vocabulary retention and comprehension. Studies such as those by Jang and Kim (2014), Lee et al. (2022), and Sun et al. (2023) highlight how intrinsic motivation fosters deeper engagement with learning tasks.

Motivated learners are also more likely to employ a wider range of cognitive and metacognitive strategies, which facilitate both vocabulary breadth and depth (Deci & Ryan, 1985a; Dörnyei, 2020; Owaidah, 2024).

### 3.7 Extrinsic Motivation and ESL Vocabulary Acquisition

Extrinsic motivation, driven by external goals such as academic achievement or social recognition, provides tangible incentives for language learning (Dörnyei, 2005). However, its effects may be less enduring or profound compared to intrinsic motivation (Noels et al., 2000). SDT categorizes extrinsic motivation into external regulation, introjected regulation, and identified regulation, with the latter resembling intrinsic motivation in its self-determined nature.

Research highlights the nuanced effects of extrinsic motivation on vocabulary learning. For instance, Alamer (2022) demonstrated that autonomous motivation (a combination of intrinsic motivation and identified regulation) positively predicts vocabulary size, while controlled motivation (introjected and external regulation) has a negative impact. These findings underscore the complexity of extrinsic motivation in driving learning behaviors.

### 3.8 Gaps in Existing Research

Although extensive research has explored affective factors in second language acquisition (SLA), significant gaps remain, particularly concerning Arab learners and vocabulary acquisition. Prior studies often examine motivation, self-confidence, attitudes, and anxiety in isolation, overlooking their combined and interactive effects. Additionally, the unique linguistic and cultural challenges faced by Arab learners, such as the divergence between Arabic and English and culturally rooted attitudes toward English, are insufficiently addressed. While vocabulary breadth is frequently studied, the equally critical dimension of vocabulary depth has received comparatively less attention (Alharbi, 2021).

Methodologically, there is a lack of robust frameworks, such as Structural Equation Modeling (SEM), to examine the complex relationships among affective factors and their impact on vocabulary acquisition. This study addresses these gaps by investigating the interplay of intrinsic motivation, extrinsic motivation, self-confidence, attitudes, and anxiety on both vocabulary breadth and depth among

Arab ESL learners in a multicultural context, employing SEM to provide comprehensive insights and practical recommendations for culturally responsive pedagogical strategies.

#### 4. Research Methodology

##### 4.1 Research Design and Instruments

To address the study's objectives, a cross-sectional research design with a quantitative approach was adopted. This design enabled systematic data collection and analysis to examine the impact of affective factors on ESL vocabulary acquisition among Arab learners. Two primary instruments were utilized: a questionnaire and a vocabulary test. Together, these instruments comprehensively measured affective factors and vocabulary skills, ensuring alignment with the study's conceptual framework.

The questionnaire included 30 items: four demographic questions and 26 items targeting five key affective variables—motivation, self-confidence, attitudes, anxiety, and vocabulary learning perceptions. These items were derived from well-established research and tailored to the linguistic and cultural context of Arab learners. The inclusion of intrinsic and extrinsic motivation, self-confidence, attitudes, and anxiety as constructs were informed by prior studies, which have demonstrated their significant roles in vocabulary acquisition (Lee et al., 2022; Zayed & Al-Ghamdi, 2019).

Motivation was measured using 11 items adapted from Dörnyei (1994), Tremblay and Gardner (1995), and Guilloteaux (2007), evaluating both instrumental and intrinsic motivations for learning English. Self-confidence was assessed with four items adapted from Alrabai (2016, 2014) and Gardner et al. (1997), focusing on participants' confidence in comprehension and communication. Attitudes were evaluated through five items adapted from Gardner et al. (1997), exploring learners' perspectives on their English teacher and course. Anxiety was measured using six items derived from the Foreign Language Classroom Anxiety Scale (FLCAS) developed by Horwitz et al. (1986), targeting participants' nervousness in English classes and speaking English. Responses were recorded on a five-point Likert scale ranging from "strongly disagree" to "strongly agree."

The vocabulary test assessed both the breadth and depth of participants' vocabulary knowledge. Vocabulary breadth was measured using the Vocabulary Size Test (VST) adapted from Nation and Beglar (2007b), which evaluates knowledge of the first 3,000 most frequent word families. This multiple-choice test included 30 questions, each worth one point, with a moderate reliability alpha coefficient of .84. Vocabulary depth was assessed using an adapted version of the Word Association Test (WAT) by Read (1993). The WAT featured 10 target adjectives, each paired with eight potentially related words, requiring participants to identify four correct options (synonyms or collocates). Each correct response earned one point, with a maximum score of 40 points, and the test demonstrated acceptable reliability with an alpha coefficient of .80. These instruments provided a comprehensive evaluation of participants' vocabulary knowledge.

The validity of the questionnaire was ensured through a rigorous review process by academic experts in English education. These experts evaluated the clarity, length, and relevance of the items, ensuring their alignment with the study's objectives and appropriateness for the target population. This thorough validation process, combined with the use of established instruments, provided a robust foundation for exploring the relationship between affective factors and vocabulary acquisition.

##### 4.2 Survey Respondents

The study was carried out at the Centre for Languages and Pre-University Academic Development (CELPAD) at the International Islamic University Malaysia (IIUM) located in Gombak, Selangor. CELPAD provides English language courses within its foundational programs, serving students from various linguistic and cultural backgrounds. The research sample comprised 165 Arab ESL learners participating in CELPAD's English courses. Participants encompassed various academic levels and ages, ranging from 18 to 24 years, and included both male and female students, mirroring the demographic diversity of CELPAD's student population.

The methodology utilized was simple random sampling. A detailed list of Arab learners registered at CELPAD was acquired, and participants were randomly chosen based on their matriculation numbers, guaranteeing equal selection probability for all qualified students. This sampling method guaranteed representativeness within the target population. A sample size of 165 participants was considered adequate for fulfilling the research objectives and performing statistical analyses, including structural equation modeling (SEM), as advised by Kline (2023).

##### 4.3 Data Analysis

The study employed advanced statistical techniques to analyze the data and validate the conceptual framework. Descriptive statistics were conducted using SPSS version 29 to summarize the demographic and affective factors data. Partial least squares structural equation modeling (PLS-SEM), a variance-based approach, was implemented using SmartPLS 4.0 software (Ringle et al., 2024). Following the guidelines of Hair et al. (2022), the analysis was conducted in two stages. The first stage involved assessing the measurement model to evaluate the reliability, validity, and psychometric properties of the constructs. Once the measurement model was confirmed, the second stage focused on assessing the structural model to test the hypothesized relationships among affective factors and their impact on ESL vocabulary acquisition. This dual-stage approach ensured rigorous validation of both the measurement and structural models, providing a reliable basis for examining the interplay between affective factors and vocabulary learning.

### 5. Results

#### 5.1 Assessment of Outer Model

Before testing the hypothesized structural model, the psychometric properties of the measurement model were evaluated. The model included six constructs: Anxiety, Attitudes, Self-Confidence, Extrinsic Motivation, Intrinsic Motivation, and ESL Vocabulary Acquisition. Convergent validity was assessed using factor loadings and Average Variance Extracted (AVE), with thresholds of >0.60 and >0.50, respectively (Hair et al., 2022). Construct reliability was examined using Composite Reliability (CR), requiring values >0.70 (Hair et al., 2022).

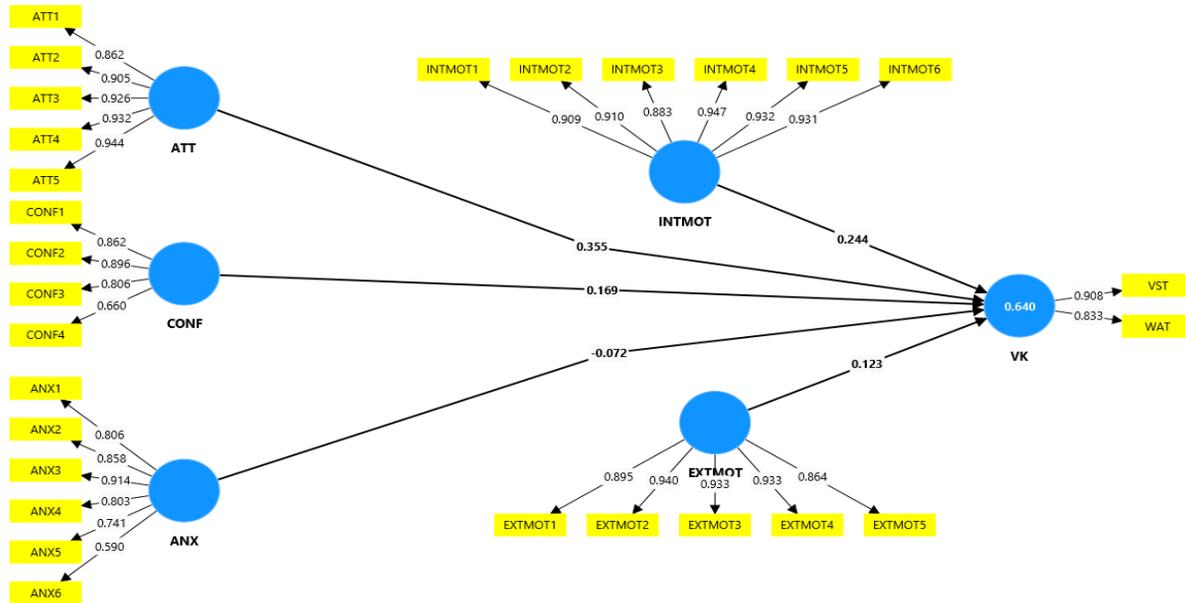


Figure 2. Outer Model Assessment

##### 5.1.1 Assessment of Constructs' Reliability and Convergent Validity

All constructs exhibited AVE values above 0.50 and CR values exceeding 0.70 (see Table 1). After removing problematic items, all retained factor loadings met the >0.50 threshold, indicating satisfactory convergent validity and reliability (Hair et al., 2022). These results confirm that the measurement model provides a solid foundation for the subsequent analysis of the structural model.

Table 1. Constructs' Reliability and Convergent Validity Metrics

Construct	Item	Factor loadings	Composite Reliability	Average Variance Extracted
Anxiety	ANX1	0.806	0.908	0.627
	ANX2	0.858		
	ANX3	0.914		
	ANX4	0.803		
	ANX5	0.741		
	ANX6	0.590		
Attitudes	ATT1	0.862	0.962	0.835
	ATT2	0.905		
	ATT3	0.926		
	ATT4	0.932		
	ATT5	0.944		
Self-Confidence	CONF1	0.862	0.884	0.658
	CONF2	0.896		
	CONF3	0.806		
	CONF4	0.660		
Extrinsic Motivation	EXTMOT1	0.895	0.970	0.844
	EXTMOT2	0.940		

	EXTMOT3	0.933		
	EXTMOT4	0.933		
	EXTMOT5	0.864		
Intrinsic Motivation	INTMOT1	0.909	0.970	0.844
	INTMOT2	0.910		
	INTMOT3	0.883		
	INTMOT4	0.947		
	INTMOT5	0.932		
	INTMOT6	0.931		
ESL Vocabulary Acquisition	VST	0.908	0.863	0.759
	WAT	0.833		

5.1.2 Assessment of Discriminant Validity

Discriminant validity, essential for ensuring that constructs are conceptually distinct, was evaluated using three approaches:

I. Fornell-Larcker Criterion

The Fornell-Larcker criterion requires that the square root of the AVE for each construct exceeds its correlations with other constructs. As shown in Table 2, all constructs satisfied this criterion, indicating adequate discriminant validity (Fornell & Larcker, 1981; Hair et al., 2022).

Table 2. Discriminant validity: Fornell-Larcker Criterion

Constructs	ANX	ATT	CONF	EXTMOT	INTMOT	VK
ANX	0.792					
ATT	-0.543	0.914				
CONF	-0.324	0.506	0.811			
EXTMOT	-0.240	0.550	0.539	0.913		
INTMOT	-0.580	0.803	0.530	0.526	0.919	
VK	-0.491	0.743	0.567	0.555	0.725	0.871

Note: In bold are the square root of average variance extracted (AVE) and blew them are the square of correlation of the constructs.

II. Heterotrait-Monotrait Ratio (HTMT)

To address potential limitations of the Fornell-Larcker approach, the HTMT ratio was used as an additional measure. All HTMT values were below the threshold of 1.0 (Ringle et al., 2024), confirming the absence of discriminant validity issues (see Table 3).

Table 3. Discriminant validity: HTMT

Constructs	ANX	ATT	CONF	EXTMOT	INTMOT	VK
ANX						
ATT	0.564					
CONF	0.345	0.549				
EXTMOT	0.241	0.571	0.602			
INTMOT	0.601	0.838	0.573	0.546		
VK	0.570	0.899	0.736	0.681	0.873	

III. Cross-Loadings

Finally, cross-loadings were examined to ensure that each indicator loaded higher on its intended construct than on others. Results in Table 4 validate the discriminant validity of the measurement model, as all indicators met this criterion (Hair et al., 2017).

Together, these assessments confirm the measurement model’s discriminant validity, supporting its suitability for structural analysis.

Table 4. Discriminant validity: cross-loadings criterion

Items	ANX	ATT	CONF	EXTMOT	INTMOT	VK
ANX1	<b>0.806</b>	-0.436	-0.242	-0.145	-0.465	-0.375
ANX2	<b>0.858</b>	-0.484	-0.302	-0.268	-0.524	-0.474
ANX3	<b>0.914</b>	-0.512	-0.277	-0.206	-0.537	-0.453
ANX4	<b>0.803</b>	-0.450	-0.264	-0.126	-0.452	-0.386
ANX5	<b>0.741</b>	-0.398	-0.270	-0.263	-0.457	-0.375
ANX6	<b>0.590</b>	-0.170	-0.116	-0.052	-0.189	-0.126
ATT1	-0.513	<b>0.862</b>	0.416	0.426	0.678	0.636
ATT2	-0.504	<b>0.905</b>	0.441	0.470	0.741	0.665
ATT3	-0.500	<b>0.926</b>	0.447	0.482	0.730	0.643
ATT4	-0.489	<b>0.932</b>	0.498	0.562	0.764	0.728

ATT5	-0.479	<b>0.944</b>	0.505	0.559	0.753	0.716
CONF1	-0.315	0.461	<b>0.862</b>	0.452	0.499	0.490
CONF2	-0.347	0.542	<b>0.896</b>	0.508	0.542	0.554
CONF3	-0.224	0.348	<b>0.806</b>	0.413	0.373	0.434
CONF4	-0.111	0.227	<b>0.660</b>	0.358	0.245	0.326
EXTMOT1	-0.155	0.407	0.446	<b>0.895</b>	0.404	0.442
EXTMOT2	-0.227	0.502	0.522	<b>0.940</b>	0.510	0.516
EXTMOT3	-0.185	0.473	0.464	<b>0.933</b>	0.459	0.483
EXTMOT4	-0.228	0.556	0.513	<b>0.933</b>	0.489	0.549
EXTMOT5	-0.287	0.551	0.504	<b>0.864</b>	0.525	0.528
INTMOT1	-0.598	0.745	0.465	0.453	<b>0.909</b>	0.661
INTMOT2	-0.506	0.720	0.484	0.480	<b>0.910</b>	0.658
INTMOT3	-0.540	0.661	0.419	0.437	<b>0.883</b>	0.606
INTMOT4	-0.580	0.766	0.481	0.478	<b>0.947</b>	0.671
INTMOT5	-0.486	0.760	0.533	0.531	<b>0.932</b>	0.683
INTMOT6	-0.496	0.769	0.529	0.514	<b>0.931</b>	0.712
VST	-0.529	0.740	0.527	0.501	0.717	<b>0.908</b>
WAT	-0.298	0.533	0.457	0.466	0.527	<b>0.833</b>

5.2 Estimation of the Hypothesized Structural Model

The subsequent step in conducting the variance-based structural equation modeling (SEM) analysis involved assessing the hypothesized structural model (inner model) to examine the proposed relationships within the study. After ensuring the psychometric properties of the measurement model, specifically its construct reliability and validity, the researchers advanced to this stage of analysis. Utilizing SmartPLS version 4, the hypotheses were tested using a bootstrapping procedure, as recommended by Hair et al. (2022). The bootstrapping method employed 1,000 resamples to provide robust estimates for the hypothesized relationships (see Figure 3).

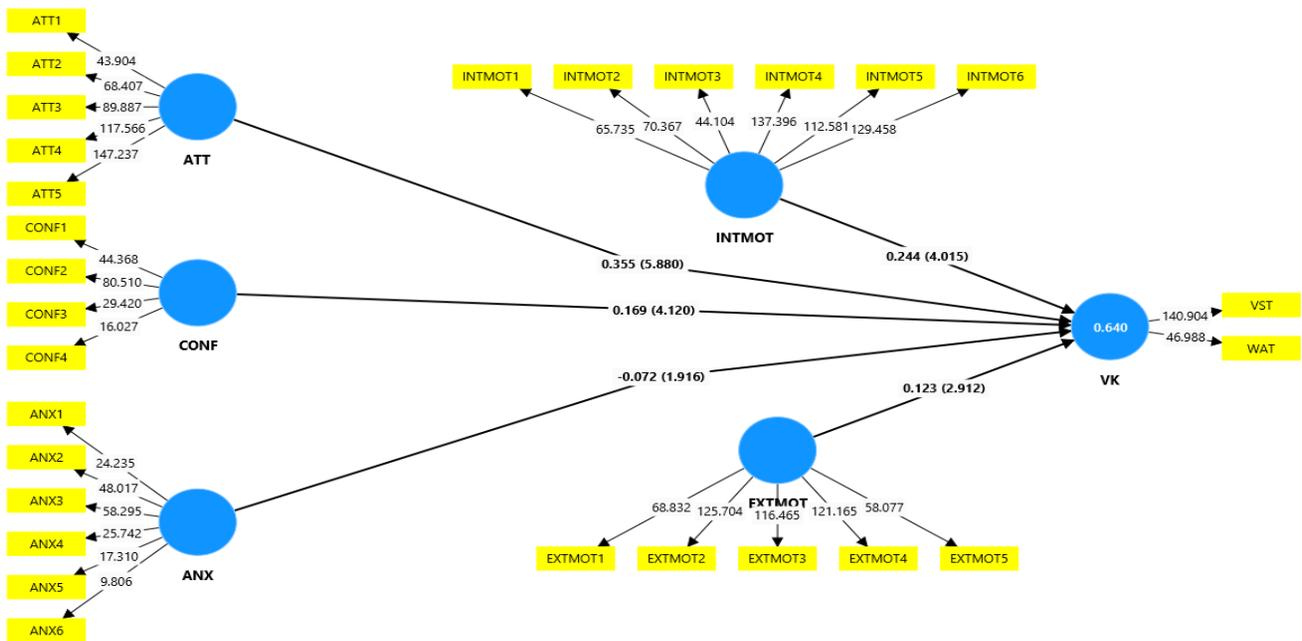


Figure 3. Graphical representation of inner model after the bootstrapping procedure

5.3 Hypotheses Testing

The structural model results summarized in Table 5 reveal significant relationships among motivation, attitudes, self-confidence, anxiety, and ESL vocabulary acquisition. Each hypothesis was evaluated using standardized beta coefficients ( $\beta$ ), critical ratios (C.R.), and p-values (Hair et al., 2022). Intrinsic motivation significantly influenced ESL vocabulary acquisition ( $\beta = 0.244$ , C.R. = 4.015,  $p < .001$ ), emphasizing the importance of internal interest in language learning. Extrinsic motivation also had a positive effect, though smaller ( $\beta = 0.123$ , C.R. = 2.912,  $p = .004$ ). Among the constructs, attitudes toward ESL learning had the strongest positive impact ( $\beta = 0.355$ , C.R. = 5.880,  $p < .001$ ). Self-confidence was another significant predictor ( $\beta = 0.169$ , C.R. = 4.120,  $p < .001$ ). Conversely, the hypothesis that anxiety negatively affects vocabulary acquisition was not supported ( $\beta = -0.072$ , C.R. = 1.916,  $p = .055$ ), indicating a need for further exploration of this relationship.

Table 5. Direct Hypotheses of the Study

Hypo	Structural Path	Beta ( $\beta$ ) ( $>.2$ )	C.R ( $>.196$ )	P-value	Decision
H1	INTMOT $\rightarrow$ Vocabulary Acquisition	0.244	4.015	0	supported
H2	EXTMOT $\rightarrow$ Vocabulary Acquisition	0.123	2.912	0.004	supported
H3	Attitudes $\rightarrow$ Vocabulary Acquisition	0.355	5.88	0	supported
H4	Self-confidence $\rightarrow$ Vocabulary Acquisition	0.169	4.12	0	supported
H5	Anxiety $\rightarrow$ Vocabulary Acquisition	-0.072	1.916	0.055	Not supported

5.4 Coefficient of Determination and Effect Size

The coefficient of determination ( $R^2$ ) for Vocabulary Acquisition is 0.640, indicating that 64% of its variance is explained by Intrinsic Motivation, Extrinsic Motivation, Attitudes, Self-confidence, and Anxiety, demonstrating strong predictive power (Hair et al., 2022). Among the predictors, Attitudes had the largest effect size ( $f^2=0.221$ ), followed by Intrinsic Motivation ( $f^2=0.150$ ) and Self-confidence ( $f^2=0.149$ ), all showing medium effects. Extrinsic Motivation also had a notable impact ( $f^2=0.125$ ), while Anxiety showed a negligible effect ( $f^2=0.009$ ). These findings highlight the critical role of attitudes, motivation, and self-confidence in vocabulary acquisition, with anxiety playing a minimal role (MacIntyre & Gardner, 1994).

Table 6. Coefficient of determination ( $R^2$ ) and Effect’s size ( $F^2$ )

Hypo	Structural Path	$F^2$	$R^2$
H1	Intrinsic Motivation $\rightarrow$ Vocabulary Acquisition	0.150	
H2	Extrinsic Motivation $\rightarrow$ Vocabulary Acquisition	0.125	
H3	Attitudes $\rightarrow$ Vocabulary Acquisition	0.221	0.640
H4	Self-confidence $\rightarrow$ Vocabulary Acquisition	0.149	
H5	Anxiety $\rightarrow$ Vocabulary Acquisition	0.009	

6. Discussion and Conclusion

6.1 Discussion of the Results

The findings of this study offer crucial insights into the interplay of affective factors—motivation, attitudes, self-confidence, and anxiety—in shaping vocabulary acquisition among Arab learners of English as a Second Language (ESL). These results align with existing theoretical frameworks while extending our understanding of how these constructs operate in the specific cultural and linguistic context of Arab learners.

**Attitudes toward the Target Language** emerged as the most influential factor in vocabulary acquisition. This finding corroborates Gardner’s (1985, 2010) socio-educational model, which emphasizes the role of positive attitudes in fostering motivation and engagement. Learners with favorable perceptions of English and its cultural context were more likely to engage deeply with vocabulary tasks, thereby enhancing both vocabulary breadth and depth. This aligns with research by Dandapat and Al Farabi (2023), who demonstrated that positive attitudes improve retention and engagement through technology-enhanced tools. Similarly, Santi et al. (2021) identified reading interest as a proxy for attitudes, highlighting its significance in EFL vocabulary learning. For Arab learners, fostering positive attitudes is especially vital given the potential linguistic and cultural barriers they face. These findings suggest that educators should adopt culturally sensitive materials and teaching strategies tailored to Arab learners’ experiences to cultivate enthusiasm for English learning.

**Intrinsic Motivation** also emerged as a substantial predictor of vocabulary acquisition, reinforcing Deci and Ryan’s (1985a) Self-Determination Theory (SDT). Intrinsically motivated learners, driven by internal satisfaction and curiosity, demonstrated enhanced vocabulary breadth and depth. This is consistent with studies by Jang and Kim (2014) and Sun et al. (2023), which highlight intrinsic motivation as a pivotal factor in L2 learning. For Arab learners, intrinsic motivation can counterbalance the extrinsic pressures often linked to academic or societal expectations (Alrabai, 2022). This underscores the importance of designing curricula that incorporate authentic, engaging, and meaningful tasks, enabling learners to explore their interests while developing language skills.

**Self-Confidence** played a critical role in vocabulary acquisition, highlighting its function as a facilitator of risk-taking and active engagement in language tasks. This finding aligns with Bandura’s (1997) self-efficacy theory and is supported by recent studies (e.g., Ghafar, 2023; Lee, 2020) that identify self-confidence as a cornerstone of successful L2 vocabulary learning. Confident learners are more likely to participate in communicative activities, experiment with new vocabulary, and overcome challenges associated with linguistic differences. For Arab learners, who face significant phonological and syntactic differences between Arabic and English (Ryding, 2014), building self-confidence is crucial. Strategies such as scaffolded instruction, peer collaboration, and positive reinforcement can empower learners to fully engage with the language.

While **Intrinsic Motivation** demonstrated a stronger influence, **Extrinsic Motivation** also contributed positively to vocabulary acquisition, albeit to a lesser extent. This finding aligns with Dörnyei’s (2005) assertion that extrinsic motivation can provide initial momentum for language learning, particularly in contexts where tangible outcomes like grades or career advancement are prioritized.

However, as noted by Alamer (2022), the long-term sustainability of extrinsic motivation depends on its alignment with learners' intrinsic goals. For Arab learners, balancing external incentives with opportunities for meaningful and intrinsic engagement can optimize vocabulary acquisition outcomes.

Contrary to established literature (e.g., Horwitz et al., 1986; MacIntyre & Gardner, 1994), **Anxiety** demonstrated a negligible effect on vocabulary acquisition in this study. This divergence suggests that its impact may be mitigated by other affective factors such as positive attitudes and self-confidence. Additionally, the multicultural context of the study, where learners shared a sense of identity and solidarity, may have reduced the negative influence of anxiety. This finding aligns with Zayed and Al-Ghamdi's (2019) observations that inclusive and supportive learning environments can buffer anxiety's detrimental effects. Further research is needed to explore this dynamic in varying cultural and educational contexts.

The model's ability to explain 64% of the variance in vocabulary acquisition underscores the critical role of affective factors in language learning. This aligns with integrated SLA frameworks, which highlight the interconnectedness of cognitive, emotional, and social dimensions in shaping learning outcomes (Nation, 2001; Dörnyei & Ushioda, 2013). Notably, the strong effects of attitudes and motivation suggest that these factors should be central to pedagogical approaches for Arab learners.

### 6.2 Implications

The findings of this study hold significant theoretical and practical implications for second language acquisition (SLA), particularly for Arab ESL learners. Theoretically, this study enriches our understanding of the interactive roles of affective factors in vocabulary acquisition, extending foundational models like Gardner's socio-educational model (1985) and Deci and Ryan's Self-Determination Theory (1985). These results emphasize the critical importance of affective dimensions—motivation, self-confidence, and attitudes—in fostering vocabulary breadth and depth.

Practically, this study underscores the need to integrate affective factors into language instruction to create holistic learning environments. Curriculum designers, educators, and policymakers must recognize that positive attitudes and intrinsic motivation are not merely facilitators but essential drivers of vocabulary acquisition. Furthermore, building learners' self-confidence through scaffolded challenges and culturally responsive teaching strategies can further enhance learning outcomes. While anxiety showed a negligible effect, fostering inclusive and low-stakes environments remains critical for ensuring learner comfort and participation. These findings advocate for a pedagogical paradigm that values affective factors alongside cognitive strategies, particularly for learners with distinct cultural and linguistic challenges.

### 6.3 Limitations

This study has limitations despite its contributions. The generalizability of the findings to other cultural and linguistic contexts may be restricted by the fact that the sample was limited to Arab ESL learners in Malaysia. In order to verify and enhance these findings, future research should investigate a variety of populations. Furthermore, the cross-sectional design of the study obstructs the observation of changes in vocabulary acquisition and affective factors over time. A longitudinal approach could offer a more profound understanding of the evolution of these relationships over the course of various stages of language acquisition. An additional constraint is the dependence on self-reported measures, which may introduce biases such as inaccurate self-assessment or social desirability. By incorporating qualitative methods, such as interviews or focus groups, the quantitative data could be enhanced by providing more nuanced and sophisticated perspectives. Finally, the investigation exclusively concentrated on vocabulary acquisition without considering its correlation with other language abilities, including writing, listening, and speaking. In order to investigate the extent to which affective factors influence broader linguistic competencies, future research should pursue a comprehensive approach.

### 6.4 Recommendations

To enhance vocabulary acquisition among Arab ESL learners, educators should prioritize developing positive attitudes toward English by integrating culturally relevant materials, relatable examples, and real-world applications. Media, literature, and tasks aligned with learners' cultural and social contexts can boost engagement and enthusiasm. Intrinsic motivation can be nurtured through meaningful and enjoyable learning activities such as gamified vocabulary tasks, creative writing projects, and problem-solving exercises. Providing autonomy to explore topics of personal interest further deepens engagement. Classroom strategies should also focus on building self-confidence by incorporating scaffolded challenges, celebrating small successes, and fostering a supportive environment that values effort and risk-taking.

Although anxiety had a negligible direct impact in this study, creating inclusive and low-stakes learning environments remains vital. Relaxation techniques and positive reinforcement can enhance learner comfort and willingness to participate. Policymakers should integrate these recommendations into language programs, recognizing the vital role of affective factors in shaping overall language proficiency. Technology-driven tools, such as mobile-assisted language learning (MALL), can further support vocabulary acquisition in modern educational contexts (Alharbi, 2024).

Future research should explore the dynamic interplay of motivation, vocabulary learning strategies, and affective variables, potentially yielding valuable insights for advancing L2 instruction (Lee et al., 2022).

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**Authors' contributions**

This is a single-authored research work. Thus, the author has done everything from A to Z to being the manuscript to its present shape.

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