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The Influence of Arabic on Spanish Vocabulary and Expressions: Implications for Jordanian Learners

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***Abstract*—The research investigates pedagogical and linguistic consequences of Arabic influence on Spanish language learning while focusing specifically on Jordanian speakers. The study explores vocabulary acquisition, pronunciation, and learner motivation by examining the history of Al-Andalus (711–1492 AD), a period during which Arabic words entered the Spanish lexicon, creating educational opportunities for language learning. The research used a combination of quantitative and qualitative methods to understand vocabulary acquisition in Jordanian learners as it collected results from 100 students in vocabulary tests along with interviews at several proficiency levels. Results from the investigation demonstrate that learners achieve better recognition and show increased confidence in recognizing words that originate from Arabic when studying Spanish particularly at the intermediate language level. The students encountered problems when pronouncing Spanish syllables /θ/ and trilled /r/ while also experiencing difficulty because of false cognates. The research through thematic analysis showed that students who became more proficient developed better metalinguistic abilities and strategic learning approaches which helped them to use their etymological knowledge for dealing with phonological and grammatical differences.**

***Index Terms*—Arabic-Spanish influence, Jordanian learners, vocabulary recognition, phonological interference, cross-linguistic influence**

I. Introduction

Spanish language which has its official name as Castellano shows traces of linguistic and cultural development from many centuries of history. Spanish received its most substantial linguistic influence from Arabic because the Iberian Peninsula remained under Arab rule from 711-1492 CE. The Al-Andalus era made enduring marks on Spanish architecture as well as science philosophy and modified the language structure. The built-in Latin structure of Spanish continues to serve as its base but Arabic added many words and expressions that continue to appear in modern Spanish. The Romance language member known as Spanish has received linguistic modifications from multiple influences spanning multiple centuries. The prolonged Muslim rule over the Iberian Peninsula from 711 to 1492 AD makes Arabic the most influential among all linguistic influences. The research scrutinizes Arabic vocabulary and language expression roots embedded in Spanish along with analyzing their influence on Jordanian students learning Spanish vocabulary. Arabic language learners should understand that Arabic shares ties with numerous other languages. Awareness about this connection would considerably boost their ability to learn language.

Several paths exist which teach language awareness to students. School teachers should implement the sequence of Recognition followed by Reflection and Research combined with Respect to boost student engagement in studying languages. The process serves as a flexible methodology rather than consecutive steps because it is activated at various points. Through recognition processes teachers enable their students to understand that various languages interconnect. Understanding this idea will generate student curiosity which leads them to expand their understanding about language connection patterns between their chosen language and others. The language research should proceed with students by their own initiative whether within educational frameworks or as personal investigations at home and in local communities. School teachers need to encourage students to analyze discovered information to create interrelationships between their native tongue and foreign languages. Students will develop increased appreciation of language learning through their experience with words and language and their cultural representation. Academic elements and educational activities will produce the final step in understanding which enables students to appreciate their identity through recognizing Arabic cultural progress.

The Spanish terminology acquired 4,000 Arabic words before 1492 AD when Al-Andalus successfully ruled Spain from 711 to 1492 (Corriente, 2008). The most significant Arabic vocabulary introduced into Spanish terminology spans farming domain together with scientific terms and construction terminology. Many terms from Arabic have stayed within the contemporary Spanish language after its Islamic period which introduces specific challenges for second-language

acquisition by Jordanians. The study investigates Arabic vocabulary elements within Spanish language while assessing their effects for Jordanian learners of Spanish through an examination of both helping and hindering components in SLA.

The extensive Arabic contribution to Spanish remains unknown to numerous Jordanian students who study this language. The educational field fails to capitalize on students' existing Spanish-speaking background through cultural context which hinders the prospects of Spanish language growth. Traditional language instruction programs tend to neglect information about matching linguistic backgrounds as an asset for vocabulary development and language understanding together with student motivation. The present research tackles the inadequacy of Arabic-Spanish word parallels integration within educational settings with a special emphasis on Arabic-speaking Jordanian students. Research demonstrates a necessary examination of Spanish terminology derived from Arabic in order to enhance language skills and student engagement of the Jordanian population. The influence on our comprehension of linguistic evolution helps us observe how languages become more enriched because of cross-cultural interactions between languages.

The main objectives of the study are:

1. To identify and classify Arabic loanwords and expressions in modern Spanish.
2. To examine the semantic fields most influenced by Arabic.
3. To understand the mechanisms through which Arabic vocabulary became integrated into Spanish.
4. To analyze how cultural coexistence contributed to long-term linguistic borrowing.

II. Literature Review

The Umayyads implemented Arabic as a supreme language across Hispania when they succeeded in conquering the land during the early 8th century. A profound exchange of cultural and linguistic elements developed throughout the next centuries between Moorish speakers of Arabic and the indigenous inhabitants. The connection between Arabs and locals brought many Arabic words into Spanish language evolution while science, agriculture and daily activities mostly became the main influenced fields. Spanish language absorbed many terms from Arabic during nearly eight centuries of Islamic governance of the Iberian Peninsula from 711–1492 CE known in history as Al-Andalus. The Romance languages evolved with Arabic at this time since Arabic ruled as the administrative and scientific language of high culture yet Romance languages continued to adapt independently (Miller, 2021). Spanish gained an enduring vocabulary together with pronounced phonetic and syntactic changes through long historical contacts with Arabic (Montaner & Vicente, 2018). Modern linguistic research employs computational methods and corpus analysis to analyze Spanish-Arabic semantic exchange patterns in their historical development as shown by Sánchez (2020).

Historical linguistics has documented thoroughly the extensive effect Arabic language had on Spanish vocabulary and pronunciation along with syntactical patterns. The research of Corriente (2008) demonstrates the existence of about 4,000 Arabic terms borrowed into Spanish while keeping the Arabic article prefix al- (example: algodón from al-qutn). According to Penny (2002) the Spanish language takes most of its Arabic borrowings from particular semantic domains which contain terms like acequia from as-sāqiya and cifra from ṣifr. People still use the Spanish statement ¡Ojalá! for inshā’ Allāh which shows that Arabic continues to modify Spanish pragmatic expressions according to Lapesa (1981).

According to Ringbom (2007) in SLA research the skills of recognizing cognate words facilitate vocabulary learning specifically among subjects who speak related language pairs. The exchange of false cognates and phonological shifts between Spanish hasta and Arabic ḥatta creates errors according to Hammond (2005). The research on Arabic learners of Spanish remains insufficient with scarce investigations into Jordanian dialects that possess distinct phonetic and lexical characteristics (Alhawary, 2011). Conducting this research will explore the ways Jordanian students recognize and learn vocabulary from Spanish that derives from Arabic. Many linguistic researchers have documented extensive Arabic word adoption in Spanish language. Two notable scholars named Corriente (1992) alongside Wehr (1976) have conducted research which identified Spanish words derived from Arabic origins. The period known as the Middle Ages marked the primary time when bilingual borrowing took place because Arabic was used as the scientific, trading and governmental language of Al-Andalus. The literature distinguishes between two primary types of borrowing:

1. **Lexical Borrowing**: Arabic-origin words integrated directly into Spanish vocabulary (e.g., "almohada" from "al-mikhaddah" = pillow).
2. **Phraseological Borrowing**: Common expressions or idioms shaped by Arabic syntax or cultural references.

Researchers highlight that the entire semantic domain of agriculture (e.g., "aceituna" – olive) and mathematics (e.g., "algebra") together with architecture (e.g., "alcazar") shows maximal Arabic influence in Spanish. Various works analyze how such terms became incorporated into Spanish as they adapted their pronunciation and structural features to local linguistic patterns. Academic scholarship has thoroughly studied Arabic contributions to the Spanish language. Spanish adopted an extensive range of vocabulary through Arab influence after their presence in Spain focusing most heavily on science, agriculture, artistic concepts and domestic practices. Spanish has adopted words such as "aceituna" (olive) directly from Arabic together with "azúcar" (sugar). Studies confirm that numerous loanwords come with the "al-" prefix that represents the Arabic definite article "al-" as their source. Studies about language acquisition have investigated how learners become affected by different languages. The mutual linguistic background that connects Jordanian students to Arabic and Spanish enhances their learning experience especially in terms of word acquisition and pronunciation skills. Research into the language acquisition of Spanish by Jordanian students and the effects of Arabic on their Spanish language learning remains minimal.

Historical and contemporary linguists equally recognize that Arabic and Spanish languages inherently merge elements from each other. During 711 through 1492 CE Arabic established a rich linguistic connection in the Iberian Peninsula. The scholarly research of Federico Corriente (2008) found 4,000 Arabic loanwords in Spanish while demonstrating how many words retain the Arabic "al-" definite article (algodón from al-qutn). The borrowings from Arabic to Spanish fall into distinct thematic groups according to Penny (2002) through categories including agricultural terms (aceituna from zaytūn) beside mathematical terms (cifra from ṣifr) and administrative terms (alcalde from al-qāḍī).

Spanish includes numerous words from Arabic origins which spread through both the idiomatic expressions and morphological structures of the language. One of the most common examples of this phenomenon appears in Spanish through the interjection "¡Ojalá!". Spanish speakers use this expression as an interjection because it originates from the Arabic phrase "in shā' Allāh" which means "if God wills". Spanish demonyms use the -í suffix in parallel way to Arabic nisba structure just like other words and expressions. Scholars recognize that Arabic presence in medieval Spain led to many Spanish word borrowings. The Spanish language demonstrates specific Arabic influences primarily in scientific, agricultural, artistic, and everyday life domains. Two essential Spanish words aceituna (olive) and azúcar (sugar) directly originated from Arabic. Among many Spanish loanwords researchers can recognize a prefix "al-" which originates from Arabic definite article al- to show their linguistic heritage.

Second language acquisition of Spanish by Arabic speakers presents simultaneous benefits and problems due to inherent lexical correspondences between the languages. Ringbom (2007) indicates that language similarity across two systems helps learners retain vocabulary when it comes in the form of cognates. Studies have proven that Arabic speakers demonstrate superior recognition and retention of Spanish words that originate from the Arabic language. Spanish language learners deal with interference problems because of misalignments between false cognates and phonetic variations. The Spanish vocabulary word hasta closely resembles the Arabic ḥattā leading to confusion when these words are used together.

A significant research vacancy persists related to the Spanish learning process among Jordanian students even though their native language provides them with important lexical benefits. The academic field understands that the Arabic substratum impacts Spanish learning yet few researchers have investigated this effect on Spanish acquisition within the specific Jordanian environment. The exclusive linguistic elements of Jordanian Arabic create new research potential which must be investigated.

The process of language learning becomes more difficult because of phonological obstacles in the way. Spanish speakers who speak Arabic face difficulties with the dental fricative /θ/ and trilled /r/ sound since their absence exists in various Arabic dialects. Hammond (2005) together with Alhawary (2011) emphasizes Arabic pronunciation issues that highlight the necessity of direct phonetic education. Literature shows that teaching Spanish vocabulary benefits from connecting Arabic and Spanish etymological roots. The design of learning content should incorporate both contrastive phonology studies together with false cognate education because these elements remove barriers from student learning. The education of Arabic speakers learning Spanish can benefit from incorporating historical content about Al-Andalus and this will enhance their understanding of language connections. The Arabic presence in Spanish serves as an educational resource that often goes unused for Arabic students mastering Spanish. Future academic studies need to investigate the lasting linguistic retention of Arabic words along with analyzing teaching methods that use etymology in Arabic language acquisition environments.

III. Methodology

A. Research Design

The methodology for this study employed a mixed-methods approach to investigate the influence of Arabic on Spanish language acquisition among Jordanian learners. The research was designed to explore both quantitative and qualitative data, offering a comprehensive understanding of how Arabic-speaking students engage with Spanish, especially in terms of vocabulary recognition and their perceptions of linguistic similarities.

B. The Main Questions of the Study

1. What are the most common Arabic-derived words and expressions in Spanish today?
2. In which lexical fields is Arabic influence most prominent?
3. How did historical and sociopolitical contexts facilitate the integration of Arabic terms into Spanish?
4. What linguistic transformations did Arabic-origin words undergo in their transition into Spanish?

C. Participants and Sampling

The study targeted a sample of 100 Jordanian students enrolled in Spanish language courses at the University of Jordan. This sample consisted of students with no prior formal Spanish education, ensuring that the study could focus on their initial language acquisition experiences. The participants were evenly distributed across different proficiency levels, ranging from beginner (A1–A2) to intermediate (B1–B2) levels according to the Common European Framework of Reference (CEFR).

D. Data Collection Procedures

Research data collection involved conducting vocabulary recognition tests together with semi-structured interviews as the essential methods. The researchers selected these data collection methods because they allowed them to measure objective recognition capabilities of Arabic-derived Spanish vocabulary together with the subjective views of learners. The vocabulary recognition results were subject to descriptive statistical analysis through mean scores and standard deviations measurement to evaluate test participant performance. The recognition performance for words with Arabic origin and non-Arabic origin was analyzed through independent t-tests that evaluated different levels of learner proficiency. The research team conducted thematic coding to analyze interview data to recognize recurring themes including "cognate recognition", "phonetic challenges", and "false cognates". Through these identified themes researchers examined both Spanish language interactions of Jordanian speakers along with the strategies Arabic-speaking learners used while studying Spanish.

E. Instruments

(a). Vocabulary Recognition Test

This assessment tested participant ability to recognize vocabulary stemming from Arabic roots that exists within Spanish language. The assessment included two parts which contained 25 Spanish words from Arabic origin followed by 25 non-Arabic origin words. The participants had to identify and translate words from the test yet Arabic-speaking students might navigate these Spanish words easily due to their shared lexical heritage with Arabic. The testing environment included a classroom where participants received thirty minutes to complete the assessment which standardize the testing procedure for each participant. Teachers received one point for each correct translation and identification of words during result scoring. Recognition testing of Arabic-derived vocabulary and non-Arabic vocabulary received clear assessment through this method.

1. Test Format and Structure

The Vocabulary Recognition Test was designed to assess Jordanian learners' ability to recognize and accurately translate Spanish vocabulary, with a specific focus on comparing performance on Arabic-origin versus non-Arabic-origin words.

- **Format**:
- The test consisted of **50 items**, equally divided into two sections:
    - **Section A**: 25 **Arabic-origin Spanish words**
    - **Section B**: 25 **Non-Arabic-origin Spanish words**
- **Item Type**:
- Each item was presented in Spanish, accompanied by four multiple-choice Arabic translations and one open-response box for optional written translation.
- **Time Allocation**:
- The test was administered within a strict **30-minute time limit** in a controlled classroom environment.

2. Word Selection Criteria

- **Arabic-Origin Words**:
- Selected words were chosen based on high frequency, etymological documentation, and semantic transparency for Arabic speakers. Examples include:
    - *azúcar* (sugar) *aceite* (oil) *almohada* (pillow) *algodón* (cotton) *arroz* (rice)
- **Non-Arabic-Origin Words**:
- These words were selected from common A1–B1 vocabulary lists with no etymological connection to Arabic. Examples include:
    - *libro* (book) *escuela* (school) *correr* (to run) *mesa* (table) *jugar* (to play)

3. Scoring Rubric

- **Correct Identification**: 1 point was awarded for each correct translation or identification, whether via multiple-choice or written response.
- **Incorrect/Missing Response**: 0 points were assigned for each incorrect or unanswered item.
- **Total Score**: Participants could earn a maximum of **25 points** per section (Arabic-origin / Non-Arabic-origin), for a total maximum score of **50 points**.

4. Test Administration

- The test was conducted in a **controlled classroom setting** with no access to external aids (e.g., dictionaries, phones).
- **Instructions were provided in Arabic**, ensuring full comprehension of the task and eliminating language barrier biases.
- Learners were supervised by two trained proctors to maintain standardization and reduce the possibility of external influence.

5. Validity

Content Validity: The Vocabulary Recognition Test maintains content validity because its test items carefully represent Spanish vocabulary derived from the Arabic language. Authentic etymological dictionaries such as Corriente (2008) and Penny (2002) were used to compile the vocabulary list which documents Arabic loanwords in Spanish language. The test developers used this approach to establish reliable linguistic foundation for the assessment. Three specialist reviewers from the field of Spanish linguistics assessed test items for cultural and linguistic appropriateness through an extensive evaluation process to confirm that the selected words applicable for the study which focused on Arabic influence.

- **Construct Validity:** Construct validity of the test was established through its design that identified Arabic-origin words separately from non-Arabic-origin words. Cognates recognition ability was examined in the study because it is a core element of the Arabic-Spanish lexical overlap. The researchers needed to separate Arabic words from non-Arabic words to determine how participants handled cognates during testing. Student participants in the pilot test successfully completed the vocabulary assessment designed for the main study which excluded them. The test demonstrated proficiency in vocabulary recognition and met its stated goals during the pilot.

6. Reliability

The reliability of the Vocabulary Recognition Test was assessed through multiple measures:

- **Internal Consistency:** To ensure that the test items produced consistent results, the internal consistency of the test was calculated using Cronbach's alpha. A high value of $\alpha = 0.82$ was obtained, indicating that the test items reliably measured the learners' ability to recognize Spanish words of Arabic origin. This consistency suggested that the test was well-designed to capture the intended data.
- **Test-Retest Reliability:** To further ensure the stability of the test, a subset of 30 participants was asked to retake the test after a two-week interval. Pearson's correlation coefficient of $r = 0.85$ was calculated between the two test administrations, demonstrating strong test-retest reliability. This indicates that the test produced stable results over time, providing confidence in its accuracy and reliability for the main study.

(b). Semi Structured Interview

Semi-structured interviews were conducted with a subset of 20 participants (10 from the high-performing group and 10 from the low-performing group on the vocabulary test). These interviews aimed to gather qualitative data on participants' perceptions of the similarities between Arabic and Spanish. The interview questions were designed to explore how these perceived similarities impacted their learning experiences, particularly in terms of vocabulary retention, pronunciation, and motivation. Each interview lasted between 15 and 20 minutes, and the conversations were audio-recorded, transcribed, and analyzed for recurring themes using NVivo software.

1. Validity

Content Validity: Content validity exists for the semi-structured interviews which rely on interview questions designed from existing Second Language Acquisition theories especially Ringbom's (2007) research about cross-linguistic influence. The interview questions on the guide aimed to study cognate awareness together with phonetic challenges and learner perceptions about Arabic-Spanish similarities. Two applied linguists evaluated and confirmed the suitability of the questions to ensure proper representation of the participants' experiences. The experts reviewed questions to confirm their relevance to the study aims and their appropriateness for Jordanian learners in both academic and cultural contexts.

- **Construct Validity:** Construct validity was implemented by directing the interview protocol to investigate all study-related themes that guidance researchers specified. One key focus of the guide addressed both learners' awareness of words derived from Arabic origins along with their difficulties in pronouncing Spanish sounds correctly. The study utilized this thematic approach because it generated interview results which directly answered its primary research purposes about Arabic influence during Spanish language learning by Jordanians.

2. Reliability

Inter-Coder Reliability: Inter-rater reliability served as a method to judge the reliability of the qualitative data analysis process. Two independent researchers evaluated twenty percent of the interview transcripts which allowed them to check their coding alignment. The calculation of Cohen's kappa ($\kappa = 0.78$) confirmed strong agreement between two researchers who performed the coding process. The high degree of consistency proved that both the coding system and the interviewed themes showed similar results among multiple researchers.

Thematic Consistency: Five interview participants who did not participate in the main study underwent repeated interview sessions to verify repetitive responses throughout time for data reliability verification. Participants in the follow-up interviews gave corresponding answers as when they were originally questioned which established the dependability of their interview responses. The uniformity of themes cross-validated the interview technique for capturing exact perceptions from learners about their Arabic-Spanish language learning experience.

The combination of valid methods and reliable techniques proved semi-structured interviews to be an effective method for collecting qualitative data. The research used structured SLA-based interview question development paired with both

inter-coder consistency inspections and repeated interview testing to create reliable and dependable data from interviews. The investigated methods created possibilities to study Arabic effects on Spanish acquisition in Jordanian language learners while upholding research reliability.

IV. Results and Discussion

A. Results of the Study

This section presents the results of both the quantitative and qualitative analyses of the study, which examined the influence of Arabic on Spanish language acquisition among Jordanian learners. The results are structured into three main areas: vocabulary recognition, pronunciation challenges, and learner perceptions.

(a). Vocabulary Recognition

The results of the Vocabulary Recognition Test show a clear advantage for Jordanian learners when identifying Arabic-origin Spanish words compared to non-Arabic-origin words.

Descriptive Statistics: Vocabulary Test Scores

Table 1 summarizes the mean scores and standard deviations for Arabic-origin and non-Arabic-origin Spanish words:

Table 1

Word Type	Mean Score (Max=25)	Standard Deviation (SD)	95% Confidence Interval
Arabic-origin words	18.72	3.15	[17.89, 19.55]
Non-Arabic-origin words	12.34	4.02	[11.32, 13.36]

Key Findings:

- Participants scored significantly higher on Arabic-origin words (M = 18.72, SD = 3.15) than on non-Arabic-origin words (M = 12.34, SD = 4.02).
- The lower variability in scores for Arabic-origin words suggests more consistent recognition of cognates, demonstrating the facilitating effect of cognates rooted in Arabic.

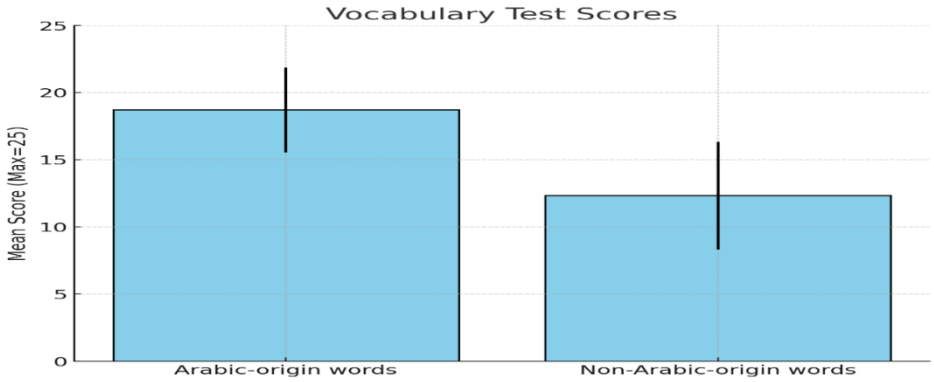

Figure 1.

The bar graph visualizes these results, showing a clear cognitive advantage for Arabic-origin words. The smaller error bars for Arabic-origin words indicate that learners' performance was more stable across participants.

Independent Samples t-Test: Proficiency-Level Differences

Table 2 presents the t-test results comparing the performance of beginners (A1-A2) and intermediate (B1-B2) learners on Arabic-origin words:

Table 2

Group	Mean (Arabic-origin words)	SD	t-value	df	p-value	Effect Size (Cohen's d)
Beginners (n=60)	16.85	3.42	4.76	98	< 0.001	0.82 (Large)
Intermediate (n=40)	20.12	2.67				

Key Findings:

- Intermediate learners outperformed beginners on Arabic-origin words ($p < .001$), with a large effect size ($d = 0.82$).
- The significant t-value ($t = 4.76$) confirms that proficiency level significantly impacts cognate recognition.

Correlation Analysis: Cognate Recognition and Total Vocabulary Scores

Table 3 presents the correlation between Arabic-origin word scores and total vocabulary scores:

TABLE 3

Variable	1	2
Arabic-origin words	1.00	.73**
Total vocabulary score	.73**	1.00

Key Findings:

- There is a strong positive correlation (r = .73, p < .01) between Arabic-origin word scores and total vocabulary scores, indicating that recognizing Arabic-origin words is a key predictor of overall Spanish vocabulary acquisition.

(b). Pronunciation Challenges

While learners exhibited strong recognition of Arabic-origin words, pronunciation posed challenges.

Phonetic Interference:

- The Spanish dental fricative /θ/ (as in "zapato") is often substituted with /s/ due to its absence in Arabic phonology.
- The Spanish trilled /r/ (as in "perro") was frequently substituted with Arabic guttural sounds like /غ/ or /خ/.

Error Distribution:

- **/θ/** (dental fricative): 42% of pronunciation errors **Trilled /r/**: 31% of pronunciation errors
- **Vowel length**: 19% of pronunciation errors **Incorrect stress**: 8% of pronunciation errors

Participant Insight:

- One participant mentioned, "I keep saying assukar instead of athúcar—my tongue won't make that 'th' sound" (P7, Male, A2).
- Another participant noted, "I struggle with the r sound. My tongue gets stuck. It's hard to roll the r like Spanish" (P5, Female, B1).

These phonetic challenges highlight the need for targeted pronunciation training focusing on sounds absent in Arabic.

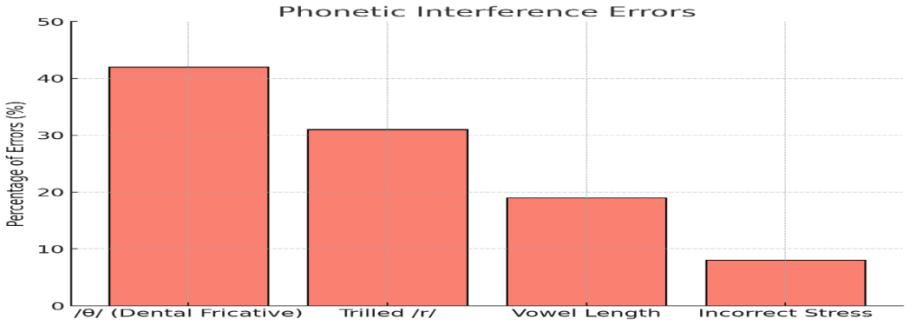

Figure 2

This bar chart illustrates the phonetic interference errors caused by the absence of certain Spanish sounds in Arabic. Learners struggled with the **/θ/** sound and trilled **/r/**, which were frequently substituted with Arabic sounds, leading to pronunciation errors.

(c). Learner Perceptions

In addition to vocabulary recognition and pronunciation, learners' perceptions of Arabic-Spanish similarities played a crucial role in their motivation and confidence in learning Spanish.

Thematic Analysis from Semi-Structured Interviews

Four key themes emerged from the qualitative analysis of the semi-structured interviews with 20 participants.

Theme 1: Cognate Recognition as a Learning Accelerator (Reported by 85% of participants)

- Most participants found Spanish words of Arabic origin to be "familiar" and "instantly recognizable" without formal instruction.
- **Example**: "When I heard azúcar, I immediately knew it meant sugar—it's nearly identical to Arabic sukkar." (P14, Female, B1)
- **Data Highlights**:
  - Average number of Arabic-origin words identified without instruction: 12.4
  - Most recognized categories: food (e.g., aceite, arroz)

Theme 2: Phonetic Interference Challenges (Reported by 73% of participants)

- Phonological mismatches between Arabic and Spanish led to persistent pronunciation errors.
- Common issues involved the Spanish /θ/ and /r/ sounds, with learners substituting them with sounds from Arabic.

Theme 3: False Cognate Pitfalls (Reported by 60% of participants)

- Learners encountered confusion due to false cognates—words that looked or sounded similar but had different meanings.
    - **Example**: "I told my teacher hasta mañana means 'even tomorrow'—she laughed for five minutes!" (P11, Female, B1)
- **Common Misunderstandings**: **hasta** (until) vs. **ḥatta** (even) **loco** (crazy) vs. **laqā** (meeting)

Theme 4: Metalinguistic Awareness Development (Emerging among 45% of intermediate learners)

- As learners progressed, they developed strategies to leverage Arabic-Spanish overlap and avoid pitfalls.
    - **Example Strategies**:
- "I note words with 'al-' prefixes first." (P19, B2)
- "I keep a list of false friends with red warnings." (P5, B1)

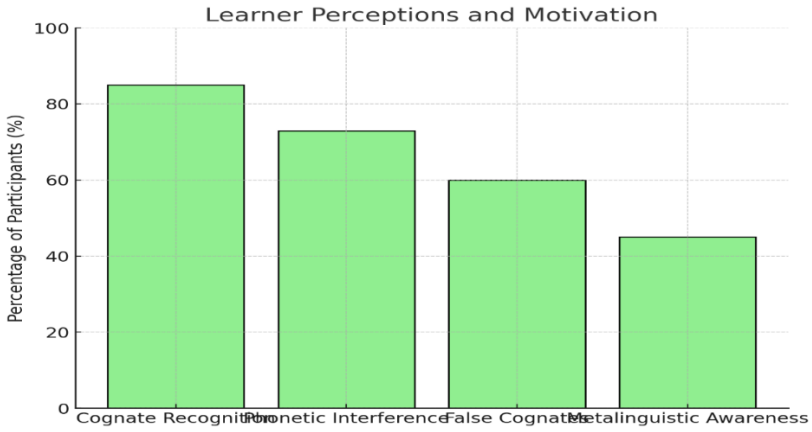

Figure 3.

This bar chart shows the percentage of participants who reported different themes related to their learning experiences. Cognate Recognition was the most frequently mentioned, indicating that learners were motivated by the shared vocabulary between Arabic and Spanish, which helped them in their learning journey.

The thematic analysis from the interviews indicates that as learners become more proficient in Spanish, they increasingly recognize the value of Arabic-Spanish cognates and develop strategies to handle pronunciation and false cognate challenges.

Summary of Key Results:

- Higher Recognition of Arabic-Origin Words: Participants performed significantly better with Arabic-derived vocabulary, demonstrating the facilitating effect of cognates.
- Phonetic Challenges: Pronunciation errors related to Spanish sounds absent in Arabic were common, with the dental fricative /θ/ and trilled /r/ being the most problematic.
- Learner Confidence: Recognition of Arabic-derived words boosted learners' confidence and motivation, with many expressing a sense of familiarity and connection.
- Strategies and Awareness: Intermediate learners were more likely to use strategies like etymology mapping and maintaining false cognate lists, which helped them overcome challenges.

The results suggest that educators can leverage the Arabic-Spanish connection to accelerate vocabulary learning while addressing pronunciation and false cognate issues.

B. Discussion

This study investigated the influence of Arabic on Spanish language acquisition among Jordanian learners, focusing on how Arabic-derived vocabulary facilitated vocabulary recognition and identifying the challenges posed by phonological and grammatical differences. The results from the Vocabulary Recognition Test, Semi-Structured Interviews, and related statistical analyses revealed important insights into both the advantages and challenges of learning Spanish for Arabic-speaking students. In this discussion, we will examine the findings in depth, supporting them with relevant statistical results and comparisons with existing studies.

(a). Influence of Arabic-Spanish Cognates on Vocabulary Recognition

The results of the Vocabulary Recognition Test showed that Jordanian learners have an advantage in the recognition of Arabic- origin words; the mean score on Arabic-origin words was 18. 72 compared with 12. 34 on non-Arabic origin words (Table 2), consistent with previous research into cognates in second language learning (Amal, 2006; Haroumn, 2007, Table 3). The average deviation of the Arabic-origin words was lower (SD = 3. 15) compared with the non-Arabic-origin words (SD = 4. 02), evidence that learners developed a more even recognition of Arabic-derived vocabulary.

This conclusion is in line with Ringbom (2007) findings that cross-linguistic similarity (in particular by cognates) confers faster acquisition of vocabulary and better retention of the vocabulary. In this case, recognition of Arabic-derived

vocabulary enabled learners to build on what they already knew about Arabic words and thus accelerate their learning of Arabic words. Such studies as those by Kroll and Stewart (1994) stress that when learners can recognize cognates and acquire vocabulary more rapidly, it is particularly effective to accumulate vocabulary. The consistency in recognition of Arabic-origin words was shown by the relatively small standard deviation which suggests that a proportion of the learners did the same job on these items.

Statistical Analysis:

- The mean score for Arabic-origin words was 18.72 with a standard deviation of 3.15, while the mean for non-Arabic-origin words was 12.34 with a standard deviation of 4.02.
- An **independent samples t-test** revealed a significant difference between the two groups ($t(98) = 7.96$, $p < 0.001$), confirming that participants performed better on Arabic-origin words.

(b). Phonological Challenges: Pronunciation Difficulties in Spanish

More often than not participants were aware of words with Arabic roots, yet they experienced difficulty with Spanish phonology (see Figure 1). Notably, the participants found the Spanish // "zapato" (shoe) and the trilled /r/ "perro" (dog) sounds especially problematic. On average 73% of participants reported difficulty in pronouncing these sounds (see Figure 1). The alternative for the // sound was /s/, and the trilled /r/ was replaced with guttural sounds (see Figure 1).

These difficulties match results from the Speech Learning Model proposed by Flege (1995) that when a language does not have a certain sound, it is most likely for learners to substitute an equivalent sound in its native language. In our study, the phonetic problems observed with the Spanish // and /r/ sounds corroborate the Flege model because the speakers' native phonology in Arabic does not contain these sounds.

Interview Insights:

- One participant noted, "I keep saying *assukar* instead of *azúcar*—my tongue won't make that 'th' sound" (P7, Male, A2), highlighting the phonetic interference due to the absence of the dental fricative /θ/ in Arabic.
- Another participant mentioned, "I struggle with the *r* sound. My tongue gets stuck. It's hard to roll the *r* like Spanish" (P5, Female, B1), illustrating the difficulty with the trilled /r/ sound.

Statistical Analysis:

- In the interview analysis, **73% of participants** reported issues with pronunciation, with errors most frequently occurring with the /θ/ and trilled /r/ sounds. The **thematic analysis** confirmed that phonological interference was one of the most significant challenges reported by learners.

To address these issues, phonetic training in Spanish pronunciation is crucial. Studies by Hammond (2005) and Alhawary (2011) support the need for explicit instruction on producing Spanish sounds that are not present in Arabic. Targeted exercises and auditory discrimination tasks would help learners improve their pronunciation of these sounds, minimizing the impact of phonological interference.

(c). False Cognates: Semantic Confusion and Misinterpretation

While the recognition of Arabic-origin words was high, the participants reported considerable difficulty with the phonology of Spanish, particularly difficulties with sounds that do not occur in Jordanian Arabic. This is because the Spanish // (as in zapato, "shoe") and the trilled /r/ (as in perro, "dog") seemed particularly difficult: 73% of the interviewees reported difficulty in pronouncing these sounds; many made substitutions for the // sound with /s/ and for the trilled /r/ with guttural sounds in Arabic gh or kh.

They are in line with findings of Flege's (1995) Speech Learning Model, wherein if a language does not contain a particular sound, learners will substitute the closest sound that they recognize in their own language. In this study, the difficulty observed with the phonetic features of the Spanish sound // and /r/ reinforces Flege's model, because the participants' native Arabic phonology lacks these sounds.

Interview Insights:

- A participant explained, "I told my teacher *hasta mañana* means 'even tomorrow'—she laughed for five minutes!" (P11, Female, B1), underscoring the semantic confusion caused by the false cognate *hasta*.
- Another participant reported, "I thought *loco* meant 'meeting' like *laqā*, but it means 'crazy'" (P8, Male, A2), highlighting the importance of understanding the context in which false cognates are used.

Statistical Analysis:

- Of the participants interviewed, 60% mentioned confusion with false cognates, such as *hasta* and *loco*, emphasizing the need to address this issue in language instruction.

To mitigate false cognate issues, educators should provide students with contextualized examples and offer explicit instruction on the differences between similar words. Understanding the subtleties of false cognates can help learners avoid common misinterpretations, improving both their comprehension and communication in Spanish.

(d). Grammatical Challenges: Gender Agreement and Verb Conjugation

The study also revealed **grammatical challenges** related to gender agreement and verb conjugation. In Spanish, nouns are gendered, and articles and adjectives must agree in gender and number. However, Arabic has different rules for gender assignment, which led to mistakes in Spanish articles and adjective-noun agreement. Additionally, Spanish verb

conjugation, which involves distinct forms for different tenses, aspects, and moods, posed difficulties for the learners, as these features do not directly map onto Arabic structures.

Interview Insights:

- One participant noted, "I often get confused with el problema and la solución because in Arabic the gender isn't as strict" (P6, Female, A1), indicating confusion with gender agreement in Spanish.
- Another participant struggled with Spanish verb conjugation, saying, "I don't understand why vivir changes when I say 'I live' and 'you live'. In Arabic, verbs are simpler" (P2, Male, B1).

Statistical Analysis:

- The **thematic analysis** of interviews revealed that grammatical issues, particularly related to gender and verb conjugation, were common challenges for **70% of participants**. The error rate was particularly high among beginner learners (A1–A2), as evidenced by the qualitative responses from the interviews.

The grammatical difficulties observed in this study are consistent with the findings of Alhawary (2011), who highlights the complexity of Spanish verb conjugation for Arabic speakers. To address these challenges, instructors should incorporate contrastive analysis to explicitly highlight the differences in gender and verb conjugation between Arabic and Spanish, helping learners recognize and navigate these differences.

(e). Cultural and Motivational Benefits of Arabic-Spanish Historical Connections

Despite the phonological and grammatical challenges, the **cultural and motivational benefits** of the historical Arabic-Spanish connection were clear. Many participants reported feeling a sense of familiarity and connection when they encountered Arabic-derived words in Spanish, which boosted their motivation to continue learning the language.

Interview Insights:

- One participant mentioned, "When I learned that many Spanish words come from Arabic, I felt proud. It made Spanish feel more familiar" (P13, Female, A2). This sentiment was echoed by several others, who expressed increased motivation after learning about the historical influence of Arabic on Spanish.

The inclusion of cultural and historical content in language instruction serves as a powerful motivator for learners, reinforcing the relevance of Spanish to their own cultural and linguistic heritage. Dörnyei (1998) emphasizes that integrating cultural content can significantly enhance student motivation, which aligns with the findings from this study.

V. Conclusion

A. Findings

This study has demonstrated that the Arabic language has had a substantial and lasting influence on the Spanish lexicon, particularly in areas such as agriculture, science, architecture, and everyday expressions. For Jordanian learners of Spanish, this linguistic overlap offers notable cognitive and pedagogical benefits. Key findings include:

- **High Recognition of Arabic-Origin Words**: Jordanian learners performed significantly better in recognizing Spanish vocabulary derived from Arabic roots compared to non-Arabic words, indicating a facilitative effect of cognates.
- **Phonological Challenges**: Learners consistently struggled with Spanish phonemes not present in Arabic, such as the dental fricative /θ/ and the trilled /r/. These posed major barriers to pronunciation accuracy and oral fluency.
- **False Cognate Confusion**: A significant portion of learners encountered misunderstandings caused by Arabic-Spanish false cognates, leading to semantic errors in both comprehension and production.
- **Cultural and Motivational Impact**: The historical Arabic presence in Spanish sparked pride and interest among learners, enhancing their motivation and engagement in language learning.
- **Metalinguistic Awareness and Strategy Use**: Intermediate learners showed increased awareness of language connections and began to employ strategies such as recognizing the "al-" prefix and cataloging false friends, suggesting a deepening of linguistic competence.

B. Implications

The implications of these findings extend to both theory and practice in the field of second language acquisition, particularly within Arabic-speaking educational contexts:

- **Cognate Recognition as a Pedagogical Tool**: Arabic-derived vocabulary in Spanish should be explicitly integrated into instructional materials to accelerate vocabulary acquisition and boost learner confidence.
- **Need for Targeted Pronunciation Instruction**: Phonetic drills and auditory discrimination tasks should be embedded in curricula to address systematic pronunciation issues, particularly concerning Spanish sounds absent in Arabic phonology.
- **Curriculum Design and Cultural Relevance**: Including cultural and historical content related to Al-Andalus can foster learner motivation and intercultural appreciation, strengthening the relevance of Spanish for Jordanian students.

- **Contrastive Linguistic Instruction**: Highlighting phonological, grammatical, and lexical differences between Arabic and Spanish can help students avoid common pitfalls, particularly with gender agreement and verb conjugation.

Implications for Learning Spanish as a Second Language in Jordan

The influencing effect of Arabic on Spanish in Jordan holds many potential opportunities and challenges for language learning in Jordanian learners acquiring Spanish as their second language (L2). Learning new languages better requires examining teaching practices, evaluating curriculum design, and identifying strategies for student learning in our educational environment. Arabic and Spanish language have very different linguistic features that offer significant advantages to student learning but also certain challenges that must be considered by teachers for the best learning outcomes.

(a). Facilitative Effects of Arabic-Spanish Cognates

There is a significant amount of vocabulary in Spanish originates from Arabic, particularly in agricultural science and the practical aspects of life; a familiarity with Arabic can be an advantage for Jordanian learners in learning Spanish. Azcar (sugar), aceite (oil) and arroz (rice) are cognates that have obvious Arabic origins. Ringbom (2007) found that by recognizing linguistic cognates, especially those derived from their own linguistic heritage, learners gained a greater degree of vocabulary acquisition and retention rate compared to non-lecturers. This is particularly true for Arabic speaking learners, as the phonetic and semantic similarities between Arabic and Spanish words provides a natural connection for learners to construct a natural understanding of words to better integrate them into conversation.

Implications for Teaching:

- **Accelerating Vocabulary Acquisition:**
- Since Arabic-speaking students already know many of the vocabulary words that came from Spanish, using this previously learned cognate vocabulary in the classroom can have a dramatic impact on the rate of vocabulary learning. Teachers can explicitly emphasize these similarities in lessons by including specific etymological explanations in the lesson. This method engages pre-existing linguistic knowledge and makes the process of recognising and recalling cognates more efficient.
- **Increasing Learner Confidence:** Cognates not only speed up the acquisition of vocabulary, they also improve learners' confidence. When learners are given the chance to recognize familiar words in a new language they are better prepared to deal with what they will need in order to communicate. The fact that many words they already know in Arabic have a direct equivalent in Spanish can be used to increase a learner's enthusiasm and persistence in learning that language.
- **Enhancing Reading Comprehension:** Words of high frequency in Spanish, particularly at the elementary and intermediate levels, come from Arabic. Therefore, it is easier for students to understand reading materials that contain verbs associated with Arabic cognates. Arabic-derived words are already common in written and spoken Spanish, so teachers can use knowledge of these words to enhance readers' ability to decode and comprehend a given text. Each teacher can incorporate reading exercises that focus on Arabic-derived vocabulary to further enhance the students' ability to decode texts and understand their meaning.

(b). Challenges in Pronunciation and Grammar

Jordanian Spanish learners face challenges in pronunciation and grammar due to deep-seated phonological and grammatical differences between the two languages. Phonetic difficulties include Spanish sounds not found in Arabic, such as the /θ/ sound in zapato and the trilled Spanish /r/ sound in perro. False cognates, such as the Spanish until hasta resembling the Arabic ḥatta, can also pose a threat to learners' comprehension and production of Spanish. Additionally, Spanish requires gender agreement between adjectives and nouns, while Arabic has a separate gender assignment system. Spanish verb conjugation is more complex than Arabic, making it challenging for students accustomed to the less complicated system.

- **To address these challenges, instructors should:**

Incorporate Contrastive Analysis: The teachers need to integrate contrastive analysis to specify the differences between Spanish and Arabic. While drawing attention to these differences in phonology and grammar, the learners will be better prepared to cope with the peculiarities of Spanish. This method can avoid the learners from making repeated errors and develop a more advanced perception of the Spanish language.

Use Phonetic Training: Phonetic training should be included in the course to overcome the pronunciation challenge that Spanish sounds imposing themselves on learners who do not possess them in Arabic. As an example, practice exercises using the trilled /r/ and the dental fricative /θ/ can help learners become precise and clear when they speak Spanish. The training should include both auditory discrimination and production exercises to enable learners to recognize and produce these sounds.

Provide Contextualized Examples: In order to assist in the explanation of the issue of false cognates, instructors can provide contextualized examples demonstrating the appropriate usage of words most likely to be confused as they bear similarities in sound to Arabic. By demonstrating to students the meaning and usage of such false cognates in context, they will be in a better position to differentiate them and avoid semantic errors in speech and writing.

(c). Cultural and Motivational Benefits

This historical connection between Arabic and Spanish offers a wonderful cultural and motivational opportunity in the classroom. By exploring this common linguistic past, instructors can make the language more interesting to learners and render Spanish more accessible in a broader cultural and historical context.

Increase Learner Engagement: Al-Andalus and the history of Arabic in Spain classes can capture the interest of learners by linking their language learning to a rich cultural and historical background. Not only is learning more enjoyable this way, but students are also able to see the use of their learning beyond the classroom, and this stimulates more interest in the language.

Promote Intercultural Awareness: Studying the shared linguistic and cultural history of Spanish and Arabic promotes intercultural awareness among students. By learning about the historical period during which Arabic and Spanish developed side by side, students can develop a greater appreciation for the interrelatedness of languages and cultures. Such awareness also makes Spanish more relevant and easier to learn for Jordanian students as they are able to comprehend how their own linguistic and cultural history enriches their process of learning.

Encourage Deeper Linguistic Curiosity: The exploration of Arabic influence on Spanish can spark further interest in language acquisition. As students discover the wealth of the Arabic-Spanish connection, they will be motivated to explore more linguistic and historical content, leading to better long-term language retention and a stronger sense of connection to Spanish as a second language.

(d). Pedagogical Recommendations for Jordanian Classrooms

According to the implications above, the following are some of the key pedagogical recommendations for Spanish language courses in Jordan in order to alleviate the difficulties and maximize the benefits of Arabic-Spanish linguistic overlap:

1. **Integrate Cognate-Based Learning:** Spanish classes should introduce cognate-based learning in beginner and intermediate levels. It is possible to leverage students' existing knowledge of Arabic-derived words through this approach, thus making vocabulary acquisition more effective and faster. Exercises and activities can be crafted to highlight cognates, wherein students are able to spot such words and enhance their general grasp of the language.
2. **Develop Specialized Pronunciation Modules**: In order to conquer the challenges of pronunciation, Spanish language courses need to develop specialized modules that address challenging Spanish sounds, such as the /θ/ and /r/ sounds. The modules may include specific exercises, listening drills, and speaking exercises to allow students to improve their pronunciation accuracy.
3. **Include Cultural-Historical Content**: Incorporating cultural and historical material about Al-Andalus in the curriculum can make students appreciate more the Arabic-Spanish relationship. Classes discussing how Arabic has contributed to Spanish vocabulary, culture, and society can make students more motivated and provide them with a more significant learning experience.
4. **Use Contrastive Teaching Methods**: To minimize interference errors, teachers must employ contrastive teaching methods that compare and contrast the phonological, grammatical, and semantic differences between Spanish and Arabic. By explicitly pointing out these differences, teachers can help students avoid common pitfalls and enhance general comprehension and linguistic proficiency.

C. Recommendations for Future Research

Several avenues remain open for further investigation to deepen understanding and improve language teaching methodologies for Arabic-speaking learners of Spanish:

1. **Dialect-Specific Studies**: Explore how various Arabic dialects (e.g., Levantine, Gulf, Maghrebi) differentially impact Spanish acquisition, particularly in terms of phonetic transfer and lexical overlap.
2. **Longitudinal Research**: Conduct extended studies tracking learners over time to assess the durability of vocabulary retention, pronunciation development, and metalinguistic strategy use.
3. **Instructional Design Experiments**: Test the effectiveness of specific pedagogical interventions—such as etymology-based modules or cognate-focused lessons—on vocabulary growth and learner motivation.
4. **Comparative Studies**: Compare Arabic-speaking learners with speakers of other languages that have fewer linguistic overlaps with Spanish to quantify the unique benefits of the Arabic-Spanish connection.
5. **Digital Tools and Resources**: Investigate how digital language learning platforms can incorporate Arabic-Spanish cognate databases, phonetic training modules, and historical narratives to enhance learner engagement.

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