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Vowel Blindness and Gender: The Case of ESL Learners at the University of Jeddah

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Abstract

Because vocabulary knowledge is considered the building block of language learning, any difficulties concerned with vocabulary can harm the overall vocabulary acquisition process. Literature suggests that native Arabic speakers struggle to notice vowels while reading English texts. This can result from the differences between L1 and L2 linguistic systems or the negative transfer of L1 processing routines to the L2 in their attempt to process the L2 forms. This study investigates this problem and whether gender affects this phenomenon or not. It used a test on Twenty-eight participants to examine the effect of gender on vowel blindness, which type of vowels (short or long vowels) are more problematic, and the kinds of vowel spelling errors that are easily noticed when processing vowels. The results showed that gender does not affect vowel blindness in a significant way. In other words, the overall results showed that the role of gender cannot be considered to have ta significan effect. Thus, male and female students both struggled to deal with short vowels equally. However, males also showed difficulties regarding the long vowels. The research also revealed that missing vowel spelling errors are salient and more likely to be noticed while processing vowels for both genders.

Keywords: vocabulary acquisition, vocabulary difficulties, vowel blindness, ESL learners

1. Introduction

1.1 Vocabulary in SLA

As stated by Ito and Hilliker (2019), one crucial aspect of second language acquisition and learning is acquiring and retaining vocabulary knowledge. According to Milton (2009), vocabulary knowledge is considered the building block of language learning. Similarly, Wilkins (1972) states, “While without grammar very little can be conveyed, without vocabulary nothing can be conveyed”. In other words, vocabulary is one crucial aspect for English learners to express themselves properly. According to Wulandari (2012), vocabulary mastery is the fundamental skill for ESL learners to determine the appropriate words in oral communication and it is important to support the four basic English skills. As it impacts both productive and receptive skills, any difficulties in the vocabulary acquisition process may prevent L2 learners from developing their language proficiency.

1.2 Vocabulary Acquisition and Gender

According to Hery and Abas (2020), gender is extensively used in SLA studies as a distinguishing factor among ESL learners. In fact, there is clear evidence that gender differences affect second language acquisition in one way or another. Such evidence is presented in the findings of studies where males are better than females in some areas and revealed the superiority of females over males in others.

In the area of vocabulary, a study was conducted by Catalan and Alba (2010) to examine the effect of gender on vocabulary performance. The results of the study showed that females scored better results and outperformed males in composition and a cue word test. In other words, females produced a relatively higher number of word types compared to males. The results of the study are inconsistent with those of Scarcella and Zimmerman (1998), in which males performed better on the TAL (Test of Academic Lexicon) than female participants. In another study to prove that gender affects vocabulary acquisition, Boyle (1987) conducted a study to compare males’ and females’ comprehension of heard vocabulary. The results showed that males outperformed females. Therefore, it is clear that the effect of gender on different areas of vocabulary acquisition is not stable and unpredictable.

1.3 Vocabulary Difficulties

1.3.1 Vowel Blindness

When Arabic native speakers try to read English texts, the differences between the two writing systems are said to cause some difficulty. This difficulty is widely referred to as the vowel blindness hypothesis. As stated by Alsadoon (2015), vowel blindness is the term commonly used for Arabic ESL/EFL learners' difficulty in decoding English vowels by transferring L1 habits of relying heavily on consonants and giving little attention to vowels. In other words, it is based on the idea that Arabic native speakers ignore short vowels while reading English texts as a result of transferring the skills of accessing the meaning of their L1 (Khan, 2013).

One of the first empirical studies of vowel blindness was conducted by Alsulaimani (1990) to investigate the kinds of problems experienced by Arabic ESL readers. The researcher chose a set of words that contained vowels and seemed problematic for Arabic ESL readers and displayed them on the computer screen so the participants read them aloud. From the participants' performance, it is evident that the consonantal sequence remained correct while the vowels were confused. For example, the participants produced words such as *speed* instead of *spade*. Also, the participants showed some difficulty in reading vowels and they consequently misspelled the words while producing them.

Similarly, Rayan and Meara (1991) tried to test the vowel blindness hypothesis by conducting a study on a group of ESL learners whose members are Arabic native speakers and a corresponding comparison group of ESL learners from different L1 backgrounds. They used a same-different matching judgment task that involved a 1-second presentation of a long word (e.g., department), followed by a 2-second blank screen, and then the presentation of the word in either its correct spelling or incorrect spelling with a vowel missing. The study concluded that Arabic native speakers who are ESL learners made relatively more errors compared to the non-Arab ESL group, and they also took longer to make the same-different judgments. They stated that Arabic L1 affects the ability of Arabic native speakers who are ESL learners to process the vowel information encoded in the graphic display. In short, they suggest that the L1 Arabic language processes lead to a type of 'vowel blindness' when processing English.

A few years later, Hayes-Harb (2006) conducted a replication of Rayan and Meara's (1991) study with some modifications. She used 10 L1 Arabic, 10 L1 non-Arabic, and 10 L1 English participants as her target population in the study. In an attempt to determine whether Arabic-speaking ESL learners are less sensitive to deleted vowels than consonants, she included another stimulus condition in which consonants were deleted to serve as a control. Surprisingly, the results obtained by the three groups showed that the deleted vowels were recognized significantly faster than the deleted consonants, even by Arabic speakers. As expected, the Arabic group responses indicated slower processing because they were slower than the other groups. Because consonants are salient to Arabic native speakers and they depend mainly on consonants to draw on meaning, the results of this study appeared to be incompatible. As a result, Hayes-Harb noted that her study might be affected by the relatively small number of participants in each group.

In order to compensate, Heyes-Harb (2006), conducted a study where she modified the number of participants to 15 in each group and used a letter detection task. In this task, the participants were asked to circle a target letter while reading English texts. For example, circle all instances of the target consonant letter *t* and the target vowel letter *o*. The study concluded that Arabic native speakers are less aware of vowel letters in English texts than the other groups.

Moreover, Bowen (2011) attempted to shed light on the vowel blindness hypothesis by performing a study to identify vowel error patterns. The study involves a comparison between visual spellers, those who tend to make spelling errors by the incorrect placement of a correct vowel, and phonetic spellers, those who make errors by using incorrect vowels. In order to achieve this study, a database with 250 spelling errors made by Arabic EFL learners in Oman and the UAE was created by EFL teachers. Hand-written assignments were used as the primary source of errors in developing the database. The process of collecting the required data took three years. The results showed that spelling mistakes with vowels were the highest, at 89%, as compared to consonants (11%). Although the errors vary in type, they all support the vowel blindness hypothesis (See Figure 1).

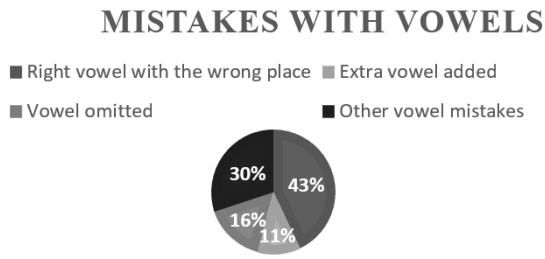

Figure 1. General patterns of vowel errors (Bowen, 2011, p. 92)

In order to support the vowel blindness hypothesis for Arabic native speakers, Saigh and Schmitt (2012) also conducted a study on twenty-four participants. The study explored the learners' difficulty with short and long vowels. The results indicated that Arabic speakers have more problems with short vowels compared to long ones. It also showed that missing English vowels are easier to be noticed (conclsion) and better than when the vowel is represented by the wrong letter (imprave).

Furthermore, Fender (2003) conducted a comparative study between Arabic native speakers and Japanese native speakers who are both ESL learners and of the same proficiency level. By using a lexical decision task, the Arabic native speakers were significantly slower than the other group, although the Arab group was significantly more accurate in integrating words into phrase and clause units and comprehending them. In short, Arabic native speakers, as expected, showed less fluent ESL word recognition skills. This can result from the over-reliance on phonological processing skills, which is a problem since English is inconsistent and irregular in its orthographic system.

A few years later, another study conducted by Fender (2008) on Arab students in which they scored significantly low results in a spelling test and a reading test than a comparison group of non-Arab ESL learners. In short, in all previous studies, the results demonstrated a more severe problem with English spelling compared to any other ESL learner group. Consequently, this difficulty does harm the overall word recognition and prevents Arabic native speakers who are ESL learners from developing their English reading proficiency.

1.3.2 Explanations of Vowel Blindness

1) The Nature of the Arabic Language System.

Extensive literature indicates that ESL learners have difficulties in language learning from different L1 backgrounds. Arabic native speakers have been the subject of many researchers as they face more trouble while reading in English. As stated by Alhazmi and Milton (2015), Arabic native speakers are significantly different from other ESL learners, such as Chinese or Persian learners. This difference may have a significant role in Arabic speakers reading difficulties while tackling English texts. Nevertheless, this difficulty can be explained by the nature of the language itself, its graphemic representation and phonological transparency.

In Arabic, the semantic information of a word is carried out by the consonantal root of the word. Generally, every root word in Arabic includes three or sometimes four consonantal letters at its heart. In some cases where prefixes and suffixes are added, the presence and order of these letters remain constant. According to Randall and Meara (1988), the Arabic word-recognition strategy is seen as an 'affix-stripping' process to search for the root. Therefore, the successful decoding of the root word facilitates the recognition of many generated derivations and inflections from this root (Alhazmi, Milton, & Johnston, 2019).

Thus, it is possible to say that Arabic native speakers depend mainly on the ability to recognize the consonantal roots in words and employ contextual and linguistic knowledge to be able to read texts and comprehend them. In other words, Arabic native speakers use the 'affix-stripping' act because it is considered their direct route for reading comprehension (Randall & Meara, 1988).

According to Alhazmi et al. (2019), another issue in addition to the tri-consonantal root issue has been discussed. Compared to other alphabetic languages, Arabic has its own representation of vowels, especially in Modern Standard Arabic (MSA). Similar to English, Arabic has both short and long vowels. However, Arabic uses diacritics to represent short vowels while letters are only used as long vowels (See Table 1).

Table 1. Arabic short and long vowels

Short Vowels Spellings		Long Vowels Spellings	
Vowel	Diacritic	Vowel	Letter
/ɪ/	<ِ>	/iː/	<ي>
/ʊ/	<ُ>	/ɑː/	<ا>
/æ/	<َ>	/uː/	<و>

Note. *. Short vowels are usually not spelled in the written text but are represented by diacritics, while long vowels are represented by letters.

According to Abu-Rabia (1998) and Abu-Rabia and Siegel (1995), short vowels in most modern written and printed words are usually not presented. However, when short vowels are present in a text, the diacritic marks are represented as symbols above or underneath the letters. For example, the graph (ت), which represents the English sound [t], is written as تَ for [ta], تِ for [ti], and تُ for [tu]. Thus, the presence of those diacritics makes it easier for the reader to decode the words. However, when they are absent, the reader is supposed to rely on the context or prior knowledge to deduce them. In addition, the importance of extra-lexical clues such as morphological and syntactic knowledge has been highlighted in order to achieve reading comprehension.

Unfortunately, there is a lack of focus on writing short vowels in Arabic, as the reader should be skilled enough to comprehend a text without diacritics. This may be due to the fact that comprehension can be achieved only through the focus on consonants of the word in Arabic. Abu-Rabia (1998) stated that many of the Arabic short vowel sounds are not present in the writing but have to be inferred.

According to the Orthographic Depth Hypothesis (ODH), which states that languages with a high level of sound-to-letter correspondence are described as phonologically shallow and orthographically transparent. However, this is not the case with the Arabic language. According to Alsadoon (2015), Arabic can be considered both transparent/ shallow or deep/opaque, based on the presence and absence of diacritics. In other words, Arabic is considered opaque or deep when the diacritics are absent. On the other hand, it is considered orthographically transparent or shallow when diacritics are present as it requires less guesswork by the reader. However, this is not the case with English vowels where all vowel sounds are generally indicated in a word.

2) The Depth of the English Orthographic System and Vowels

The orthographic system of English, as stated by Deacon (2017), consists of 26 graphs that are derived from the Roman alphabet. When reading English texts, the reader starts reading from left to right and from the top to the bottom of the text. The orthographic system of English can be problematic for Arabic native speakers who are ESL learners because it is inconsistent and irregular. According to Frost et al. (1987), the orthographic system of English is characterized by its deepness because of the mapping of phonemes. Here are some examples of the irregular mapping of phonemes in English:

① Some English graphs are linked to many different phonemes: the graph (y) in an**y** /i/, s**y**llabus /ɪ/, sh**y** /aɪ/, and **y**ear /j/.

② Some phonemes are linked only to one digraph: the digraph (sh) is linked to the phoneme /ʃ/, and the digraph (th) is linked to the phoneme /θ/.

③ Some phonemes are linked to both a graph and digraph: /f/ is linked to (f), (ph), and (gh).

④ Some phonemic contrasts have graph or digraph contrast: /ð/ and /θ/ are linked to only digraphs (th).

⑤ Some graphs or digraphs are assigned no value: liv**e** and hei**gh**t

In addition, Deacon (2017) stated that when some graphs or digraphs obtain a morphemic value, they may change their phonetic value. For example, the graph (s) for the plural can be realized as [s] in cat**s**, [z] in dog**s**, and [ɪz] as in boxe**s**. Similarly, the (ed) graph for the past tense is realized by [t] as in jump**ed**, [d] as in repell**ed**, and [ɪd] as in root**ed**. Additionally, stress placement, syntactic category, and the presence or absence of other non-local graphs can affect the value of a given graph (Deacon, 2017). To summarize, this irregular mapping of phonemes is one of the explanations for why Arabic native speakers have difficulties when reading in English.

Moreover, it is also argued that English is much richer than Arabic in vowels, with a wide variety of representations in its written form. According to Gimson (1980), vowels in English are written with twice the number of letters and letter combinations that English consonants require. This wide variety can be challenging for native Arabic speakers while reading English texts. In fact, only five letters of the 26 represent 11 vowels, either short or long. (See Table 2.)

Table 2. English short and long vowels

Short Vowels	Long Vowels
/ɪ/ as in h**i**t.	/iː/ as in ch**ee**se.
/ʊ/ as in b**oo**k.	/uː/ as in f**oo**d.
/e/ as in l**e**ft.	/ɜː/ as in w**o**rd.
/æ/ as in att**a**ck.	/ɔː/ as in l**a**w.
/ʌ/ as in r**u**n.	/ɑː/ as in f**ar**.
/ɒ/ as in d**o**g.	

According to The Orthographic Depth Hypothesis (ODH), the orthographic system of English is considered opaque or deep. Nadia and Charles (2011) stated that L2 readers usually require extra time to determine the grapheme-phoneme correspondence in English. In short, this opacity of English orthography is a fundamental reason to prevent ESL learners from developing their vocabulary acquisition and, consequently, having difficulties in reading.

1.3.3 Alternative Explanations of Vowel Blindness

Extensive research has been conducted in order to find some alternative explanation for vowel blindness of Arabic native speakers while attempting to read in English. Alhazmi et al. (2019) stated that one explanation for this difficulty encountered by Arabic speakers who are learners of English as their second language is the negative transfer of 'inappropriate' reading strategies from Arabic to English.

Alderson (1984) believes that a negative transfer explanation is possible, but it is not the only one. Other studies suggest that ESL learners of different L1 backgrounds are also different in developing their vocabulary knowledge. Alhazmi and Milton (2015), stated that Arabic speakers may be significantly different from the other ESL learners. This difference may have a major role in Arabic speakers' reading difficulties while tickling English texts. Milton and Hopkins (2006), conducted a study to compare vocabulary knowledge between Arab, European, and Chinese learners of English as a second language. They used both aural and written tests of vocabulary to demonstrate that their Arabic native speakers of ESL have a 'balanced lexicon' where knowledge of words in the written form matches their knowledge of words in the aural form. On the other hand, the other groups showed 'unbalanced lexicons' where they showed better results in recognizing words in their written form compared to the aural form. Coltheart (1978) argued that these results are due to Arabic ESL learners' knowledge deficiency. In other words, their English vocabulary knowledge is limited to the phonological side of the lexicon without corresponding representations of these words on the orthographic side.

This problem of Arabic ESL learners should not be associated with the right-to-left consonant orthography of the L1. Milton and Riordan (2006) attempted to prove this assumption by comparing Arabic and Persian ESL learners because they use Arabic orthography with its right-to-left script direction. Interestingly, Persian ESL learners displayed 'unbalanced lexicons' as same as European and Chinese learners in Milton and Hopkins' (2006) study.

Some studies suggested that this vowel blindness is temporary and curable. According to Khan (2013), it was stated that Arabic native speakers could overcome this difficulty by concentrating on the fact that all vowel letters in English words must be provided. Also, proper instruction, remedial work, reinforcement, and constant exposure to print and audio/video media will absolutely help the learners overcome such difficulty (Khan, 2013).

In short, the effect of gender on vocabulary acquisition discussed in this part is related to vocabulary difficulties in a major way. Although there is extensive literature on vocabulary acquisition and the differences between males' and females' performance in vocabulary-related areas, there is a gap in relating gender to the vowel blindness hypothesis. Thus, this paper aims to fill the gap by investigating whether gender affects vowel blindness or not. Therefore, it aims to answer the following questions:

1) Does gender affect vowel blindness?

2) Which type of vowel (short or long) involves more difficulties for each gender?

3) What are the types of vowel spelling errors (missing or incorrect vowels) males and females are more likely to notice while processing vowels?

2. Methodology

In order to explore whether gender is an affecting factor in vowel blindness for Arabic ESL learners at The University of Jeddah or not, this research used a quantitative research method to achieve its aims and objectives.

It used a modified version of a test originally designed to investigate vocabulary difficulties for Arabic native speakers by the researchers Saigh and Schmitt (2012). Therefore, this research used a quantitative research method because it makes the findings more straightforward and less open to error and subjectivity.

2.1 Participants

Twenty-eight females (N = 14) and males (N = 14) who are ESL learners at The University of Jeddah participated in this study. The English proficiency level of the participants was intermediate to upper intermediate. It is also important to note that all participants studied English for more than four years. In other words, they are supposed to be from the third level to the eighth level in the English Department. In addition, the age range of the participants was between 18 and 25 years old. For females, there were five participants between 18 and 19 years old (N = 5), five participants with an age range between 20 to 21 (N = 5), two participants from 22 to 23 years old, and from 24 to 25 age range, there were two participants (N = 2). On the other hand, there were seven male participants whose age was between 18 to 19 years old (N = 7), four participants with an age range between 20 to 21 years old (N = 4), one participant with an age range between 22 to 23 years (N = 1), and two participants with age range between 24 to 25 years (N = 2). The participants were not chosen randomly, as they were supposed to be at a certain level of language proficiency to be able to participate. The researcher also ensured that all participants were native speakers of Arabic and had not been exposed to English at a very young age.

2.1.1 Demographic Information

1) Gender

The participants' demographic information showed that they were equally distributed regarding their gender. Thus, 50% of the participants were males and 50% of the participants were females. The distribution of the participants based on gender is represented in Table 3.

Table 3. Gender and distribution of the respondents

Characteristics		Frequency	Percent %
Gender	Male	14	50.0
	Female	14	50.0
	Total	28	100 %
Age	18–19 years	12	42.9%
	20–21 years	9	32.1%
	22–23 years	3	10.7%
	24–25 years	4	14.3%
	Total	28	100 %

2) Age

Table 4 shows the age distribution of the participants of the study. The results indicate that most of the respondents (42.9%) were in the age category 18–19 years, (32.1%) of the respondents were in the age category 20–21 years, (14.3%) of them were in the age category 24–25 years, and lastly only (10.7%) of the respondents were in the age category 22–23 years.

3) Years of Studying English

One condition to participate in the study is to spend more than four years studying English, whether in college or in schools for younger participants. All participants, with a percentage of 100%, have spent more than four years studying English in school or university. Any participant who spent less than that was excluded.

2.2 Instruments

The instrument of data collection in the present study was a test derived from a test that was originally designed by Saigh and Schmitt (2012). Forty sentences were used from the original test, correct sentences without any spelling mistakes (N = 5), and sentences that involve spelling mistakes (N = 35) to assess ESL learners' ability to notice vowel spelling errors. Sentences with spelling mistakes involve either words with incorrect vowels (N = 18), as in "*We live in the western **ragion** of the country*", or missing vowels (N = 17), as in "*This bus comes **frquently,** at least every 15 minutes*". Every sentence in the test is dedicated to one target word that involves either short vowels (N = 21), as in "*John had very good classroom **attindance** this year*" or long vowels (N = 19), as in "*My son loves eating **humburgers** with potato chips*".

The test has been transformed into a form of Google Forms to collect the data as fast as possible. However, the test was modified to focus limitedly on the learners' ability to notice mistakes rather than recall each word's correct spelling. Therefore, instead of asking participants to write down the correct words, the participants were asked to choose between two options. In other words, if the sentence does not involve any spelling mistakes, the participants are supposed to choose option *a*. On the other hand, if the sentence involves a spelling mistake, the participants choose option *b*.

2.3 Data Collection Procedures

The test was transformed into a Google Forms version to be easily administered. The data collection process took three weeks to be fully gathered. The researcher used Telegram, WhatsApp, and Twitter groups to collect participants who were willing to participate in the study. The researcher also ensured that the participants were ESL learners at University of Jeddah by requesting their students' IDs. Before distributing the test link, participants were informed that they could withdraw any time during the test. In addition, the researcher ensured that the data provided by the participants were anonymous, as no names or personal information was requested. In addition, they were told that the data gathered would only be used for research and academic purposes.

The instruction of the test involved notifying the participants that they were not allowed to use any dictionaries or spelling checkers in order to get genuine precise results. As for the overall time the test would take, the participants were told that the test would not take more than 15 minutes.

2.4 Scoring Procedures

The test was scored based on the criteria that when the participants choose the correct answer, they get one point (Correct answer = 1). On the other hand, participants who fail to choose the correct answer do not get any points (wrong answer = 0). The data was scored in a Microsoft Excel sheet for each participant in order to prepare it for the data analysis procedures. The scoring procedures took one week to be fully corrected.

2.5 Data Analysis Procedures

In data analysis procedures, the Statistical Package for Social Sciences (SPSS) version 26 is used to analyze the data. Before the data analysis process, the data was prepared by editing, coding, entering, and cleaning the data. In the first section of the test, descriptive statistics were applied to calculate the demographic information such as age and gender. The second section of the test was about answering the first question of the study. Therefore, an independent t-test was used to compare the two groups' results and to find if there is a significant difference between their overall performance in vowel blindness. To answer the second question, an independent t-test was used to find any significant differences between males' and females' performance in the two types of vowels, short and long vowels. To answer the third question, descriptive statistics and an independent t-test were utilized to assess the participants' performance in noticing vowel spelling errors.

3. Results

3.1 Vowel Blindness and Gender

To answer the first research question, "*Does gender affect vowel blindness?*" an independent t-test was utilized. Therefore, the results revealed that there was a significant difference between males and females in vowel blindness regarding (Q3) that states, "*My son loves eating humburgers with potato chips*", where ($t = -2.30$, $p = 0.029$). Similarly, the results showed that there was a significant difference between males and females in vowel blindness regarding (Q27) that states "*'the', 'a' and 'an' are the English articles*", where ($t = -3.606$, $p = 0.003$). Also, the results reported there was a significant difference between males and females in vowel blindness regarding (Q37), which states "*the paragraph length should be a minmum of 75 words*", where ($t = 2.280$, $p = 0.031$). However, the overall results showed that there was not a significant difference between males' and females' answers ($p > 0.05$) for the rest of the questions (See Appendix A).

3.2 The Knowledge of Short and Long Vowels

To answer the second research question, which states, "*Which type of vowel (short or long) involves more difficulties for each gender?*", descriptive statistics were applied for this purpose as well an independent t-test was used to test the significant differences between males and females. The results presented in Table 4. showed that the mean score of short vowels for males was (0.735) and the mean score of long vowels was (0.714). Regarding the females, the results showed that the mean score for short vowels was (0.799) and the mean score for long vowels was (0.838). However, the results showed no significant difference between males and females in the mean score of short vowels ($t = -0.746$, $p = 0.462$) and long vowels ($t = -1.341$, $p = 0.192$).

Table 4. The type of vowel (short or long) involves more difficulties for each gender

Type of vowel	Gender	N	Mean	Std. Deviation	t value	P value
Short	Male	14	0.735	0.245		0.462
	Female	14	0.799	0.211	-0.746	
Long	Male	14	0.714	0.283	-1.341	0.192
	Female	14	0.838	0.200		

3.3 Noticing Missing and Incorrect Vowels

The third research question, which states, "*What are the types of vowel spelling errors (missing or incorrect vowels) each gender is more likely to notice while processing vowels?*", was answered to understand the vowel mistakes that each gender is more likely to notice while processing vowels by applying descriptive statistics. Moreover, to test the significant differences between the two groups, an independent t-test was utilized. The results presented in Table 5 showed that the mean score of incorrect vowels for males was (0.714) and the mean score of missing vowels was (0.705). Regarding the females, the results showed that the mean score for incorrect vowels was (0.817) and the mean score for missing vowels was (0.785). However, the results did not show significant differences between males and females in the mean score of incorrect vowels ($t = -1.124$, $p = 0.271$) and missing vowels ($t = -0.769$, $p = 0.449$) (See Table 5).

Table 5. The types of mistakes (missing or incorrect vowels) each gender is more likely to notice while processing vowels

Types of mistakes in the vowel	Gender	N	Mean	Std. Deviation	t value	P value
Incorrect vowel	Male	14	0.714	0.286	-1.124	0.271
	Female	14	0.817	0.189		
Missing vowel	Male	14	0.705	0.307	-0.769	0.449
	Female	14	0.785	0.237		

4. Discussion

The first question, which states, "*Does gender affect vowel blindness?*" examined whether being a male or female ESL learner at The University of Jeddah affects vowel blindness or not. Although the results showed that there was no significant difference between male and female responses ($p > 0.05$) in the majority of the questions in the test ($N = 37$), there were only three questions that involved a significant difference. This significant difference was evident in Question 3, which states, "*My son loves eating humburgers with potato chips*", and Question 27, which states, "*'the', 'a' and 'an' are the English erticles*", where ($t = -3.606$, $p = 0.003$). The results of those two questions showed that females outperformed males and scored better. Thus, they are consistent with the results of Catalan and Alba (2010), in which females scored better results than and outperformed males in a vocabulary composition and a cue word test.

On the other hand, males scored better with a significant difference in the results in Question 37, which states, "*the paragraph length should be a minmum of 75 words*", ($t = 2.280$, $p = 0.031$). Therefore, it is not realistic to generalize the results based on the results of only three questions of the test. Hence, based on the results, it is possible to say that gender cannot be considered an affecting factor on vowel blindness in the case of ESL learners at The University of Jeddah. However, the significant difference found in the three questions cannot be neglected either. In this case, the results align with the assumption stated by Boyle et al. (2011), who argued that the role of gender in areas of vocabulary acquisition is not stable and unpredictable. Thus, in the following section, the difference found will be discussed.

In order to compare males' and females' performance in dealing with short and long vowels, the second question of the research, which states, "*Which type of vowel (short or long) involves more difficulties for each gender?*" was answered. The results stated that the two groups: males and females equally experienced difficulties related to short vowels. Those results align with the results of Saigh and Schmitt's (2012) study in which they suggested that Arabic speakers have more problems with short vowels than long ones. That difficulty can be explained by the differences between Arabic and English in the graphemic representation, the phonological and morphological transparency, the depth of each orthographic system, the negative transfer of L1 routines to L2 situations, and the L1 background effect on L2.

However, the results surprisingly revealed that males with a mean score of (0.714) had also difficulty in dealing

with words that involved long vowels. This can be an indication that males at The University of Jeddah have lower vocabulary proficiency compared to females, who scored better than males with a mean score of (0.838) while processing long vowels.

The results of the third question of the research, which states, "*What are the types of vowel spelling errors (missing or incorrect vowels) each gender is more likely to notice while processing vowels?*" have shown that there was no significant difference between males and females in noticing vowel spelling errors based on the type of mistake. However, it is clear from the results that missing vowels mistake was more likely to be noticed while processing vowels for both genders. This can be explained by the fact that when Arabs try to read Arabic texts, they process every written letter in the target text. Thus, they transfer their L1 orthographic process to their L2 reading process. Moreover, a possible interpretation of Arabs ESL learners' ability to notice missing vowel mistakes is that Arabs develop some orthographic skills related to consonant clustering rules in learning English vocabulary. So, when a missing vowel breaks those clustering rules by its disappearance, it becomes very salient to the reader.

The results were also supported by Saigh and Schmitt's (2012) study in which they concluded that missing English vowels are easier to be noticed (conclsion) and better than when the vowel is represented by the wrong letter (imprave). Similarly, the results were also consistent with the results of Hayes-Harb (2006), who stated that the deleted vowels were recognized significantly faster than the deleted consonants by Arabic speakers.

5. Conclusion

This research project investigated the effect of gender on vowel blindness, how males and females differ in dealing with the two types of vowels; short and long vowels, and the type of vowel spelling errors (missing or incorrect) the ESL learners are able to notice while processing vowels. The primary objective of this research was to explore if gender affects vowel blindness or not. It also aimed to compare male and female Arabic native speakers who are ESL learners at The University of Jeddah to gain knowledge about each group's performance in dealing with vowels in general. It also aimed to give insights into how each gender deals with vowels based on the type of vowel: short and long vowels. In addition, it aimed to investigate their ability to notice vowel spelling errors (missing or incorrect vowels) in their vowel recognition process. Consequently, the results showed that gender does not affect vowel blindness in a significant way. In other words, the role of gender is found to be not significantly clear. Also, the two groups equally struggled in dealing with short vowels compared to the long ones. The research also revealed that missing vowel spelling errors are salient and more likely to be noticed by Arabic ESL learners while processing vowels for both genders.

As with all studies, there are a few limitations of the present investigation. The first limitation of the present study lies in the time available to finish it. Consequently, the limited time has led to minimizing the number of the population of the research. Another limitation of this study is that it is geographically limited to only one university in Saudi Arabia, as it is established at The University of Jeddah. In addition, another limitation of the present study is the lack of qualitative data; that is when participants produce more details about vowel recognition, the collected information will participate in gaining more knowledge.

In the future, it would be fruitful to see similar studies with more participants and diverse research instruments. In other words, the researcher recommends using both qualitative and quantitative methods to answer the research questions and to gain more accurate results about vowel blindness and gender. The researcher also recommends that future studies to be applied in other settings and different universities in Saudi Arabia.

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Appendix A

The Statistical Differences Between Males and Females in Vowel Blindness

Questions	Gender	N	Mean	Std. Deviation	t value	P value
Q1	Male	14	0.71	0.47	-1.48	0.149
	Female	14	0.93	0.27		
Q2	Male	14	0.79	0.43	-1.88	0.071
	Female	14	1.00	0.00		
Q3	Male	14	0.57	0.51	-2.30	**0.029**
	Female	14	0.93	0.27		
Q4	Male	14	0.71	0.47	-0.901	0.376
	Female	14	0.86	0.36		
Q5	Male	14	0.93	0.27	0.593	0.559
	Female	14	0.86	0.36		
Q6	Male	14	0.93	0.27	0.00	1.00
	Female	14	0.93	0.27		
Q7	Male	14	0.64	0.50	-0.391	0.699
	Female	14	0.71	0.47		
Q8	Male	14	0.57	0.51	-0.769	0.449
	Female	14	0.71	0.47		
Q9	Male	14	0.79	0.43	-0.478	0.637
	Female	14	0.86	0.36		
Q10	Male	14	0.71	0.47	-0.901	0.376
	Female	14	0.86	0.36		
Q11	Male	14	0.64	0.50	-1.302	0.205
	Female	14	0.86	0.36		
Q12	Male	14	0.93	0.27	1.063	0.297
	Female	14	0.79	0.43		
Q13	Male	14	0.36	0.50	-0.374	0.712
	Female	14	0.43	0.51		
Q14	Male	14	0.71	0.47	-0.901	0.376
	Female	14	0.86	0.36		
Q15	Male	14	0.93	0.27	0.593	0.558
	Female	14	0.86	0.36		
Q16	Male	14	0.57	0.51	-1.202	0.240
	Female	14	0.79	0.43		
Q17	Male	14	0.71	0.47	0.00	1.00
	Female	14	0.71	0.47		
Q18	Male	14	0.79	0.43	-0.478	0.637
	Female	14	0.86	0.36		
Q19	Male	14	0.71	0.47	-1.486	0.152
	Female	14	0.93	0.27		
Q20	Male	14	0.71	0.47	-0.422	0.677
	Female	14	0.79	0.43		
Q21	Male	14	0.79	0.43	-0.478	0.637
	Female	14	0.86	0.36		
Q22	Male	14	0.86	0.36	0.00	1.00

	Female	14	0.86	0.36		
Q23	Male	14	0.86	0.36	-0.593	0.558
	Female	14	0.93	0.27		
Q24	Male	14	0.64	0.50	-0.391	0.699
	Female	14	0.71	0.47		
Q25	Male	14	0.71	0.47	-0.422	0.676
	Female	14	0.79	0.43		
Q26	Male	14	0.64	0.50	-1.302	0.204
	Female	14	0.86	0.36		
Q27	Male	14	0.50	0.52	-3.606	**0.003**
	Female	14	1.00	0.00		
Q28	Male	14	0.86	0.36	-0.593	0.559
	Female	14	0.93	0.27		
Q29	Male	14	0.57	0.51	-1.202	0.240
	Female	14	0.79	0.43		
Q30	Male	14	0.64	0.50	-0.816	0.422
	Female	14	0.79	0.43		
Q31	Male	14	0.57	0.51	-0.769	0.449
	Female	14	0.71	0.47		
Q32	Male	14	0.79	0.43	0.422	0.676
	Female	14	0.71	0.47		
Q33	Male	14	0.79	0.43	0.00	1.00
	Female	14	0.79	0.43		
Q34	Male	14	0.79	0.43	-1.063	0.299
	Female	14	0.93	0.27		
Q35	Male	14	0.71	0.47	0.391	0.699
	Female	14	0.64	0.50		
Q36	Male	14	0.93	0.27	0.00	1.00
	Female	14	0.93	0.27		
Q37	Male	14	1.00	0.00	2.280	**0.031**
	Female	14	0.71	0.47		
Q38	Male	14	0.64	0.50	-0.816	0.422
	Female	14	0.79	0.43		
Q39	Male	14	0.57	0.51	-0.769	0.449
	Female	14	0.71	0.47		
Q40	Male	14	0.71	0.47	-0.422	0.677
	Female	14	0.79	0.43		