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The Stress Assignment in Najrani Arabic: An OT Perspective

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Abstract: ***In this paper, it is shown that syllable weight plays a significant role in the assignment of stress in Najrani Arabic, NA, a variety of Arabic spoken in the southern province of Saudi Arabia. After first presenting the Najrani data that highlights the syllable structure, an optimality-theoretic analysis, (Prince and Smolensky 1993, 2004), of Najrani is developed to provide a complete analysis of the stress assignment and vowel deletion found in NA. Stress is examined in monosyllablic, disyllabic, and trisyllabic words separately. and concluded that syllable weight is the driving force behind the assignment of stress in NA. It is also found that vowel deletion occurs only on an initial open syllable of certain environments.***

Keywords: syllable weight**,** Najrani Arabic, OT, stress

1. Introduction

Arabic is a language that has a lot of dialects. There are several dialects of Arabic that differ quite dramatically from the Modern Standard Arabic (MSA), diglossia. Most native speakers of Arabic live in the Arab World. The dialectical differences are so extensive, that two Arabic speakers from Morocco and Najran in Saudi Arabia, for instance, will most likely not understand each other. Instead, they speak what is called the white dialect, the middle language between the colloquial and the MSA, pointing out that it brings closer the language of understanding between people. There are three levels of Arabic: Classical Arabic (CA), the second is the MSA, and the third are the colloquial dialects. MSA is almost the same as CA, but with some additions to fit the modern times. The third level is dialects that share with the MSA in some linguistic properties and vary in other aspects. In Saudi Arabia, or what is referred to as "Arabian Peninsula", there are many dialects like Najdi, Hijazi, Shamali, Najrani etc.

Arabic belongs to the central Semitic languages. Najrani Arabic (NA) is a variety of Arabic language that is mainly spoken in number of areas of South-western of Saudi Arabia, including Najran, Sharourah and Wadiiah. However, all the examples have been taken and judged only from people who live in Sharoura, a small area belongs to Najran. There are approximately hundred thousand speakers of NA in Sharourah.

This study is to examine the stress patterns and the vowel syncope in NA using Optimality Theory (1). With the introduction of Optimality Theory (2), much interest has been given to syllable structure and stress assignment processes by examining a number of dialects including Bedouin Hijazi (3) . Najdi (4), Makkan (5), Palestinian (6), Sanaani (7), and Cairene (8). Despite this large body of theoretical research on Arabic word stress, Najrani Arabic dialect has not received attention. The present study attempts to fill in this gap in the theoretical research on syllable stress in Arabic dialects by examining syllable stress and related phonological phenomena in Najrani Arabic dialect that has not been the subject of any serious analysis in the available literature.

2. Theoretical Background

2.1 The Prosodic Hierarchy

The internal structure of Prosodic words is divided into smaller segments that are organized in a prosodic hierarchy. Many researchers followed the prosodic structure theory (e.g., (9), (10); (11); (12). The common prosodic hierarchy version is represented in Figure 1, including a prosodic word, feet, syllables and moras.

PrWd

Foot

Syllable

Mora

Figure 1: Prosodic hierarchy

Prosodic words are divided into rhythmic segments. These rhythmic segments are referred to as feet. They help in describing the stress system of languages. A foot has two syllables in most languages. In optimality theoretical terms, it is grasped by the constraint FOOTBINARITY (1). Within each foot, one of the syllables is stronger than other syllables. This dominant syllable could be at the left edge (ˈσσ) in some languages, known as Trochee or at the right edge of a foot (σˈσ) in others, known as Iamb.

2.2 Syllable Structure

According to several phonological studies done on syllables and syllabification, as stated in (13) and (14), the basic internal structure of syllables is illustrated in Figure 2.

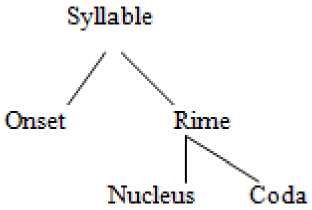

Figure 2: Internal structure of syllables

Every syllable consists of two segments: an onset and a rime. The rime consists of two parts: a nucleus and a coda. The onset is the initial segment (a consonant) of a syllable. The nucleus is the central segment (typically a vowel) and the final segment (a consonant) is called the coda. In all languages, the nucleus is obligatory in all syllables, and onsets and codas are optional. The occurrence of onsets and codas is different in the syllables of languages. Some languages allow only one consonant in the onset and some allow multiple consonants (clusters) as in English (15) and some varieties of Arabic e.g., Hadrami (16), Najdi (4) and San'ani (7). The same is true for codas. Therefore, syllable structure is language specific.

There are two types of syllables. Light syllables consist of a short vowel (CV). Some languages consider the pattern (CVC) as light syllable (14). Syllables with a long vowel or a diphthong (CVV) are heavy syllables. Some languages deal with the pattern (CVC) as heavy syllables (Ibid).

2.3 The Moraic Approach

Moras are phonological units that function as a measurement for syllable weight (e.g., (9-10); (17) as cited in (14). It is the lowest unit in the prosodic hierarchy as shown in (1). The moraic approach is adopted to serve as a primary tool in this study. Syllable weight is the driving force behind stress assignment in some languages including Arabic (Ibid). Consequently, Arabic is identified as a quantity sensitive language. Quantity- sensitive languages differentiate between light syllables and heavy syllables when assigning stress (Ibid). Light syllables are assigned one mora and heavy syllables with long vowels or a diphthong are assigned two moras. An example of the moraic representation of a syllable of the shape CVV is given in Figure (3).

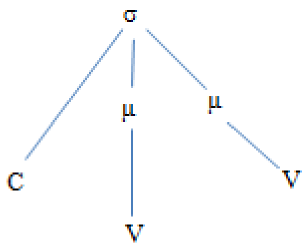

Figure 3: Syllable-Internal Structure (Moraic Model) (14)

According to (17) and (13) as cited in (14), languages differ in their moraic structure. Some languages only consider CVV syllables as heavy syllables and CV and CVC syllables as light, whereas other languages deal with both CVV and CVC as heavy syllables and CV as light (Ibid).

2.4 Optimality Theory

Many linguistic frameworks have been devised to account for different linguistic characteristics in several languages e.g. rule-based models. This has been replaced by Optimality Theory, as a constraint-based approach to grammar. According to (18) and (11), the main components of an OT grammar are the constraint set (CON), the generator (GEN), and the evaluator (EVAL). The key concept of OT is that Universal Grammar (UG) contains a large universal set of violable constraints that are strictly ranked within a particular language. Thus, the variation observed in languages is attributed to their difference in terms of constraint ranking. OT constraints can be violated; no word can satisfy all of them. A language specific ranking of the constraints makes some violations less important than others.

In OT, the first task is accomplished by the function Gen (generator) while the second task is accomplished by Eval (evaluation). In order to retrieve all the possible candidate forms for some input, Gen acts on a LEXICON that contains all of those lexical forms. This is tantamount to saying "every language considers exactly the same set of options for realizing an input" (19: 1605):

Gen (input) => {candi, cand2 ...cand„}

The function Eval (evaluation), on the other hand, is language-specific. That is, each language ranks the set of universal constraints in a unique way, so that only one form will ultimately win the competition

Eval {candi, cand2 ...cand3 } (cand) output

This reads as: Eval evaluates all the candidate forms supplied by Gen, and singles out precisely one output for each input with respect to a given ranking of constraints.

3. Syllable Structure of NA

In all Arabic dialects, syllables must have an onset that is composed of only one consonant and rhyme which is classified into nucleus and coda. In NA, syllable structure is categorized into four categories: light, heavy, superheavy, and ultra-superheavy.

1) Light syllable is composed of a consonant and a short vowel (CV) like [wá.ra.gi.ti] 'my papaer'.
2) A heavy syllable is composed of either a consonant and two vowels (CVV) like [rá:.hit] 'she left' or a consonant followed by a short vowel and consonant (CVC) non final like [tál.bih] 'student (fem)'.
3) A superheavy and ultra-superheavy syllable is composed of the following:

- CVVC [ma. ʕa:.zí:m] 'invited (pl)'
- CVCC [ka.tábt] 'I wrote'
- CCVVC [mis.tig.ʕdí:n] 'they're waiting (m)'
- CVVCC [ná:mm] 'he slept'

3.1 Stress Assignment

Words are composed of feet, and these feet can be one or more syllables. for each foot, one of the syllables is stronger than the other syllables. NA is a left-dominant language; i.e., the dominant syllable is on the left edge of a foot. Like most varieties of Arabic.

In NA, Word stress patterns depend on syllable weight where stress falls on one of the following syllables: a word-final syllable is stressed iff that syllable is CVVC or CVCC. Lacking such a final syllable, stress falls on non-final CVC syllable if it is in penultimate position, otherwise stress falls on the leftmost CV syllable:

a) stress on final super-heavy syllable: [ka. bí:r] ‘big’ [ra. ʒa. ʒí:l] ‘men’
b) stress on heavy penultimate syllable: [ma.na. ʃíf.na] ‘our towels’ [ʃa.ʒa. rát. hum] ‘their tree’
c) otherwise, stress the leftmost CV syllable: [fal. sá. fah] ‘philosophy’ ['ra.xa.ma] ‘stupid’

Syllables, in NA, are footed from left to-right and are left headed i.e. trochaic. Extrametricality applies to the final consonant in final CVC or CVVC. Finally, stress is governed by the End Rule Right (ERR) principle.

(1) Monosyllabic words

a. /CVV/	['maa]	water
b. /CVVC/	['raah]	he went
c. /CVCC/	['film]	movie
d. /CVVCC/	[ná:mm]	he slept

(2) Disyllabic word patterns

a. ('LL)	['ma.rag]	‘soup’
b. L('H)	[ka.'bi:r]	‘tall’
c. ('H)L	['saa.lim]	‘save’
d. (H)('H)	[xar.'baan]	‘broken’

(3) trisyllabic words patterns

a. ('LL)L	['ra.xa.ma]	‘stupid’
b. (LL)('H)	[ʃa.ri.'faat]	‘honest (f)’
c. L('H)L	[ka.'rii.ma]	‘generous (f)’
d. L(H)('H)	[ma. ʕa:.zí:m]	‘invited (pl)’
e. ('H)LL	['muʕ.ta.raf]	‘recognized’
f. (H)L('H)	[kar.tu.'niin]	‘two boxes’
g. (H)('H)L	[mis.'taʕ.ʒil]	‘in a hurry’
h. (H)(H)('H)	[mis.tig.ʕdí:n]	‘they’re waiting (m)’

4. An OT Analysis of Stress in NA

4.1 Monosyllabic words

In NA, long vowels are assigned to two moras, and short vowels are assigned only one mora. In the shape of (CVC), the final coda consonants are extrasyllabic. Therefore, the first constraint that is inviolable in NA is Lx = Pr.

1. Lx = Pr:
every lexical word must consist of a prosodic word,

Table 1

/'ra$_\mu$ a$_\mu$ h/	Lx = Pr
a. ☞ ('ra$_\mu$ a$_\mu$) <h>	
b. ra$_\mu$ a$_\mu$ h	*!
c. ('ra$_\mu$ a h)	

In table (1), only the second candidate that incurs the violation Lx = Pr, but both candidates (a and c) win the competition. We cannot have two winners, so one of the two winning candidates (a & c), should be ruled out. Therefore, we need another constraint that can achieve the desired output, which can be WeakEdge.

2. WeakEdge (PrWd):

The right periphery of PrWd should be empty.

As discussed earlier, the final consonants are weightless i.e extrasyllabic. Therefore, to account for the extasyllabicity, the constraint WeakEdge is required to rule out one of the candidates in table (1).

Table 2: Lx = Pr >> WkE (PrWd)

/'ra$_\mu$ a$_\mu$ h /	Lx = Pr	WkE (PrWd)
a. ☞('ra$_\mu$ a$_\mu$) <h>		
b. ('ra$_\mu$ a$_\mu$ h)		*!
c. ra$_\mu$ a h	*!	

In table 2, Candidates (c) is ruled out by Lx = Pr. The final consonant in candidate (b) is not extrasyllabic. Thus, it is excluded by WeakEdge. Candidate (a) is the winner because it satisfies both Lx = Pr and WeakEdge.

Monosyllabic words also can be completed by the interaction of the constraints *PrWd, Lx = Pr and *MORA[V] as represented below in table (3):

3. *MORA[V]:
No mora is associated with a vowel.

Table 3: Lx = Pr, Weakedge> *MORA[V].

/'ra$_\mu$ a$_\mu$ h /	Lx = Pr	WkE (PrWd)	*MORA$_{[V]}$
a. ☞('ra$_\mu$ a$_\mu$) <h>			**
b. ('ra$_\mu$ a$_\mu$ h)		*!	**
c. ra$_\mu$ a$_\mu$ h	*!		*

Candidate (a), in table (3), wins the competition because it satisfies the highl- ranked constraints Lx = Pr and PrWd. Candidate (b) and (c) incur fatal violation of the constraints WkE (PrWd) and Lx = Pr respectively. Hence, the desired optimal form is candidate (a). This demonstrates that PrWd dominates *MORA[V]. The constraint ranking for the monosyllabic words is presented in ranking (1)

Ranking 1: WkE (PrWd), WeakEdge > *MORA[V].

4.2 Polysyllabic Word Stress

In disyllabic words of the shape /LL/, stress falls on the first syllable /'LL/ because feet in NA are trochaic i.e. the left syllable is the dominant of the foot. Thus, to account for two stresses within a foot, the constraints *IAMB and *TROCHEE as in (4) and (5) can achieve the desired candidate as shown in table (4). The *IAMB constraint is required to prevent stress in the second syllables of the form (L'L), and the *TROCHEE constraint prevents stress in syllables of the form of ('LL).

4. *IAMB:
Stress does not fall on the last mora of a foot.

5. *TROCHEE:
Stress does not fall on the first mora of a foot.

Table 4: LX = PR >*IAMB>*TROCHEE

/'la$_\mu$ fa$_\mu$ /	Lx = Pr	*IAMB	*TROCHEE
a. ☞ (lá$_\mu$ fa$_\mu$)			*
b. (la$_\mu$ fá$_\mu$)		*!	
c. la$_\mu$ fa$_\mu$	*!		

Candidate (c) here is ruled out because no foot is constructed over the word. Candidate (b) incurs a violation of *IAMB because stress falls on the last mora of a foot, so it loses. Thus, table (4) indicates that Lx = Pr outranks *IAMB because it is more important to have a foot that is constructed over the word than to avoid a syllable of (L'L). Therefore, the optimal candidate would be (a) even though it violates *TROCHEE because *IAMB dominates *TROCHEE. Thus, the constraint ranking so far is as following:

Lx = Pr, WeakEdge >> *MORA[V]. *IAMB >>*TROCHEE.

As illustrated in section 3, In NA heavy syllables attract stress. Thus, Weight-to-stress principle is an important constraint here.

6. Weight-To-Stress-Principle (WSP) (18)

Heavy syllables are prominent in foot structure and on the grid. The next table will demonstrate how Lx = Pr outranks *TROCHEE, and *TROCHEE outranks WSP.

Table 6: Lx = Pr, *IAMB >> *TROCHEE >> WSP

/ maʕa:z'i:m /	Lx = Pr	*IAMB	*TROCHEE	WSP
a. ma. ʕa:.zí:m	*!			***
b. (ˌma.) (ʕa:) (zí:m)			**!	
☞ c. (ma.) (ʕa:) (zí:)<m>			*	**

In table (6), Candidate (a) is ruled out because it violates Lx = Pr in that no foot is constructed over the word. Candidate (b) is excluded because it has a secondary stress. The optimal candidate that own the competition has the only one violation of *TROCHEE.

The constraint ranking so far is: Lx = Pr, WeakEdge >> *IAMB >> *TROCHEE> WSP

In tetrasyllabic words of the shape /LLLL/ or /H LLH/, stress falls on the rightmost syllable if it is heavy syllable, otherwise on the initial syllable. This fact can be accounted for by the interaction of two alignment constraints. The first constraint is Align-Head-R, which forces primary stress to fall on the rightmost foot. And the second one is Align ('L,PrWd,L), which requires that primary stress must be word-initial if there is no heavy syllable.

7. Align-Head-R:
The prominent foot is at the right edge of the PrWd.

8. Align ('L,PrWd,L):
Align the head syllable with the left edge of the PrWd.

Table 7: shows the interaction of these two constraints for words of the shape /LLLL/. Align ('L,PrWd,L) >> ALHDR

/'waragati/	Align('L,PrWd,L)	ALHDR
a. (wa.ra)('ga.ti)	**!	
b. wa('ra.ga)ti	*!	**
c. ☞ ('wa.ra)(ga.ti)		***

Table 7 shows the interaction between Align ('L,PrWd,L) and Align-Head-R. in Candidate (a), the word-initial light syllables is not stressed, so it incurs two violations of Align ('L,PrWd,L). Candidate (b) is excluded because the stressed syllable is neither at the left edge of the PrWd nor at the right edge of the PrWd, so it violates both constraints. Candidate (c) wins the competition because it satisfies Align ('L,PrWd,L). Furthermore, table (8) below will account for the words of the shape /H LLH/.

Table 8

/mistila'maat/	Align('L,PrWd,L)	ALHDR
a.(mis)('tila)(maa)t	*!	**
b. ('mis)(tila)(maa)t		*!**
☞c. (mis)(tila)('maa)t		

In the first Candidate, the stressed light syllable is not on the leftmost edge of the word, so it does not fulfill the Align ('L,PrWd,L) constraint. Candidate (b) satisfies the Align ('L,PrWd,L) constraint but it incurs three violations of ALHDR, so it's ungrammatical. In candidate (c), the prominent foot is on the rightmost edge of the word. Thus, it wins the competition because it satisfies both alignment constraints.

The final ranking of the constraints is as the following:
Lx = Pr, WeakEdge >> *IAMB >>*TROCHEE >> WSP, Align ('L,PrWd,L) >> Align-Head-R.
The following tables (10-13) show how Ranking (4) accounts for the stress in monosyllabic, disyllabic, trisyllabic and tetrasyllabic words.

Table 9: A monosyllabic word

/'raµ aµ h /	a. ('raµ aµ) <h>	b. ('raµ aµ h)	c. raµ aµ h
Lx = Pr			*!
WkE		*!	
*IAMB			*
*TROCH	*!	*	
WSP			*
Align-'L			
ALHDR			

Table 10: A disyllabic word

/'laɰ faɰ /	a. ☞ ('laɰ faɰ)	b. (laɰ fáɰ)	c. laɰ faɰ
Lx = Pr			*!
WʀE	*	*	
*IAMB		*!	
*TROCH	*		
WSP			
Align-'L			
ALHDR			

Table 11: A trisyllabic word

/ maʕa:zi:m /	a.ma. ʕa:.zí:m	b.(ˌma.)(ʕa:)(zí:m)	c. ☞ (ma.) (ʕa:)(zí:)<m>
Lx = Pr	*!		
WʀE		*!	
*IAMB			
*TROCH		**!	
WSP			
Align-'L		***	***
ALHDR		***	***

Table 12: A tetrasyllabic word

/'waragati/	a. (wa.ra)('ga.ti)	b. wa('ra.ga)ti	c.☞ ('wa.ra)(ga.ti)
Lx = Pr			
WʀE			
*IAMB			
*TROCH			
WSP			
Align-'L	**!	*!	
ALHDR		**	***

4.3 Vowel Deletion

Syncope is a process of deleting a sound from some syllables of the word. The phenomenon of short vowels deletion in non-final syllables is commonly found in some Arabic variations. There have been many researchers who investigated vowel deletion in some Arabic dialects including San'ani Arabic (7), (20), Bedouin Hijazi Arabic (3), and Al-Mohanna (21-22), etc. Therefore, in some Arabic dialects, the deletion of short vowels in open syllables undergo only for high short vowels while other dialects have both high and low short vowel syncopated. In NA, unstressed high short vowels in initial light syllable is deleted only in two environments. First when a monomoraic initial syllable with high short vowels is followed by a syllable of the form CVVC as shown in (8), and when an initial syllable is followed by a stressed heavy syllable as illustrated below in (9).

(8)
a. /ki. 'ta:b/ → [k'ta:b] 'a book'
b. /ti. 'na:m/ → [t'na:m] 'you sleep'
c. / tu.'ʃu:f/ → ['tʃu:f] 'you see'
d. /tu.'gu:m/ → ['tgu:m] ''you stand'
e. /yu.'gu:l/ → ['ygu:l] 'he says'
f. /sa. 'la:m/ → [sa. 'la:m] 'he says'

9.
a. /sa.'la:.mah/→ ['sa.'la:.mah] 'safety'
b. /ri.'dˁa:.ʕah/→ ['rdˁa:.ʕah] 'agriculture'
c. /su.'nu:.nah/ → [snu:.nah] 'his teeth'
d. /ti.'maʃ. ʃa/ → ['tmaʃ. ʃa] ' you walk'

The examples in (8 and 9) show that only unstressed high short vowels undergo syncope in the surface form as in (8.a, b, c, d, e and 9 b, c, d) while the syncope process fails to target the unstressed low short vowel /a/ as in (9 f and 9 a). Therefore, the same environment of syncopation is found in San'ani Arabic (7) as well.

The unstressed high short vowels syncope will be accounted for by using OT. Therefore, the following constraints are high ranking in Najrani Arabic. That is, violation of any of them yields an incorrect vowel deletion:

10. . MAX-IO (23)
An input segment has a correspondent segment in the output (No deletion).

11. *COMPLEXONS (1)
A syllable must not have more than one onset segment.

12. #*i]σ
High front short unstressed vowels in an open syllable are not allowed initially.

13. #*u]σ
High back short unstressed vowels in an open syllable are not allowed initially.

The first environment of the high short unstressed vowels syncope is taken place when the initial open syllable is followed by syllables of the forms CVVC.

Table 13:

Ki. 'ta:b	#*i]σ	MAX-IO
a. ki. 'ta:b	*!	
b. kta:b		*
c. kitb	*!	*
d. kuta:b		

In table 13, Candidates (a and c) are ruled out because they violate the high-ranking #*i]σ. But now we have two winning candidates (b and d), one of them should be excluded. Although the markedness constraint #*i]σ ruled out the (a and c) candidates, it cannot help determine the optimal form between (b) and (d) because they both do not have /i/ in an initial open syllable. Therefore, we need other constraints that can help find the optimal form here, which are #*u]σ and *COMPLEX-CODA.

Table 14:

Ki. 'ta:b	#*i]σ	#*u]σ	*COMPLEX-CODA	Max IO
1.a. Ki.'ta:b	*!	*!		
☞ 1.b. 'Kta:b				*
1.c. Kitb	*!		*!	*
1.d. Kut'a:b		*!		

Table 15

/**tu**.'ʃu:f/	#*i]σ	#*u]σ	*COMPLEX-CODA	Max IO
2.a. **tu**.'ʃu:f		*!		
☞ 2.b. tʃu:f				*
2.c. '**tu**ʃf/		*!	*!	*

Candidates (1.a, c, d) and (2.a, c) are ruled out by #*i]σ and #*u]σ. Candidate (b) wins the competition because it satisfies both #*i]σ and #*u]σ. Therefore, the tableaux in (14) show that the constraint hierarchies in (14) correctly predicts that the optimal output in (1.b and 2.b) should surface with deletion of the high short vowel.

In the previous tables, it shows that only high short unstressed vowels that undergo syncope when the initial syllables are followed by syllables of the form CVVC. However, the low short unstressed vowels are not syncopated when they are followed by syllables of the form CVVC as illustrated below.

Table 16

sa.'la:m	#*i]σ	#*u]σ	*COMPLEX-CODA	Max IO
a. ☞ sa.'la:m		*!		
b. 'sla:m				*
c. 'salm			*!	*

Constraint (b) is ruled out by it violates a high-ranked constraint COMPLEX-CODA that dominate the low-ranked constraint MAX-IO. However, candidate (b) does not violate any high-ranked constraint, so it must be excluded by a high-ranked constraint that is more important than MAX-IO. Therefore, another constraint must be added to dominates the low-ranked constraint MAX-IO, which is *COMPLEXONS.

Table 17:

sa.'la:m	a. ☞ sa.'la:m	b. 'sla:m	c. 'salm
#*i]σ			
#*u]σ			
*COMPLEX-CODA			*!
*COMPLEXONS		*	
Max IO		*	*

#*i]σ, #*u]σ >> COMPLEX-CODA>> MAX-IO

Candidate (b) here is excluded by a new constraint, *COMPLEXONS, that is more important than MAX-IO.

The second environment of the high short unstressed vowels syncope is taken place when the initial open syllable is followed by a stressed heavy syllable.

Table 18:

/ri.'dˤa:.ʕah/	a. ri.'dˤa:.ʕah	b. ☞rdˤa:.ʕah	c. ri.'dʕah
#*i]σ	*		*
#*u]σ			
*COMPLEX-CODA			
*COMPLEXONS		*	*
Max IO		*	*

In table 17, candidates (a, c) are ruled out because the initial syllables have high short vowels are unsyncopated and violated high-ranked constraints. Candidate (b) wins the competition because the high short vowel in the initial open syllable that is followed by a stressed heavy syllable is syncopated. Therefore, data shows that only high short vowels in open unstressed syllables in words of the shape CVCVVC, CV.CVC.CVC or CV.CVV.CVC undergo syncope.

However, not all the words that have the same form would undergo syncopation. Therefore, the high short vowels that followed by a stressed heavy syllable do not syncope only if the word is attached to subject suffixes, consider the following examples:

Table: 19

stem	+suffix	gloss
1. /kitá:b/ /kitá:b-i/ /kitá:b-na/	[ki.tá:b] [ktá:.bi] [ktá:b.na]	'book' 'my book' 'our book'
2. /ʕuɟú:n/ /ʕuɟu:n-i/	[ʕu. ɟú:n] [ʕɟú:ni]	'eyes' 'my eyes'
3. /'ʃirig/ /'ʃirig-t/ /'ʃirig-na/	[ʃí.rig] [ʃi.rígt] [ʃi.ríg.na]	'choked' 'I choked' 'we choked'
4. /'kutub/ /kutub-na/	['ku.tub] [ku.'tub.na]	'books' 'our book'

Data in table (19) shows that before the word is suffixed, stress falls on the leftmost light syllable as (3 and 4). however, after suffixation, stress should move to the penult because stress in NA falls on the penult if it is heavy, and unstressed vowel should be syncopated. Consequently, data in (19) shows that stress does shift to the heavy penult but unstressed vowel of the stem does not undergo syncopation. Thus, this issue has been existed in few Arabic dialects such as Palestinian Arabic. Thus, this problem can be fixed by the cyclic approach. The syncopation of high vowels in initial open syllables occur after the stress applied. However, if the stress rules applied first and then the syncopation of unstressed vowels applies after word, we won't get the desired output. For instance, for the disyllabic word with the subject pronoun suffix /ʃirig +na/, if we attach the suffix to the stem, the stress shifts to the heavy penult, so we will get [ʃi. 'rig.na]. Second cycle is that after the stress is shifted, then an unstressed short vowel in an open syllable must be syncopated, so if the vowel is syncopated then we will get [ʃ'rig.na], which is not grammatical in NA. Therefore, there must be another way of resolving such problem. In his work on Maltese, Brame (24) indicates that when the stress shifts to the next heavy syllable as a first sycle, the light syllable will still carry a secondary stress. Second cycle then is applied only to unstressed vowels. After syncope has applied, secondary stress can be deleted late in the derivation. Now, it is useful to use the same derivations rule as Brame used with Palastenian Arabic.

(14) / 'ʃirig +na/ → [ʃi.'rig.na]

First cycle is that the primary stress shifted from the light open syllable to the heavy penult, so the light syllable still carry a stress but not the primary one. In the second cycle, syncope is then applied to an unstressed short vowel in an open syllable. In (14), the initial vowel can be syncopated because it carries a secondary stress, so syncopation cannot apply here. After stress and syncope have applied, the secondary stress then can be deleted.

5. Conclusion

This paper has studied the stress system and vowel high short vowel syncope of Najrani Arabic. In NA, stress is dependent on the syllable weight. a word-final syllable is stressed iff that syllable is CVVC or CVCC. Lacking such a final syllable, stress falls on non-final CVC syllable iff it is in penultimate position, otherwise stress falls on the leftmost CV syllable. Along with the stress system of NA, I discussed the deletion of certain vowels in certain environments. The unstressed high short vowels in initial light syllable must be deleted only it is followed by a syllable of the form CVVC, or when it is followed by a stressed heavy syllable. The OT framework (18) is used to provide a complete analysis of both stress assignment and vowel syncope in NA. A specified set of constraints is hypothesized to account for where the placement of stress is and where the syncopation high vowels occurs. In addition, it is shown that NA, unlike Najdi and Hijazi Arabics, vowel deletion occurs only on the initial open syllable.

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