

The Relationship Between Grammar And Reading Comprehension In Tests Of Arabic As A Foreign Language

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Abstract

The aim of this study was to explore the relationship between the performance of learners of Arabic as a foreign language (AFL) in grammar tests and reading comprehension tests. The participants ranged from beginner to upper intermediate levels. We adopted a quantitative approach by analyzing the test results of 394 students over the 2022-2024 academic years. Pearson's correlation coefficient and linear regression were used to examine relationships between grammar scores and reading comprehension scores. The findings revealed a strong positive correlation between students' performance in grammar and reading comprehension across all proficiency levels. Moreover, grammar test performance was a strong predictor of performance in reading comprehension, and vice versa. These results highlight the strong interconnection between grammatical competence and reading comprehension among the study sample. The results also align with findings from previous research on other foreign languages. This study represents a novel contribution to the field of teaching AFL.

Keywords: Arabic As A Foreign Language; Reading Comprehension; Grammar Competence; Language Assessment; Preparatory Program

INTRODUCTION

The 21st century has witnessed a significant increase in the demand for learning Arabic as a foreign language (AFL). This trend is reflected in various linguistic education statistics. For example, a study indicated that the number of Arabic learners in higher education institutions in the United States had doubled since 2000 compared to previous years (Lusin et al., 2023, p. 54). In Turkey, Arabic has become a mandatory subject in İmam Hatip schools at both the middle and high school levels. The total number of students enrolled in these levels reached 1.137 million in the 2023–2024 academic year, whereas the total number was less than half a million in 2012–2013 (Strateji Geliştirme Başkanlığı, 2025). In addition, while no Arabic preparatory programs existed in Turkish universities in 2000, the number of such programs had exceeded 60 by 2023 (Hassan, 2024).

As is the case for any foreign language, learners' motivations for studying Arabic vary. However, the unique status of Arabic as the language of the Qur'an—the holy book of Islam—and the language of Islamic sciences sets it apart from other languages (Ramezanzadeh, 2021; Selim & Abdalla, 2022). A substantial body of research has identified religious motivation as a key driver for Muslims to learn Arabic as a foreign or second language (L2) across a range of sociocultural contexts. This motivation is evident

in Arab countries such as Saudi Arabia (Alhamami & Almosa, 2023), in Muslim-majority nations like Malaysia (Mat & Abas, 2016), and in countries in which Muslims constitute a minority, including the United States (Husseinali, 2006) and China (Qiao et al., 2013). In addition, many non-Arab Muslim learners are driven by a desire to understand the Arabic way of life in the belief that that such an understanding will bring them closer to living in accordance with Islamic principles (Alshammari et al., 2024).

We examined the relationship between the performances of AFL learners in grammar tests and reading comprehension assessments in this study. Despite variations in nomenclature, language proficiency theories have consistently identified grammatical competence as a fundamental component of overall language proficiency (see Bachman, 1990; Bachman & Palmer, 1996, 2010; Canale, 1983; Canale & Swain, 1980; Celce-Murcia et al., 1995).

Grammatical competence encompasses knowledge of vocabulary, phonology, morphology, syntax, and semantics (Canale & Swain, 1980; Richards & Schmidt, 2010). Some researchers refer to grammatical competence as grammatical knowledge (Bachman & Palmer, 2010; Centre for Canadian Language Benchmarks, 2012). In addition, language accuracy serves as a key criterion for evaluating linguistic performance across all frameworks of language proficiency. It is either embedded within linguistic production, as seen in the American Council on the Teaching of Foreign Languages' (ACTFL) proficiency guidelines and the Interagency Language Roundtable (ILR) scale (ACTFL, 2024; ILR, n.d.), or is explicitly designated as a separate component, as in the Common European Framework of Reference for Languages (CEFR) and Canadian Language Benchmarks (CLB) (Council of Europe, 2020; CLB, 2012). Grammar has had a prominent position in traditional Islamic education throughout history. The study of Arabic grammar (Naḥw) emerged before the middle of the first century AH, driven by the linguistic errors made by newly converted Muslims when reciting the Qur'an. The establishment of grammar as a field of study was initiated by a direct decision from the ruling caliph at the time (Versteegh, 1997, p. 58).

The first book on Arabic grammar was published in the second century AH by Sībawayhi (d. 177/793), and was entitled *Kitāb* (Versteegh, 2014, p. 107). These historical developments highlight the profound interest of both political authorities and scholars in preserving and standardizing Arabic grammar, an interest that has continued throughout Islamic history.

Reading is also a primary goal of Muslims when they learn AFL, and it is of particular importance because it serves as the key to accessing classical Islamic texts, beginning with the Qur'an (Orhan, 2023). Although it may appear to be a simple task, reading is actually the result of complex cognitive processes (Dehaene, 2009, p. 8). This inherent complexity led Alderson (2000, p. 1) to argue that fully grasping the nature of reading was an impossible endeavour. According to this view, reading is not merely a passive decoding of printed symbols, but is a strategic and effortful process that involves multiple interrelated skills including predicting information from the text, selecting essential content, mentally organizing and summarizing information, monitoring comprehension, repairing breakdowns in understanding, and aligning the constructed meaning with the reader's goals (Grabe & Yamashita, 2022, p. 17). Accordingly, previous researchers have sought to explain the reading process by developing a variety of models, ranging from simple to highly complex, that aimed to capture the cognitive and metacognitive mechanisms involved in reading.

Reading comprehension is integral across major reading models. The Simple View of Reading (SVR) treats comprehension as decoding \times language comprehension (Gough & Tunmer, 1986, p. 6). Kintsch's Construction-Integration model requires morphosyntactic parsing to achieve coherence (Kintsch, 1988, 1998). Perfetti's Verbal Efficiency and Lexical Quality frameworks embed grammar within lexical representations, which frees up resources for higher-level understanding (Perfetti & Hart, 2002; Perfetti, Landi, & Oakhill, 2005; Perfetti, 2007; Perfetti & Stafura, 2014). The Reading Systems Framework (RSF) treats grammatical processing (parsing, linking, and disambiguation) as a distinct coherence-building stage (Perfetti & Stafura, 2014). The Landscape Model assumes grammar by regulating concept activation through sentence structure and morphological cues (van den Broek et al., 1999). In summary, grammar is a core operating channel for reading comprehension.

Numerous studies have investigated the role of linguistic factors in reading comprehension, focusing on the first language (L1), the second language (L2), or both. A large-scale meta-analysis by Tong et al. (2024), which examined 59 studies involving L1 English and L1 Chinese learners, underscored the central role of grammatical competence in supporting reading comprehension. More recent evidence from diverse L1 backgrounds further reinforces this conclusion. Among Finnish L1 students, metalinguistic awareness and syntactic knowledge were significant predictors of reading comprehension outcomes (Marjokorpi & van Rijt, 2024). In Danish L1 learners, syntactic comprehension had the strongest direct effect (Nielsen et al., 2025), while among Persian L1 students, the relationship was moderate but increased with age (Ahmadi et al., 2025). Collectively, these findings point to a robust and cross-linguistic association between grammatical knowledge and reading comprehension.

Expanding this scope to L2 acquisition, Jeon and Yamashita (2024) synthesized findings from 14 meta-analyses that were published between 2010 and 2023, and provided compelling evidence that linguistic variables, particularly vocabulary and grammar, exhibited strong correlations with L2 learners' reading comprehension. A more comprehensive perspective was provided by Zheng et al. 2023, who conducted a meta-analysis of 86 studies spanning 1998 to 2021, encompassing both L1 and L2 acquisition. Their findings emphasized the fundamental role of grammatical knowledge in text comprehension, particularly with regard to complex texts. Moreover, their results suggested that, as students progressed through educational levels, the influence of grammar on reading comprehension became more pronounced, probably due to the increasing complexity of academic texts.

The role of morphological awareness in reading comprehension has been examined extensively, particularly in English as both an L1 and as an L2. Zhang, Ke, and Mo (2023) used meta-analytic structural equation modeling to analyze data from 107 studies that were published between 1981 and 2020, and provided substantial evidence that morphological awareness was a crucial factor in reading comprehension. Similarly, several studies have explored the contribution of syntactic knowledge to L2 reading comprehension. Zhou (2022) found that syntactic awareness played a unique role in reading comprehension in L2 Chinese, while Pratiwi (2019) reported a strong and positive correlation between syntactic knowledge and reading comprehension in L2 English, emphasizing the role of syntax in textual processing. In addition, recent systematic reviews have highlighted that a combination of L1 and L2 language skills—such as vocabulary and morphological awareness—along with cognitive factors like working

memory and higher-order components such as metacognitive knowledge, are positively associated with L2 English reading comprehension (Vettori et al., 2024).

Research on the relationship between grammatical and vocabulary knowledge in L2 reading comprehension has yielded mixed results. Some researchers, such as Park (2014) and Aryadoust and Baghaei (2016), found both to be significant predictors, with vocabulary exerting a slightly greater influence. Conversely, research by Shiotsu and Weir (2007), Atai and Nikuinezhad (2012), and Lin and Yang (2025) identified grammar as the strongest predictor across various L2 contexts, while Lee (2016) noted that its relative influence varied according to the type of test and the learners' proficiency levels. Further evidence has supported the influence of the proficiency level. Taşçı and Turan (2021) found that syntactic knowledge demonstrated stronger predictive power in L2 reading comprehension among high-proficiency learners, whereas lexical breadth had the most significant impact on reading comprehension among intermediate and low-proficiency learners. These findings suggest that, while both grammar and vocabulary contribute to L2 reading, their relative importance may shift depending on learners' proficiency levels and reading demands. Distinctions have also been observed in the role of implicit versus explicit grammatical knowledge in L2 reading comprehension. Zhang (2012) found that implicit grammar knowledge—referring to automatic syntactic processing—was correlated more strongly with reading comprehension in L2 English than was explicit grammar knowledge.

In the context of English for specific purposes, Akbari (2014) identified grammatical knowledge as a strong predictor of reading comprehension, particularly in medical education, and further proposed that it could serve as a reliable indicator of reading success in specialized fields. Extensive research has established a strong relationship between grammatical knowledge (syntax and morphology) and reading comprehension across various L1s and L2s, age groups, levels of language proficiency, and language-learning contexts. However, this relationship remains largely unexplored in AFL. Given Arabic's intricate morphological and syntactic structures, whether findings from studies of other languages apply to AFL learners remains unclear. Therefore, this study is crucial for addressing this research gap by examining the relationship between grammar and reading comprehension in Arabic. The findings could provide valuable insights for AFL instruction, curriculum development, and assessment. To explore the relationship between the performances of AFL learners in reading comprehension tests and on grammar tests. This research answer what is the relationship between the performances of AFL learners in reading comprehension tests and on grammar tests?

Sub questions (1) what is the level of performance of AFL learners in reading comprehension tests? (2) What is the level of performance of AFL learners on grammar tests? (3) Do students' performances on grammar tests affect their ability in reading comprehension tests? (4) To what extent is there a correlation between students' results for grammar tests and for reading comprehension tests? (5) Can any of the differences in the relationship be attributed to the learner's gender, the type of test (quiz versus final exam), the level of language proficiency (A1, A2, B1, B2, and B2+), or the academic year (2022/2023 versus 2023/2024)? (6) Can students' performances in reading comprehension tests be predicted based on their performances in grammar tests? (7) What is the nature of the relationship between an individual student's performance on reading comprehension and grammar tests over the course of the program?

METHOD

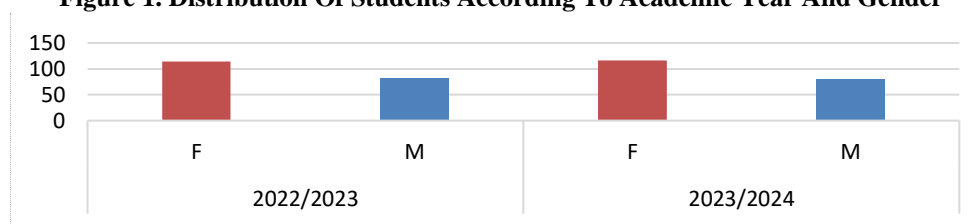
We adopted a quantitative, descriptive-analytical, observational correlational design for this study in order to investigate the association between students' grammar performances and their reading comprehension using archival assessment data that were routinely collected by the Arabic Preparatory Program at the Fatih Sultan Mehmet Waqf University (FSMVU) across the 2022–2023 and 2023–2024 academic years. Ethical approval was obtained from the university's research ethics committee.

In this study, we analyzed the test results of students in the Arabic preparatory program at FSMVU, which prepares students linguistically for the Faculty of Islamic Sciences and the Arabic Language Teaching Program in the Faculty of Education. Completing the program is a prerequisite for undergraduate study. Students are placed into A1–B1 levels based on a placement test, following the CEFR framework. Each level consists of six weeks (180 hours). Education Faculty students must pass B2. Islamic Sciences students must pass B2+. The program includes male and female students, mainly Turkish students, with some nonnative Arabic speakers with various nationalities. Data were collected during the 2022–2023 and 2023–2024 academic years. Table 1 presents the distribution of students according to proficiency level, academic year, and gender. All personally identifying information was removed prior to the analysis.

Table 1. Distribution of Students According to Proficiency Level in Each Academic Year

Level	2022-2023		2023-2024		Total
	Female (F)	Male (M)	Female (F)	Male (M)	
A1	21	18	23	19	81
A2	23	15	22	15	75
B1	32	24	28	20	104
B2	32	21	29	16	98
B2+	6	5	14	11	36
Total	114	83	116	81	394
	197		197		

Figure 1. Distribution Of Students According To Academic Year And Gender



Data Collection and Analysis

Research Instruments

Short Quizzes: Administered twice per level (Weeks 3 and 5), these 45-minute tests cover reading, vocabulary, and grammar in a single paper. **Reading Quiz:** 10 questions based on a passage (10 points). **Grammar Quiz:** 15 questions assessing recently covered grammar (15 points). **Final Examinations** held in Week 7 after approximately 180 hours of instruction, the 90-minute exam integrates reading, vocabulary, and grammar into one paper. **Reading Exam:** Two passages, 20 questions (20 points). **Grammar Exam:** 20 questions covering the grammar topics for each level (20 points). The grammar test encompasses the disciplines of syntax and morphology; it measures syntactic knowledge and awareness, as well as morphological knowledge and awareness.

All the assessments consist of multiple-choice questions and are graded automatically. These assessments undergo rigorous standardization, including clear objectives, content alignment, and multistage review processes to ensure validity.

To verify the reliability of the research instruments—namely, the grammar tests and reading comprehension tests—a random sample of 50 learners, distributed across the academic years 2022/2023 and 2023/2024, were selected. Reliability was assessed using Cronbach's alpha and the Guttman split-half coefficient, as shown in Table 2.

Table 2. Cronbach's Alpha and Guttman Split-Half Reliability Coefficients for the Instruments

Reliability	Cronbach's Alpha	Guttman Split-Half Coefficient
Grammar	.762	.810
Reading	.788	.825

Table 2 shows that the value of Cronbach's alpha for the research instruments was (0.762), which is a high value indicating the good internal consistency of the items constituting the grammar test, meaning that all the items measured the same construct consistently. The value of the Guttman split-half coefficient for the grammar test was (0.810), which is a very high value indicating excellent agreement between the two sections of the test. For the reading comprehension test, the value of Cronbach's alpha was (0.788), which is also a high value indicating very good internal consistency of the items, while the value of the Guttman split-half coefficient was (0.825), which is a very high value indicating excellent agreement between the two sections of the reading test. Based on the high values of Cronbach's alpha and the Guttman split-half coefficients for the research instruments, it can be said that they are reliable, meaning that the test consistently and reliably measured the construct it was intended to measure, and that the items constituting the test were closely related to one another, which indicates that the test measured a single construct.

Procedures: (1) Ethical approval was obtained, (2) The tests were administered as part of on-going program evaluation. Data Collection Procedures:

1. We compiled test results from all the short and final assessments over a two-year period for this study.
2. Information about the students' identities was removed to ensure anonymity.
3. Data were aggregated by level and test type for the 2022–2023 and 2023–2024 academic years.

Data Analysis

The data were analyzed using IBM SPSS Statistics. Descriptive statistics (mean, standard deviation, and percentage) were calculated for reading comprehension and for grammar scores. Pearson's correlation coefficients were computed overall and by gender, test type (quiz/final), proficiency level (A1–B2+), and academic year (2022/2023, 2023/2024). Correlation strength was interpreted according to Cohen's (1988, p. 82) benchmarks: $r \approx .10$ (small), $.30$ (medium), $.50$ (large), based on the absolute value of r . Simple linear regression analyses were conducted to predict reading comprehension scores based on the grammar scores and to predict grammar scores based on the reading comprehension scores. R , R^2 , standard error of the estimate, ANOVA F test results, and regression coefficients (B , beta, t , and p) were reported for each model.

The study was conducted in accordance with the ethical standards and guidelines of Fatih Sultan Mehmet Vakıf University (FSMVU-06/06/2024-36/26).

RESULTS AND DISCUSSION

Performances of AFL Students in the Reading Comprehension Tests

Table 3 presents the descriptive statistics (mean, standard deviation, and percentage) for students' scores on the reading comprehension quiz and the final test. The mean score for the quiz was 7.09 out of 10 (70.90%), whereas the mean score for the final test was 13.57 out of 20 (67.92%). These results indicate relatively similar performance levels between the two assessments, with a slightly higher percentage score for the quiz.

Table 3. Mean, Standard Deviation, and Percentage Scores of Students for the Reading Comprehension Test

Test	Total score	Mean	Std. Deviation	Percentage
Quiz	10	7.09	2.257	70.90 %
Final	20	13.57	4.404	67.92 %

Performances of AFL Students on the Grammar Tests

Table 4 presents the descriptive statistics (mean, standard deviation, and percentage) for the students' scores for the grammar quiz and the final test. The mean score for the grammar quiz was 11.81 out of 15 (78.72%), whereas the mean score for the final test was 14.53 out of 20 (72.69%). These results indicate comparable performances on both assessments, with slightly higher scores for the quiz.

Table 4. Mean, Standard Deviation, and Percentage Scores of Students for the Grammar Test

	Testing	Total score	Mean	Std. Deviation	Percentage
Grammar tests	Quiz	15	11.81	2.792	78.72 %
	Final	20	14.53	3.760	72.69 %

Using Grammar Test Performances to Predict Reading Comprehension Test Performances

Table 5 displays the correlation coefficients for the regression model predicting the reading comprehension scores based on the grammar scores. The results indicate a positive, moderate correlation between the grammar test scores and the reading comprehension scores ($R = .578$). The coefficient of determination ($R^2 = .334$) shows that 33.4% of the variance in the reading comprehension scores could be explained by the grammar scores.

Table 5. Correlation Coefficients of the Regression Model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.578	.334	.334	3.593

Table 6 presents the one-way ANOVA results that were used to assess the statistical significance of the regression model. The results revealed a statistically significant model ($F = 1607.223$, $p < .001$), indicating that the grammar scores significantly predicted the reading comprehension scores.

Table 6. One-Way ANOVA Results for the Regression Model

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	20751.238	1	20751.238	1607.223	.000
	Residual	41290.129	3198	12.911		
	Total	62041.367	3199			

Table 7 shows the standardized and unstandardized regression coefficients for predicting the reading comprehension scores based on the grammar scores. The unstandardized coefficient ($B = 0.731$) indicates that each one-point increase in the grammar score corresponded to a 0.731-point increase in the reading comprehension score; this effect was statistically significant ($p < .001$).

Table 7. Standardized, Unstandardized Coefficients and the Significance Level of the Regression Model

Model	Unstandardized Coefficients		Standardized Coefficients	<i>t</i>	Sig.
	<i>B</i>	Std. Error	Beta		
(Constant)	.277	.244		1.137	.256
Grammar	.731	.018	.578	40.090	.000

Relationship between Grammar Test Performances and Reading Comprehension Test Performances

Table 8 presents the results of Pearson's correlation analysis, showing a strong, positive, and statistically significant relationship between the students' grammar test scores and their reading comprehension scores ($r = 0.578$, $p < .001$, $N = 394$). This indicates that higher grammar scores were associated with higher reading comprehension scores.

Table 8. Correlation between Reading Comprehension Test Performances and Grammar Test Performances

		Grammar
Reading	Pearson Correlation	.578**
	Sig. (2-tailed)	.000
	N	394

Table 9 shows Pearson's correlation coefficients for the grammar and reading comprehension scores by gender. The results indicate that the correlation was statistically significant for both males ($r = .563$, $p < .001$) and for females ($r = .590$, $p < .001$), suggesting a strong, positive relationship in both groups. The correlation was slightly higher among female students, though the difference was minor and may have been due to other factors.

Table 9. Pearson's Correlation between Grammar and Reading Comprehension Scores by Gender

	Gender	Grammar	
Reading	Male	Pearson Correlation	.563**
		Sig. (2-tailed)	.000
		N	164
	Female	Pearson Correlation	.590**
		Sig. (2-tailed)	.000
		N	230

Table 10 presents the Pearson's correlation coefficients that were used to examine the relationship between grammar scores and reading comprehension scores by test type. For the quiz, the correlation was $r = .422$ ($p < .001$, $n = 1295$), indicating a moderate positive relationship. For the final test, the correlation was $r = .509$ ($p < .001$, $n = 1905$), indicating a strong, positive relationship.

Table 10. Pearson's Correlation between Students' Grammar and Reading Comprehension Scores by Test Type (Quiz versus Final)

	Exam	Grammar	
Reading	Quiz	Pearson Correlation	.422**
		Sig. (2-tailed)	.000
		N	1295
	Final	Pearson Correlation	.509**
		Sig. (2-tailed)	.000
		N	1905

Table 11 shows a positive and statistically significant correlation between the grammar test scores and the reading comprehension scores across all the levels of language proficiency. The correlation coefficients ranged from $r = 0.498$ at level B2 to r

= 0.631 at level A2. The associations were strong at levels A1, A2, B1, and B2+, and moderate at level B2.

Table 11. Pearson's Correlation between Students' Scores on Reading Comprehension Tests and Grammar Tests by Language Proficiency Level

	Level	Grammar	
Reading	A1	Pearson Correlation	.620**
		Sig. (2-tailed)	.001
		N	599
	A2	Pearson Correlation	.631**
		Sig. (2-tailed)	.000
		N	775
	B1	Pearson Correlation	.615**
		Sig. (2-tailed)	.000
		N	892
	B2	Pearson Correlation	.498**
		Sig. (2-tailed)	.000
		N	739
	B2+	Pearson Correlation	.590**
		Sig. (2-tailed)	.000
		N	195

Finally, Table 12 shows that the correlation between grammar test scores and reading comprehension scores was strong and was relatively stable across the two academic years. The correlation coefficient was $r = 0.571$ in 2022/2023 and $r = 0.585$ in 2023/2024, with both correlations being statistically significant at $p < 0.001$.

Table 12. Pearson's Correlation between Students' Scores on Reading Comprehension Tests and Grammar Tests by Academic Year (2022/2023 and 2023/2024)

	Year	Grammar	
Reading	2022-2023	Pearson Correlation	.571**
		Sig. (2-tailed)	.000
		N	1551
	2023-2024	Pearson Correlation	.585**
		Sig. (2-tailed)	.000
		N	1649

Using Reading Comprehension Test Performances to Predict Grammar Test Performances

Table 13 presents the results of a simple linear regression analysis that was used to examine whether the grammar scores could be predicted based on the reading comprehension scores. The correlation coefficient was $R = 0.578$ ($p < 0.001$), indicating a strong, statistically significant positive relationship between the two variables. The coefficient of determination was $R^2 = 0.334$, indicating that approximately 33.4% of the variance in grammar scores could be explained by the reading comprehension scores.

Table 13. Model Summary for the Simple Linear Regression

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.578	.334	.334	2.843

Table 14 presents the results of the one-way ANOVA for the regression model, showing that the F value was 1607.223 with a significance level of Sig. = 0.000, $p < 0.001$. This indicates that the regression model was highly statistically significant, the relationship between the two variables was not random, and that the model provided a good description of the relationship.

Table 14. One-way ANOVA for the Regression Model

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12993.370	1	12993.370	1607.223	.000b
	Residual	25853.779	3198	8.084		
	Total	38847.149	3199			

Table 15 presents the effect of the independent variable (students' scores for the reading comprehension test) on the dependent variable (students' scores for the grammar test). The unstandardized coefficient ($B = 0.458$) indicates that, for each one-unit increase in reading comprehension scores, the grammar scores increased by 0.458 units. The standardized coefficient ($\beta = 0.578$) shows that the independent variable had a strong effect on the dependent variable. The t value and the significance level ($p < 0.001$) indicate that this effect was highly statistically significant, meaning that the reading comprehension scores were a strong and reliable predictor of the grammar scores.

Table 15. Standardized and Unstandardized Coefficients for the Regression Model

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	8.466	.122		69.540	.000
Reading	.458	.011	.578	40.090	.000

The Relationship between Individual Student's Performances on Grammar Tests and Reading Comprehension Tests

Table 16 presents the relationship between an individual student's performance on grammar tests and reading comprehension tests over the course of the program. Pearson's correlation analysis revealed a strong, positive association between the two scores ($r = 0.726$) at a significance level of $\text{Sig.} = 0.000$, which was lower than the adopted alpha level ($\alpha = 0.05$), indicating a highly statistically significant relationship. Accordingly, a student who scored high on the grammar tests was also expected to score high on the reading comprehension tests, and vice versa.

Table 16. Pearson's Correlation between Individual Student's Scores on the Grammar and Reading Comprehension Tests

Reading	Grammar	
	Pearson Correlation	.726
Sig. (2-tailed)	.000	
N	394	

The results indicate that the students' mean performances in the short reading comprehension and grammar tests slightly exceeded their performances in the final tests. This difference may be attributed to several factors. First, the nature of short tests—typically comprising fewer tasks, shorter texts, and more targeted questions—reduces cognitive load and helps to clarify what is required. Moreover, the environment of short tests tends to be less stressful compared to that of the final examination. The slight decline in final test scores, although not substantial, may reflect the influence of certain variables, such as the lengths of the texts, the greater number of questions, and the increased cognitive demands. Additional factors may include fatigue or anxiety associated with end-of-level examinations, during which students are required to take three tests on the same day (reading comprehension and grammar/vocabulary, listening, and writing). This finding is consistent with what Alderson (2000) referred to as “factors affecting the nature of reading” and with Aydın's (2009) conclusions regarding the impact of anxiety on foreign-language learners. Accordingly, this result calls for a reconsideration of the final examination system to avoid scheduling multiple tests on the same day. Such a change

would help students to demonstrate their actual proficiency without the influence of external pressures, thereby providing a more accurate representation of their reading ability.

The results of the simple linear regression analysis revealed a strong, positive, and statistically significant relationship between students' performances on the grammar tests and their performances on the reading comprehension tests. The coefficient of determination ($R^2 = 0.334$) indicated that approximately 33.4% of the variance in reading comprehension scores could be explained by the students' performances on grammar tests. This finding aligns with the results of Atai and Nikuinezhad (2012) in the context of teaching the English language, which showed that grammatical knowledge accounted for the variance in reading scores. It is also consistent with the work of Taşçı and Turan (2021), who found that grammatical knowledge had stronger predictive power for reading comprehension in English as an L2 among higher-proficiency learners. Similarly, Zhou (2022) reported that students' performances on grammatical awareness tasks was positively associated with their reading comprehension in Chinese as an L2. Moreover, these results are in line with those of Zheng et al. (2023), whose findings highlighted the fundamental role of grammatical knowledge in text comprehension; Lin and Yang (2025) reached the same conclusion in the context of Chinese as an L2.

The results indicated that students with greater grammatical competence achieved higher scores on the reading comprehension tests, as shown in Table 8, suggesting that grammatical competence makes a significant contribution to reading comprehension. This finding is consistent with previous studies that identified grammatical knowledge, alongside vocabulary, as being a strong predictor of L2 reading ability (Raeisi-Vanani & Baleghizadeh, 2022). In a meta-analysis of studies—most of which examined English as an L2—Jeon and Yamashita (2014) found that L2 grammar knowledge, vocabulary knowledge, and decoding skills were the strongest correlates of L2 reading comprehension. In another meta-analysis synthesizing multiple L2 acquisition meta-analyses, Jeon and Yamashita (2024) reported that vocabulary and grammar had strong correlations with L2 reading comprehension. Grammatical competence has also been proposed as an indicator of reading success in specialized domains (Akbari, 2014).

The results indicate that the relationship between grammar and reading comprehension was stable and statistically significant across the different variables that were examined (gender, test type, proficiency level, and academic year), emphasizing the central role of grammatical competence in reading comprehension among AFL learners. Although the strength of the relationship varied slightly among the groups, the overall trend remained consistent: Higher grammatical mastery corresponded to higher comprehension levels. This finding is consistent with a recent meta-analysis of the relationship between grammar and reading comprehension in both English and Chinese, which revealed that the correlation between the two variables was strong (Tong et al., 2024). It is noteworthy that the correlation between grammar and reading comprehension among AFL students with lower levels of proficiency in Arabic was stronger than it was among students with higher levels of proficiency. This may have been due to the substantial grammatical differences between Arabic and Turkish—the L1 of most of the participants in the sample—which necessitated a greater reliance on grammar knowledge to understand Arabic texts in the early stages. By contrast, the students with higher proficiency levels were more accustomed to Arabic sentence structures and were able to process them more intuitively.

The regression analysis results confirmed that reading comprehension was a strong predictor of students' grammatical competence, reflecting a functional interdependence between the two constructs in the context of language learning. The presence of a statistically significant correlation and a relatively high coefficient of determination (33.4%) indicated that students who had strong reading comprehension skills were also likely to demonstrate good control over grammatical structures. It is noteworthy that no previous studies that examined reading comprehension performance as a predictor of grammatical performance were found.

The results suggest that the relationship between students' performance on grammar tests and reading comprehension was not simply a temporary association that could be observed in a single test, but was a cumulative and stable relationship that demonstrated consistency across both skills throughout the duration of the program. The high correlation coefficient ($r = 0.726$) indicated a consistent performance pattern, reflecting the genuine integration of linguistic structures and comprehension, confirming that progress in one skill is often accompanied by progress in the other. This finding is consistent with the findings of Xie and Yeung (2022), Jeon and Yamashita (2024), and Zheng et al. (2023).

Educational Implications; The strong, positive relationship between grammar and reading comprehension suggests the need for integrated instructional approaches in AFL programs:

1. **Integrating Grammar and Reading:** Embed grammar teaching within authentic reading contexts, and use grammatical structures to support meaning making rather than teaching them in isolation.
2. **Curriculum Design:** Incorporate explicit grammatical objectives into reading units and use functional texts in grammar lessons to link form and meaning.
3. **Implicit Grammar Development:** Apply contextual strategies that connect linguistic form and meaning to promote implicit grammar acquisition.
4. **Balanced Assessment:** Design tests that assess both grammar and reading comprehension to reflect actual proficiency.
5. **Focus on Beginners:** Given the stronger grammar-reading link at the A1–A2 levels, emphasize grammar development at these levels to support advanced comprehension in the future.

This study was conducted within specific delimitations that should be considered when interpreting and generalizing the findings. Topically, it focused on students' performances on grammar tests—covering both syntactic and morphological components—and their performances in reading comprehension tests. Temporally, the data were restricted to two academic years (2022/2023 and 2023/2024), which may limit the generalizability of the results to other educational contexts or timeframes. With regard to the assessment tools, the analysis was based exclusively on the results of short quizzes (formative assessments) and final exams (summative assessments).

CONCLUSION

In this study, we aimed to explore the relationship between the performances of AFL learners on grammar and reading comprehension tests by analyzing the results of 394 students in the Arabic preparatory program at FSMVU over the academic years 2022/2023 and 2023/2024. We adopted a quantitative descriptive-analytical approach and employed measurement tools that were developed according to rigorous standards and

statistical control. Data were analyzed using means, standard deviations, correlation tests, regression analysis, and an analysis of variance. The results revealed a strong, positive, and statistically significant correlation between students' performances on grammar and reading comprehension tests, which remained stable across gender, proficiency level, test type, and academic year. The regression results indicated that 33.4% of the variance in the students' reading comprehension performances could be explained by their grammar performances and vice versa, demonstrating mutual predictive power between grammar and reading comprehension performances. The analyses also showed a strong correlation at the individual performance level throughout the program ($r = 0.726$), reflecting the genuine integration of grammatical competence and reading comprehension. These findings are consistent with previous research, particularly meta-analyses and recent experimental studies, which have emphasized the pivotal role of grammatical competence in developing reading comprehension, particularly in the context of L2 or foreign-language learning.

Future studies could examine the impact of instructional approaches, such as integrating grammar into authentic reading contexts versus isolated grammar instruction, on reading comprehension. Researchers could also compare students who were taught using classical methods to those who were taught using modern communicative approaches. Further investigations could address the interplay among grammar, vocabulary, and other language skills (e.g., listening and writing), as well as including learners with diverse linguistic and cultural backgrounds to assess the role of the L1 and the educational culture in shaping the grammar-reading relationship.

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