

**Research Article**

The Phonological Change in Hebrew Words Borrowed into Palestinian Arabic in the Hebron City

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ABSTRACT

Introduction: Phonology is one of the core subfields of linguistics that involves the organization and use of human speech sounds, or phonemes, in a language. Over time, the pronunciation principles of a language may change, resulting in a phenomenon called phonological change. Phonological change occurs when language users modify the distribution of phonemes in a language. The current study aimed to explain the phonological changes that occur in Hebrew words borrowed into Palestinian Arabic in Hebron city, using a borrowing scale and to explain the differences in phonological forms between Hebrew and Palestinian Arabic by comparing the original Hebrew words with the borrowed Hebrew words in terms of the phonetic modifications made in Palestinian Arabic.

Methodology: The study involved 100 Arabic-speaking Palestinians of both genders residing in Hebron city, most of whom spoke Hebrew and worked with Jews regularly. Face-to-face interviews were conducted with each participant to achieve the objectives of the study. The interviews were recorded, and the questions focused on their profession, favorite meals, daily routines, frequently visited places, education, and technology. A total of 32 hours of conversations were recorded and analyzed.

Results: The results indicated that the most common types of phonological changes in Palestinian Arabic were the substitution phenomenon (consonant substitution and vowel substitution), epenthesis, and deletion.

Conclusion: It can be concluded that the lexical borrowing of Hebrew words by Palestinian Arabic has led to various phonological changes to the Palestinian Arabic lexicon in Hebron.

1. Introduction

Language change is a natural and recurring phenomenon that occurs in communities. It can be attributed to various factors, such as the economy, social environment, occupation, contact, and wars (Harya, 2016). One of the ways through which language changes is the reduction of speech forms. This happens as speakers tend to use their words more efficiently, leading to the simplification of word forms through analogies. Another way languages change over time is by borrowing words from other languages, which can create new sounds and sound combinations not previously present in the source language. These loanwords are often assimilated into the phonological structure of the target language (Akidah, 2013).

Thomason and Kaufman (1988) defined borrowing as the process of incorporating foreign traits into a group's native language by its speakers, resulting in a transformation of the language. Content words, such as nouns, adjectives, and verbs, are usually the first to be adopted into the borrowed language, making loanwords the most common sign of borrowing. Thomason and Kaufman (1988) also introduced the concept of the borrowing scale, which includes five thresholds. Features that appear higher on the scale must be borrowed after those that appear lower on the scale. Moreover, Thomason and Kaufman (1988) introduced the concept of contact intensity as the degree of interaction between speakers of different languages and the

resulting impact on the languages involved. A study by Elhija (2017) on Hebrew borrowing in the Israeli-Palestinian as the case of linguistic contact between Arabic and Hebrew indicated that the contact between the two languages was intense. Following the borrowing scale by Thomason and Kaufman (1988), the researchers concluded that the borrowing was between grades 3 and 4 on the borrowing scale since fluency in Hebrew—the dominant language—is required for advancement and economic success. This resulted in the discovery of lexical arguments and structural borrowings.

Klamer and Moro (2023) employed Thomason and Kaufman's (1988) borrowing scale to predict the forms of lexical borrowing that can be expected in the communication situation. They consider communication frequency to be a basic social indicator. Although it was difficult to quantify the concept of contact intensity, it could be operationalized as a function of the degree of fluency of borrowers, the proportion of loanword speakers who were fully bilingual in the source language, and the attitudes of the speakers. In addition to connection density, the most important predictor was the linguistic dimension. Stylistic similarity across languages improves the probability of borrowing, and open structures are easier to copy than fully integrated structures.

Hebrew and Arabic are Semitic languages with a common ancestry and have coexisted since at least 600 A.D. (Huehnergard & Pat-El, 2019). Arabic is the official language of many countries, including Palestine, Morocco, Algeria, the United Arab Republic, Sudan, Lebanon, Iraq, and the states of the Arabian Peninsula, with over 420 million speakers worldwide. In Palestine alone, there are approximately 3.762 million Arabic speakers (Kamusella, 2017), while Hebrew is spoken by over 7 million people in Israel and the Palestinian territories (Uziel-Karl et al., 2014).

Thomason and Kaufman's (1988) discussion on the main factors affecting contact intensity is reflected in Israeli society. Bilingualism has evolved over the past 67 years, during which Israel has exercised political control over the Palestinian people. In addition, a large influx of immigrants from various parts of the world, particularly Russia, arrived shortly after 1948. As a result, Hebrew, the source language, is spoken by the majority, while Arabic, the recipient language, is spoken by a minority. Israel recognizes two official languages, Hebrew and Arabic, which is also a political factor. However, Arabic speakers account for only 20% of the population and their language is marginalized, with Hebrew being the dominant and sole official language used for practical purposes (Amara, 2007).

In recent times, Hebrew has become more dominant than Arabic in Israel and the surrounding region of Palestine (Elhija, 2017). One consequence of this shift is that Palestinian speakers in Israel increasingly borrow from and switch to Hebrew. Conversely, modern Hebrew dictionaries now include a significant number of formulaic words that have been borrowed from other languages. Some examples are *daxilak* 'please,' *mabʕuk* 'congrats,' *mabsut* 'contented,' *axla* 'great,' *ahbal* 'idiot,' *ahlan*

'welcome,' *xalas* 'enough,' and *zahlan* 'a mixture of spices including thyme.' The majority of these loanwords are salutations, curse words, epithets, and culinary terms. Their two main sources are Jews from Arab countries and Arabs in Israel (Hasan, 2015).

Swaitti and Yeshoda (2022) conducted a study to identify the changes that occur to Hebrew lexical components when substituted with the original Arabic words in Palestinian Arabic, specifically in the city of Hebron. The study also addressed how Arabic and Hebrew interaction impacted the Palestinian Arabic lexicon. The results showed that nouns were the most commonly borrowed lexical items from Hebrew into the Palestinian Arabic lexicon, and they underwent semantic shifts in the borrowed language. However, Numerous studies have investigated the relationship between Hebrew and Arabic in Israel (e.g., Amara, 2007; Horesh, 2015; Jabali & Ayyoub, 2021; Landau, 1987; Uziel-Karl et al., 2014). The conducted studies mostly addressed the connection between the two languages (e.g., Jabr & Hamad, 2009; Odeh, 2005; Zidan, 2010), and only a few have thoroughly examined the phonological changes that occur due to borrowing. Therefore, the present study aimed to examine the phonological alterations that occur in Hebrew words borrowed into Palestinian Arabic, resulting from contact, partially or wholly. By addressing this gap in the literature, this study sought to provide a deeper understanding of the impact of borrowing on the phonological structures of Hebrew and Arabic with reference to Thomason and Kaufman's (1988) borrowing scale.

2. Methodology

2.1. Participants

A total of 100 Arabic-speaking Palestinians within the age range of 20-60 years, with at least a secondary school education, participated in this study. Of the participants, 30 were female and 70 were male. They lived in Hebron and used Hebrew mainly while working and communicating with Jews daily.

2.2. Theoretical framework

The current study was performed based on the borrowing scale introduced by Thomason and Kaufman (1988). The scale has five levels, which are as follows:

1. Casual contact that merely leads to lexical borrowing (mainly nouns).
2. Slightly more intense contact involves a limited amount of structure—minor phonological, syntactic, and lexical-semantic features as well as a slight structural borrowing of functional terms like conjunctions, adverbs, and discourse markers.
3. More intense contact results in less minor structural traits and slightly more structural borrowing, such as prepositions and postpositions.
4. Strong cultural pressure entails moderate structural borrowing.

5. Very strong cultural pressure results in substantial structural borrowing.

2.3. Interview

The interviews were semi-structured, as the structure of semi-structured interviews is flexible (LeCompte et al., 1999). Each interview lasted 20 minutes. The interview questions focused on the nature of their profession, their preferred foods, their daily routines, the locations they frequent, education, and technology (Appendix A). The mentioned topics were chosen since these topics were rich in borrowing and code switches. Conversations totaling 32 hours were recorded and analyzed.

2.4. Procedure

The researcher conducted individual interviews with each person face-to-face in order to achieve the objectives of the study. Written consent was obtained from all participants after explaining the research objectives to them. These interviews, which lasted for 20 minutes each, were recorded using a telephone voice recorder that was equipped with earphones and took place over the course of two consecutive months. The interview questions focused on the nature of their profession, their preferred foods, their daily routines, the locations they frequent, education, and technology. Since these topics are rich in borrowing and code switches, Conversations totaling 32 hours were recorded and analyzed.

2.5. Data analysis

The conversation recordings were downloaded to the computer, and after sorting the borrowed words (around 50 word) that were heard in the recordings and comparing them to the Hebrew words’ original pronunciation using the Hebrew pronunciation dictionary (pronounced “Forvo”), phonological changes were discovered. Then, the obtained data were analyzed according to the following classifications:

- 1- Hebrew words borrowed with consonant and vowel epenthesis into Palestinian Arabic.
- 2- Hebrew words borrowed that included consonant deletions.
- 3- Hebrew words borrowed that included consonant substitutions.

3. Results and Discussion

3.1. Phonological changes of Hebrew words borrowed into Palestinian Arabic

Arabic and Hebrew are Semitic languages, as was previously mentioned. The two languages are members of two same language families and have similar phonological

systems with some differences.

To understand the different phonological processes involved in borrowing Hebrew words into Palestinian Arabic, it would be useful to provide a brief outline of the phonetic systems of both languages before delving into the various phonological changes that take place.

3.2. The sound system of Palestinian Arabic

There are 28 or 29 letters in Modern Standard Arabic (MSA), the standard 28 plus the Hamza-on-the-line letter, which is made from the Hamza letter form (the glottal stop, Habash & Rambow, 2007). The consonants in MSA are shown in Table 1.

Table 1.
Consonants in Modern Standard Arabic

Arabic letter	Pronunciation	Arabic letter	Pronunciation
أ	/a/	ذ	/ð/
ب	/b/	ر	/r/
ت	/t/	ز	/z/
ث	/θ/	س	/s/
ج	/d̥ʒ/	ش	/ʃ/
ح	/h/	ص	/sˤ/
خ	/x/	ض	/dˤ/
د	/d/	ط	/tˤ/
ظ	/ðˤ/	م	/m/
ع	/ʕ/	ن	/n/
غ	/ɣ/ or /ʁ/	ه	/h/
ف	/f/	و	/w/
ق	/q/	ي	/j/
ك	/k/	ء	/ʔ/
ل	/l/		

Four additional consonants, namely [g], [v], [t], and [ʒ], appear in Palestinian Arabic, but [dˤ] is typically omitted except when employing MSA pronunciation. Hebron’s urban Palestinian dialects typically lack strong emphatic consonants that are pharyngealized. In contrast to rural dialects, they exhibit less pharyngealization. The consonants used in urban versus rural Palestinian Arabic dialects are displayed in tables 2 and 3:

In MSA, there are three short vowels, three long vowels that match them, and two diphthongs. The short and long vowels in Hebron Arabic are identical, with the exception that the two diphthongs in MSA frequently become monophthongized, as shown in Table 4.

3.3. The sound system of Hebrew

Hebrew has 22 letters, five of which use different forms at the end of a word (tables 5 and 6). Hebrew vowels also come in three classes and three lengths. The three main classes are a-class (ah-class), i-class (ee-class), and u-class (oo-class). The i-class includes both “i” and “e”; the u-class includes both “u” and “o.” The three vowel lengths are long, short, and slurred. The consonants are:

In Hebrew, the vowel sounds are the “a,” “e,” “i,” “o,” and “u,” as shown below.

Table 2.
Consonants in Urban Palestinian Dialect in Hebron

	Bilabial	Labio dental	Alveolar	Postalveolar	Velar	Uvular	Pharyngeal	Glottal
Plosive	b		t d		k	q		ʔ
Nasal	m		n					
Trill			r					
Fricative		f	v	s z	ʃ ʒ	x ɣ	ħ ʕ	H
Liquid			l					

Table 3.
Consonants in Rural Palestinian Dialect in Hebron

	Bi-labial	Labiodental	Dental	Alveolar	Post alveolar	Velar	Uvular	Pharyngeal	Glottal
Plosive	b			t d tʰ		k g	q		ʔ
Nasal	m			N					
Trill				R					
Fricative		f v	θ ð ðʰ	s z sʰ	ʃ	x ɣ		ħ ʕ	H
Affricate					tʃ dʒ				
Liquid				L					

3.4. Phonological adaptation in Hebrew words borrowed into Palestinian Arabic

As previously mentioned, when a word is borrowed from another language, it goes through some changes to fit the phonological structure of the recipient language. These changes may lead to adoption or adaptation, when the phonetic structure of the loanword is changed (where loanwords get assimilated into the recipient language while preserving their original form and pronunciation in the donor language). The process of adapting Hebrew words into the Palestinian phonological system goes hand in hand with the practice of borrowing Hebrew terms into Palestinian Arabic. In this section, the adaptation steps necessary to transform Hebrew loanwords into Palestinian Arabic are outlined. The phonological procedures involved are listed below.

3.5. Consonant substitution

According to Guba (2016), substitution is a general propensity to retain sounds from deletion and to rearrange the word such that it more closely resembles the input form. However, since some sound combinations are not permitted in the recipient language, they undergo certain adaptations.

Table 4.
Vowels in Hebron Arabic

	Modern Standard Arabic	Hebron Dialect	
Short vowels	[i]	[i]	Short vowels
	[u]	[u]	
	[a]	[a]	
	[i:]	[i:]	
Long vowels	[u:]	[u:]	Long vowels
	[a:]	[a:]	
Diphthongs	[aw]	[o:]	Monophthongs
Diphthongs	[aj]	[e:]	Monophthongs

In substitution, a word or phrase is changed to the phonetically closest phonemes in the chosen language (Kennedy, 2017).

This process occurs during borrowing and includes the substitution of consonants from the source language with those from the target language. Typically, this is attributable to the lack of equivalents in the target language. The information provided below shows the process of consonant substitution in Hebrew words borrowed into Palestinian Arabic consonants:

Hebrew borrowed words	Palestinian Arabic word	Glossary
i. / Besi:dy / → / besi:dr / →	All right	
ii. / yamzoy / → / Ra:mzon / →	Traffic light	
iii. / hʔafudah / → / ʔfu:d a:h / →	Work	
iv. / Tlu:f / → / Klu:f / →	Receipt salary	
v. / Tabwzem / → / Tabwzena: / →	Orange juice	
vi. / Maxsu:m / → / Ma hs u:m / →	Checkpoint	

The examples above show that in the process of borrowing, the Hebrew consonant /ʕ/ gets substituted by /r/, and /ʕ/ gets substituted by /n/, /ʔa/ gets substituted by /ʕ/. In the third example, /T/ becomes /K/ in Arabic. Also, in the fourth example, /m/ is substituted by /n/, and in the last example, /x/ is substituted by /ħ/.

Table 5.
Modern Standard Arabic

Group	Name	Position	Sound
a	Qamets	ʔ	a, as in car
	Pathach	ʔ	a, as in bat
e	Tsere	ʔ	e, as in they
	Tsere- Yod	ʔ	e, as in they
	S ^e ghol	ʔ	e, as in met
i	Hireq-Yod	ʔ	i, as in marine
	Hireq	ʔ	i, as in sit
o	Holem	ʔ	o, as in row
	Holem-Vav	ʔ	o, as in row
	Qamets-Hatuf	ʔ	o, as in cost
u	Shureq	ʔ	u, as in rule
	Qibbut	ʔ	u, as in rule

Table 6.
Consonants in the Hebrew Name

	Sound	Letter	Name	Sound	Letter
Lamed	L	ל	alef	silent	א
mem	M	מ	bet	b	ב
nun	N	נ	vet	v	ב
sameh	S	ס	gimel	g	ג
ayin	Silent	ע	dalet	d	ד
peh	P	פ	heh	h	ה
feh	F	ף	vav	v	ו
tsadeh	Ts	צ	zayin	z	ז
qof	Q	ק	het	h	ח
resh	R	ר	tet	t	ט
shin	Sh	ש	yod	y	י
sin	S	ש	khof	k	כ
tav	T	ת	hof	h	ך

Although Hock (1991) provides valid data, he overlooks the fact that Arabic words do not accept word-initial vowels (short vowels). Therefore, the examples he cited, such as /ʔufēd/, /ʔaʔa:fē/, /ʔisi:y/, could be stated as [ʔufēd], [ʔaʔa:fē] and [ʔisi:r], respectively.

3.5. Vowel substitution

Vowel adaptation procedures pertain to the treatment of different vowels in loanwords after they have entered a recipient language (Bowen, 2014). There are regular alterations to the sounds of vowels. These methods of vowel adaptation include vowel replacement and vowel preservation.

Substitution is an unmarked process of sound change which is a feature of most languages of the world (Hussain et al., 2011). The examples of vowel substitution are discussed below.

/u:/ and /i:/ adapted as /a:/

There were some examples in the data, where /u:/ and /i:/ are realized as /a:/.

Examples:

Hebrew borrowed words	Palestinian Arabic word	Glossary
/xma:mu:t/	/ħma:ma:t/	Greenhouses
/Mata:nu:t/	/Mata:na:t/	Gifts
/Mazga:ni:m/	/Mazga:na:t/	Conditioners
/shi:ish/	/ja:i:j/	Marble

In the previous examples, the vowels /u:/ and /i:/ have been substituted by the long vowel “alef/a:”. During the process of plural Hebrew words borrowed into Palestinian Arabic, these letters are often transformed to /a:/. The majority of them are located before the letter “t” in the Arabic plural of the word. As in this word /Mazga:na:t/.

/a/ Adapted as /i:/ and /u:/

Hebrew borrowed words	Palestinian Arabic word	Glossary
/Taxana/	/taħani:/	Station
/ʃuʒgat/	/ʃaʒu:t/	Chocolate pastries

3.5. Epenthesis

Epenthesis and directionality of syllabification in Arabic Epenthesis is the insertion of a segment into a word in a position where no segment was previously present

(Elashhab, 2018).

Epenthesis is the process of adding a phoneme (vowel or consonant) into a word in order to change the consonant cluster system used for Hebrew loanword adaption in the Arabic language. It is often driven by the language of the recipient. In consonant epenthesis, a consonant is inserted between vowels to generate a consonant cluster. In addition, epenthesis includes inserting a vowel between consonants and resulting in an easy-to-pronounce consonant cluster. Arabic has constructions of five syllables. These are their forms for CV, CVV, CVC, CVVC, and CVCC. Most, if not all, Arabic dialects have two characteristics, namely the existence of syllables with simple codas and the lack of onsetless syllables. Thus, CV and CVC syllables are present in all Arabic dialects, although V and VC syllables are undocumented (Broselow, 2017).

On the one hand, the most popular syllables system in Palestinian Arabic is the CV syllable and the CVC syllable, as seen below:

Type of syllable	IPA
(1) CV	/sa/
(2) CVC	/dam/
(1) CVV	/fi:/
(2) CVVC	/na:r/
(3) CVCC	/ð ^s efr/

The most frequent syllables in native Hebrew words are CV and CVC, i.e., those with a simple onset, with or without a coda. However, Hebrew also permits onsets with fewer syllables and complicated margins., for example, word initial:

CV	ħa.lóm	‘dream’
CVC	maf.té.aħ	‘key’

Because Palestinian Arabic in Hebron city occasionally favors an open syllable structure over a closed one, it tends to insert a vowel between or after the consonants when adopting a loanword with a closed syllable. The following examples exemplify this phenomenon:

(6) Hebrew word	Palestinian Arabic word	Glossary
Kyi:sh	Kri:ʃi:	Thin plank
CV.CVVC	CV.CVVCVV	
Tabu:zi:m	Tabu:zi:na:	A type of juice
CV.CVV.CVVC	CV.CVV.CVVCVV	

The majority of Hebrew loanwords in Palestinian Arabic

include consonant clusters at the end of their words and undergo vowel epenthesis.

Consonant deletion

This refers to the deletion of germinate consonants in Hebrew. The following examples illustrate the process of consonant deletion in Arabic words borrowed into Palestinian Arabic:

Hebrew borrowed words	Palestinian Arabic word	Glossary
(1)Tyesem	Trese	Blind

There are studies with results comparable to the current study, such as the study by Elhija (2017) that focused on the frequency of borrowed vocabulary, phonetic adaptation, and the reasons for borrowing from the Hebrew language, as it confirmed the validity of three invested hypotheses: First, the most common borrowed elements are names. Secondly, the borrowed elements are compatible with the Arabic phonetic system. Finally, the main reasons for borrowing are the introduction of culturally or technologically new concepts, as well as new ways of referring to previously existing concepts. The two studies were similar in adapting borrowed words to the Palestinian Arab system.

4. Conclusion

This research paper was confined to the borrowing of the Hebrew and Arabic languages in Palestine and the resulting phonetic modifications. It discussed the numerous phonological processes that Hebrew words have undergone throughout their assimilation into Palestinian Arabic in Hebron as a consequence of borrowing. The main purpose of the research was to examine in detail the phonological changes brought about in whole or in part by borrowing Hebrew words into Palestinian Arabic. Hebrew words underwent phonological processes, including vowel and consonant epenthesis, consonant deletion, and vowel and consonant substitution. The term for these processes was adaption. According to the findings, the systematic process of borrowing Hebrew words into Palestinian Arabic resulted in the adaption of Hebrew terms as they were assimilated into Palestinian Arabic. Hence, it is concluded that the lexical borrowing of Hebrew words by Palestinian Arabic has resulted in several phonological changes to the lexicon of Palestinian Arabic in Hebron city. Thus, it is feasible to predict future Hebrew words in which similar phonological changes would be observed.

Declarations

Competing interests

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Appendix A.

Interview questions

1-	How are you?
2-	What do you do? What do you do in your job?
3-	How do you go to work?
4-	What is your daily routine?
5-	What are the places you like to visit? And how do you visit them?
6-	What is your favorite food?
7-	Is technology essential for you?
8-	What are you studying? Do you favor studying or working, and why?
9-	What do your parents do?