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The Stress System of English Loanwords in Qassimi Arabic: An Optimality Theoretic Analysis

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Abstract: The current paper examines the stress system of English loanwords as used by Qassimi Arabic (QA henceforth) speakers. It specifically conducts an optimality theory (OT) analysis of stress assignment of English borrowed words as uttered by QA speakers. The paper mainly seeks to investigate how stress is assigned in loanwords with different syllable types and syllable numbers, and how optimality accounts for it. The data in the paper are collected from previous studies as well as QA speakers. They are analyzed by the researcher using a number of markedness as well as alignment optimality constraints. It is found that stress assignment in English loanwords is adapted to the stress system of QA. Therefore, the ranking of OT constraints of borrowed English words is the same as that of original Qassimi Arabic words. I conclude that QA stress system is well described and justified using the OT analysis.

Keywords: Qassimi Arabic, Optimality Theory, stress system, markedness constraints, alignment constraints.

نظام النبر في المفردات الإنجليزية المستعارة في القصيمية العربية: تحليلات مبنية على نظرية الأفضلية اللغوية

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المستخلص: تبحث الورقة الحالية بدراسة نظام النبر في الكلمات المستعارة الإنجليزية كما يستخدمها الناطقون بالقصيمية العربية، وتحليل نظرية الأفضلية اللغوية لتحديد النبر للكلمات المستعارة الإنجليزية كما ينطقها الناطقون بالعربية القصيمية. تسعى الورقة بشكل رئيسي إلى استقصاء كيفية تخصيص النبر في الكلمات المستعارة بأنواع مختلفة من القوافي وأعداد مختلفة من القوافي، وكيفية تفسير الأفضلية لذلك. تم جمع البيانات في الورقة من الدراسات السابقة وكذلك من ناطقين بالعربية القصيمية. تم تحليلها من قبل الباحثة باستخدام عدد من القيود الأفضلية للتمييز وكذلك التوافق. تبين أن تخصيص النبر في الكلمات المستعارة الإنجليزية يتكيف مع نظام النبر في العربية القصيمية. لذلك، تكون ترتيب قيود الأفضلية اللغوية للكلمات الإنجليزية المستعارة هو نفس ترتيب الكلمات الأصلية بالعربية القصيمية. وخلصت الدراسة إلى أن نظام النبر في العربية القصيمية يمكن وصفه وتبريره بشكل جيد باستخدام تحليل الأفضلية اللغوية.

الكلمات المفتاحية: القصيمية العربية، نظرية الأفضلية اللغوية، نظام النبر، قيود التمييز، قيود التوافق

1.0. Introduction

Qassimi Arabic is one of the Arabic dialects that is spoken by Qassimi people in the country of Saudi Arabia. It is a colloquial form that is originally spoken by Qassimi people and understood by most Arabs in the Arab world. The QA phonological structure and stress system shows some differences when compared to the phonology construction of other Arabic varieties. Moreover, the phonological structure and stress pattern of loanwords used by QA speakers seem to exhibit some adaptation into that of QA.

Stress and how it is dealt with within the optimality theory has been the center of testing and analyzing by numerous studies. Although a great deal of studies focused on stress in certain Arabic dialects, few number of them focused on the stress of loanwords used by certain Arabic people. Moreover, fewer studies analyzed the stress structure of loanwords utilized by Saudi Arabic speakers. Thus, the current study conducts a constraint-based analysis of English loan words used by QA speakers in terms of primary stress placement.

2.0. Theoretical framework

The present study examines data according to the central ideas of the constraint-based theory explained below. Optimality framework was first proposed by Prince and Smolensky in 1993 as a model of grammar structuring. Under the perspective of optimality theory, the surface form is derived through the use of a set of conflicting constraints rather than rules. These set of constraints conflict over the choice of a winner from a set of existing candidates generated by GEN (the generator). McCarthy and Prince (1995, 1999) highlight that the ranking of a set of constraints is language dependent. Therefore, the ranking of constraints in a particular language depends on the candidates' degree of violation to the constraints of that language. The candidate that exhibits the least violations acts as the optimal candidate that is selected by EVAL (the evaluator) to be the output surface form (Archangeli, 1999).

It is claimed that the building of feet in standard metrical theory determines stress assignment. Al-Mohanna (2004: 01) states that stress in metrical theory is identified through feet construction, which therefore suggests a limited set of parameters. He continues that "these parameters literally are set on a language particular basis to construct the desired foot form and/or content" (Al-Mohanna, 2004: 01). Among the basic parameters of word stress are parameters that determine the metrical feet shape. The first one of these is boundedness which has two values: bounded, which require feet to have two or less syllables and unbounded, which does not require feet to have size limits (Kager, 1995). Another foot shape parameter is headedness, which governs the side where the head of the foot is placed (Ibid). A third one is quantity-sensitivity, which determines the position of light and weighty syllables in feet (Ibid).

However, the construction of footing in OT is a process made by the generator (GEN), in which a number of words or candidates with different types of footing and different stress places are generated. Then, the ranking of certain active constraints that conflict over the choice of the correct footing type are determined (e.g. NONFINALITY, PARSE-SYL, FOOT-BINARITY and WSP). Finally, the optimal candidate with the footing type that does not violate or has the least violations of the higher ranked constraints is selected by EVAL to be the surface form.

3.0. Literature review

Although many studies investigated stress in multiple Arabic varieties within the optimality theory, a few number of them focused on the stress of loanwords uttered by Arabic speakers. One of these studies is by Jarrah (2013). He tested the phonological changes of the syllable structure of English loan words that are usually used by Madina Hijazi Arabic speakers. He also tested how stress is distributed in the English loanwords that are adjusted into MHA. The researcher discovered that the phonological structure of MHD is preserved by its speakers when uttering borrowed words. This preservation is shown through the application of some processes such as resyllabification and epenthesis in the pronunciation of English borrowings. His results show that the phonological structure as well as the stress of loan words adapted into MHD are sufficiently explained and well clarified through the optimality analysis.

Moreover, Abu-Guba (2018) examined how English borrowings are adapted into Ammani Arabic (AA henceforth). He examined more than 400 English loanwords used by monolingual speakers of AA. In his study, the researcher analyzes the stress patterns and syllable structure of English loanwords used by AA speakers. Moreover, he discusses another phenomenon which is the customization of English consonants and vowels into AA phonology. He concluded that the phonological structure of AA influences the variation observed in English loanwords.

Many other studies were conducted regarding stress in Arabic dialects. Aquil (2012) and Al-Momani and Mahadin (2020) both investigated stress in their studies. Aquil (2012) investigated the stress pattern of Cairene Arabic (CA) under the OT. The paper is mainly a translation of previous analysis of primary stress in CA into OT perspective in an attempt to show the relation among stress constraints. Al-Momani and Mahadin (2020), on the other hand, examined the stress structure of Bani Saxar Arabic (BSA), a variety spoken by some Jordanian Bedouins, under the Optimality theoretic analysis. The researchers found that the BSA phonological system exhibits an iambic foot structure that shows a left to right parsing. They also discovered that Degenerate feet are strongly prevented because the word's bimoraic minimality state is conformed to by content words. Finally, the study demonstrates that few universal constraints are enough to explain the stress structure of BSA.

The current study on the other hand aims to investigate the stress system of loanwords rather than native QA words. Moreover, it intends to examine how the stress system of English loanwords used by QA speakers is adapted into that of QA. Lastly, it tries to find out how the OT account for such adaptation.

Because QA stress pattern is the source from which the present study bases its data and analysis, it is greatly valuable to start with explaining the stress system of QA before tackling the methodology and stress related constraints of OT that are at use in the study.

3.1. QA stress system

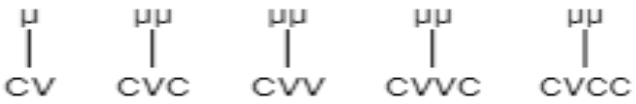
Stress in QA is quantity sensitive, which means that QA depends mainly on syllable's weight to identify stress locations (Alhoody, 2019). Moreover, the parsing of feet in QA starts from left to right and the foot inventory involves (H) and (LL) syllables (Ibid). According to Alhoody (2019: 47) "QA is trochaic and stress falls on the right foot of the prosodic word". Therefore, stress is assigned to the ultimate superheavy syllable. If the last syllable is not superheavy, stress is assigned to the heavy penult. Lastly, stress assigns to the antepenult that is either heavy or light if the penult is light. However, the light penult is assigned stress in the case of disyllabic words containing two light syllables. No stress is assigned to syllables on the left side of the antepenult.

Based on the above remarks regarding stress distribution in QA, it is clear that stress in QA is highly dependent on the number of moras in a syllable, which means syllable's weight. In this regard, Alhoody (2019) claims that although final consonants in QA count as adding a mora in non-final positions, they are not moraic in final syllables. In other words, CVC in final position is monomoraic and CVV is always bimoraic in QA since it does not occur in final position of words. The following structures demonstrate the number of moras in final and non-final light, heavy and superheavy syllables:

(1) Number of moras in final and non-final light, heavy and superheavy syllables:

a. Final position:

b. Non-final position:



The above structures clearly show that the syllable's position in QA determines its number of moras. Thus, CVC syllables are monomoraic in final but not in non-final position while superheavy syllables are bimoraic in both final and non-final positions. However, according to Alhoodi (2019), CVV syllables never occur finally in QA.

4.0 Objective and Methodology

The current paper aims at examining the stress system of English loanwords as used by QA speakers. The paper follows the descriptive-analytical approach. Moreover, It intends to answer the following questions:

4.1. Research questions

1. Is the stress system of loan words utilized by Qassimi speakers adapted to that of QA?
2. How does the optimality theory account for stress in English loanwords used by QA speakers?

4.2. Data collection

The collected data in the paper are taken from previous related studies and native speakers of QA. Fifteen words with two and more syllables and with different syllable types are examined, such as words with light, heavy and/or superheavy syllables, to analyze the stress pattern of such words. All tested words are recognized common words that are accessible to almost all adult QA speakers. The researcher, as a native speaker of QA, pronounced these words and asked three more native speakers to pronounce them as well to ensure that the stress location is the same in their pronunciations as what is suggested by previous studies.

4.3. Data analysis

The analysis of data in this study are optimality based analysis. The researcher worked on different universal constraints in analyzing data. The focus is on constraints related to stress assignment.

The constraints that are at play in QA stress system are:

(2) The prosodic markedness constraints:

a. FT-BIN

"Feet are binary under moraic or syllabic analysis." (Kager, 1999:156)

b. PARSE-SYL

"Syllables are parsed by feet." (Kager, 1999:162)

c. PARSE-SEG

Link all the segments of a syllable to the directly above level. (McCarthy, 2008)

d. RHTYPE=T

"Feet have initial prominence" (Kager, 1999:172)

e. WSP (weight to stress principle)

Stress is attracted by syllables that are (super)heavy. (Prince & Smolensky, 1993, 2004)

f. NONFINALITY

"No foot is final in PrWd." (Kager, 1999: 151)

g. *CLASH

Adjacent stressed syllables are not allowed. (Selkirk, 1984)

(3) The alignment constraints:

a. GRWD=PRWD

"A grammatical word must be a prosodic word." (Kager, 1999: 152)

b. ALIGN HEAD-R

The head foot of a prosodic word must be aligned with the prosodic word's right edge. (McCarthy & Prince, 1993).

c. Align (PrWd, L, Ft, L)

The left edge of each foot must be aligned with the left edge of a prosodic word. (McCarthy & Prince, 1993).

Furthermore, the present study aims to use the violation type of tableaux rather than the comparative one since the intended goal is to indicate possible winners under different rankings of constraints. McCarthy (2007) states that when the goal of the study is to show probable winners under different rankings of a group of constraints, this type is best used.

5.0. Analysis

5.1. The stress system of English loanwords in QA

As mentioned earlier, the stress system of QA is quantity sensitive (Alhoody, 2019). Moreover, the rhythm type of QA is trochaic, and the foot inventory involves (H) or (LL) syllables (Ibid). Therefore, stress is assigned to the most right superheavy syllable or the heavy penultimate syllable of a prosodic word if the most right is not superheavy. However, if the penult is light, stress falls on the antepenult. If a prosodic word consists of only light syllables, stress falls on the antepenult unless the word contains only two syllables, then stress is assigned to the penult (Ibid). Stress never assigns to syllables that precede the antepenult in QA.

The collected data from native speakers and from previous studies clearly shows that QA speakers apply the stress system of QA to the borrowed English words. Number (4) below shows the English words with the original stress location –the one that follows the stress system of English- and the stress position of these words after they are borrowed and adapted to QA highlighting the syllable type that attracted the stress in these words after adaptation (Alhoody, 2019):

(4)

English word	English transcription	QA transcription	Stressed syllable type after adaptation
April	**/eɪp.ril/**	**[ʔib.ˈriːl]**	**Superheavy ultimate**
Captain	**/kæb.tɪn/**	**[ˈkʌb.tin]**	**Heavy penult**
Tank	**/tæŋk/**	**[ˈtaːn.ki]**	**Superheavy penult**
Cassette	**/kə.ˈset/**	**[ˈka.sit]**	**Light penult**
Compressor	**/kəm.ˈpres.ər /**	**[ˈkumb.ri.sir]**	**Superheavy Antepenult**
Mascara	**/ mæ̃.ˈska:.ra/**	**[ˈmʌs.ka.rah]**	**Heavy antepenult**
Cinema	**/sɪ.nɪ.mə/**	**[ˈsɪ.na.ma]**	**Light antepenult**

Number (4) exhibits that Qassimi speakers adapt the English loanwords to the QA stress system. Put differently, either the stress placement of English words or the length of the vowel inside a syllable is changed to adapt to that of QA. The lengthening of a vowel in a syllable is done to ensure that the stressed foot is bimoraic (jarrah, 2013). For example, the word *'April'* in English shows a penultimate syllable stress, but after adapted to QA, stress is placed on the last syllable after its vowel is lengthened to become a superheavy syllable that attract stress. This clearly indicates that the stress system of English loanwords is adapted to QA. According to Jarrah (2013), speakers of a certain language either change the stress location or lengthen the vowel of the stressed syllable of borrowed words to meet the stress rules of their language or dialect. Although stress in some words remains on the same syllable after adaptation, this same placement is accidental. In other words, stress location in words like [ˈkʌb.tin], [ˈtaːn.ki] and [ˈsɪ.na.ma] follows the stress system of QA even though it happens to be in the same location as that of the English word. For instance, the words [ˈkʌb.tin] as used by QA speakers shows a penultimate stress because the penult is heavy while the ultimate syllable is light.

5.2. Optimality based analysis

Since it becomes clear that Qassimi speakers apply the stress system of QA dialect on English loanwords, I should now deal with the OT analysis of such stress system. According to several studies that deal with Arabic dialects, the constraints that are at use in most Arabic dialects are FT-BIN, PARSE-SYL, GRWD=PRWD, RHTYPE=T and WSP (Almohanna, 2004; Jarrah, 2013; AbuGuba, 2018). However, after some investigations, it has been found that QA uses six more constraints beside these ones, which are NONFINALITY, CLASH, ALIGN HEAD-R, PARSE-SEG and Align (PrWd, L, Ft, L).

The ranking of these constraints in QA is different compared to other Arabic dialects because the stress system of QA exhibits slight differences when compared to that of those dialects. In QA, some of these constraints are ranked higher than others, and some of them are relatively unranked while others are relatively ranked. It is noticed that the FT-BIN constraint is always in conflict with the PARSE-SYL constraint as PARSE-SYL necessitates the parsing of syllables into feet. The FT-BIN is undominated and ranked higher than PARSE-SYL because QA does not allow the parsing of more or less than two light syllables or two moras into feet, which violates PARSE-SYL that requires all syllables in a word to be parsed into feet. Number (6) below is a tableau that offers some illustrations about the ranking of these two constraints using the two syllables word /kiːlu/ *'kilo'*:

(5)

/ki:lu/	FT-BIN	PARSE-SYL
→a. (ki:)lu		*
(ki:)(lu)	*!	

The optimal candidate in (5), which is marked by the arrow, is (a). Although this candidate incurs some violations of the lower ranked constraint, it does not violate the higher ranked constraint. Reversing the ranking lead to incorrect results and wrong optimal candidate.

The constraint WSP is dominated while *CLASH and GRWD=PRWD are undominated in QA. WSP is ranked lower because stress in QA is quantity sensitive, which means the violation of this constraint by some QA output forms. Moreover, the *CLASH constraint is ranked high to avoid selecting candidates with two adjacent stressed syllables. The GWD=PWD constraint is also ranked high to avoid selecting candidates with no footings as optimal ones. Tableau number (7) bellow with the two syllable word /fʌi.ru:s/ *'virus'* offers some illustration:

(6)

/fʌiru:s/	*CLASH	GWD=PWD	WSP
→ a. fʌi(ru:s)			*
b. (fʌi)(ru:s)	*!		
c. fʌi.ˈru:s		*!	

The optimal candidate in (6) is (a). Although this candidate exhibits some violations of the lower ranked constraints, it incurs no violation of the higher ranked ones. All other candidates are fatally violated by at least one of the higher ranked constraints. By reversing the ranking, wrong optimal candidate will be selected.

The NONFINALITY constraint is ranked higher than PARSE-SEG in QA. The high ranking of NONFINALITY is simply because final segments are unparsed in QA. Therefore, final feet are never found in QA stress system. The non-parsing of final segments in final heavy syllables of quantity sensitive Arabic dialects is also recommended and applied by Al-Mohanna (1998). Al-Mohanna (1998) assumes that the final consonant of a superheavy syllable in final position is immediately linked to the PrWd node. So, the ranking of the constraints in regard to words with final superheavy syllables as in /ta.la.fu:n/ *'telephone'* is as follows:

(7)

/talafu:n/	NONFINALITY	PARSE-SEG
→ a. ta.la(fu:)n		*
b. ta.la(fu:n)	*!	

The optimal candidate in (7) is (a). This candidate violates the lower but not the higher ranked constraint. On the contrary, the other candidate is seriously violated by the higher ranked constraint NONFINALITY. Reversing the ranking result in incorrect optimal candidate.

The constraints ALIGN HEAD-R and Align (PrWd, L, Ft, L) are both dominated in QA but RHTYPE=T is not because QA rhythm type is trochaic in which the foot is left headed. ALIGN HEAD-R and Align (PrWd, L, Ft, L) constraints are ranked low because the optimal candidate [ka('bi:)neh] violates both. In other words, the necessity of having these alignment constraints is to show that the optimal candidate is not always faithful to such constraints therefore they are ranked low. Moreover, ALIGN HEAD-R is needed for the winner candidate to beat some losers. So, the ranking of the constraints in this regard is shown in (9):

(8)

/ fʌiru:s/	RHTYPE=T	ALIGN HEAD-R	Align (PrWd, L, Ft, L)
→a. fʌi(ru:)s			*
b. (fʌi)ru:s		*!	

The optimal candidate in (8) is (a). This candidate shows no violations of the higher ranked ALIGN HEAD-R in the above tableau. Reversing the ranking of ALIGN HEAD-R and Align (PrWd, L, Ft, L) will result in the winning of the incorrect form, Thus, the low ranking of these two constraints with ALIGN HEAD-R ranked higher than Align (PrWd, L, Ft, L) is recommended for QA stress system.

The ranking in (9) below summarizes the proposed dominance relations and the overall hierarchy of constraints for the QA stress pattern discussed so far:

(9) FT-BIN, CLASH, RHTYPE=T, GRWD=PRWD, NON-FIN>> WSP>> ALIGN HEAD-R >> PARSE-SYL, ALIGN (PRWD, L, FT, L), PARSE-SEG

Tableaus number (10), (11) and (12) below with ultimate, penultimate and antepenultimate stress respectively show how the above ranking of constraints accounts for the stress pattern in QA.

(10)

/ fʌiru:s/	FT-BIN	CLASH	RHTYPE=T	GRWD=PRWD	NON-FIN	WSP	ALIGN HEAD-R	PARSE-SYL	Align (PrWd, L, Ft, L)	PARSE-SEG
→a. fʌi(ˈru:)s						*		*	*	*
b. fʌi(ˈru:s)					*!	*				
c. (ˈfʌi)ru:s						*	*!	*		
d. (ˈfʌi)(ru:s)		*!			*		*		*	
e. fʌiˈ.ru:s				*!		*		**		
f. (fʌiˈ.ru:s)	*!		*		*	*				

(11)

/ kʌbtIn /	FT-BIN	CLASH	RHTYPE=T	GRWD=PRWD	NON-FIN	WSP	ALIGN HEAD-R	PARSE-SYL	Align (PrWd, L, Ft, L)	PARSE-SEG
a. kʌb(ˈtIn)	*!				*	*		*		
b. (ˈkʌb.tIn)	*!				*			*		
→c. (ˈkʌb)tIn							*	*	*	
d. (kʌb)(ˈtIn)	*!	*			*			**	*	
e. ˈkʌb.tIn				*!				**		

(12)

/si.na.ma /	FT-BIN	CLASH	RHTYPE=T	GRWD=PRWD	NON-FIN	WSP	ALIGN HEAD-R	PARSE-SYL	Align (PrWd, L, Ft, L)	PARSE-SEG
→a. (ˈsi.na)ma							*	*		
b. si(ˈna.ma)					*!			*	*	
c. (siˈ.na)ma			*!				*	*		
d. (ˈsi.na)(ma)	*!				*		*		**	

/si.na.ma/	FT-BIN	CLASH	RHTYPE=T	GRWD=PRWD	NON-FIN	WSP	ALIGN HEAD-R	PARSE-SYL	Align (PrWd, L, Ft, L)	PARSE-SEG
e. si(ˈna)ma	*!						*	**	*	
f. si.na.(ma)	*!				*			**	**	
g. ˈsi.na.ma				*!				***		

The aforementioned analysis shows that the ranking of constraints in terms of English loanwords stress system should be the same as that of original QA since the stress pattern of borrowed words is adapted to that of QA. Therefore, the above ranking of constraints, which is somehow similar to several Arabic varieties that have related stress pattern, is used to deal with the stress system of QA. The relatively unranked constraints FT-BIN, CLASH, RHTYPE=T, GRWD=PRWD and NON-FIN are the highest in the tableaus because winner candidates that follow the QA stress pattern never exhibit any violations to them. On the other hand, the final three constraints PARSE-SYL, Align (PrWd, L, Ft, L) and PARSE-SEG are relatively unranked because their ranking is not important since all loser candidates must be beaten before the winner form violates any of them. In terms of WSP and ALIGN HEAD-R, the higher ranking of the first over the second is because ALIGN HEAD-R is the must violated by output forms since the head foot in them is not always aligned to the right of the prosodic word. However WSP, is not as much violated by optimal candidates because heavy and superheay syllables often attract stress in QA especially in two and three syllables words. So, these two constraints need to follow the above ranking in order for the remaining loser candidates to be beaten.

Some of the other dialects that have slightly similar stress form as QA and accordingly slightly similar ranking of constraints are Madinah Hijazi Arabic, Palestinian Arabic, Cairine Arabic and Jordenian Arabic. According to Jarrah (2013), Al-Mohanna (2004), Huneety & Mashaqba's (2016) and Abu-Guba (2018), these dialects are quantity sensitive, their feet type is trochaic, the direction of footing is from left to right, and they allow one main stress, which falls on the word's right edge, but do not allow secondary stresses. It should be mentioned that stress in these dialects is predictable and can be described using the metrical parameters for the stress system in Arabic suggested by Hayes (1995). Hence, the drawn conclusion regarding the stress system of QA goes side by side with the conclusions of these Arabic varieties. However, since QA stress pattern is to some extent different from the stress patterns of other Arabic varieties, we believe that it does not share the same ranking nor the choice of constraints with them.

Conclusion

The current study investigates the stress system of English loanwords as used by QA speakers under the optimality theory. The study demonstrates that QA speakers apply the stress pattern of QA colloquial to the borrowed words. Therefore, the ranking of constraints in terms of loanwords is the same as that of original QA words.

In regard to the constraint based analysis, we can state that they are useful in explaining the stress system of QA in a way that allows the variety's correct form, among a list of competing candidates, to be the optimal output form. Hence, I suggest that further studies apply the OT to the stress pattern of other Najdi dialects such as Zelfawi and the dialect spoken in Riyadh.

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