Research Article

		Linguistics
The Study of Phonological Processes in Al Adwan Dialect (ADW) within the Moraic Theory Framework		**Keywords:** moraic theory, Al Adwan Dialect, phonology, phonological processes, syllable.
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Abstract

The purpose of this study is to investigate some phonological processes found in Al Adwan Dialect (ADW), a Jordanian Arabic dialect, using the moriac theory. The study also examines syllable structure and syllabification in ADW within the moriac theory framework. The data of the study are collected by recording the speech of 41 native speaker of ADW. The data are transcribed and analyzed in order to identify and formulate the rules that govern the phonological processes in ADW. The findings of the study identify three phonological processes namely, vowel epenthesis, closed syllable shortening and vowel syncope.

1. Introduction

There are many phonological theories which discuss different phonological processes such as vowel epenthesis, closed syllable shortening, and vowel syncope. One of these theories is the moraic theory which is adopted in this study.

Moriac theory (Hyman1983; Hayes 1989; Broselow 1995) proposes a phonological unit called mora. This unit is used to determine the weight of the syllable, whereas the heavy syllable consists of two moras and the light syllable consists of one mora (Watson,2002, p. 53). Watson (2002) suggests three sources of syllable weight:

1. Short vowels are assigned one mora and long vowels two moras:
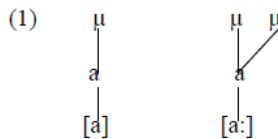
2. Geminate consonants are assigned one mora:
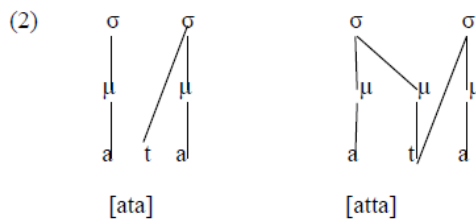
3. Weight-by-position principle: a coda consonant is assigned a mora in the course of syllabification

2. Literature Review

Moriac theory is adopted by many researchers in order to account for the different phonological processes in Arabic as well as in other languages. For example, Orwin, Martin (1996) studies the phonology of Somali within the framework of moraic theory. The study applies this model to Somali dialect in order to explain a number of prosodic phenomena including the behavior of diphthongs and the prosodic facts of prefixal reduplication.

Watson (2002) adopts the moraic theory to account for different phonological processes in two Arabic dialects: Carnie and Sanaa'ni. These processes include syncope, vowel epenthesis, closed syllable shortening, consonant prosthesis and stress.

Al Damen, H. (2007) discusses syllable-based and assimilation processes found in Bani Kinanah dialect (BKD), a Jordanian dialect using the moraic theory and feature geometry. Five syllable-based processes are identified using the moraic theory, namely epenthesis, germination, syncope, stress and vowel shortening. The findings of the study prove that moriac theory is superior in accounting for the phonological processes found in BKD.

Davis, S. (2014) examines the representations of geminate consonants in Arabic using the prosodic length representation and the moriac weight representation. The paper presents a strong argument for the moriac representation of geminates. The argument for moriac theory is based on evidences which come from the behavior of geminates in stress, geminates in loan words and geminate in first language acquisition.

It is obvious from the previous literature that moriac theory was used by researchers to account for different phonological processes in Arabic dialects. However, there is no study that adopts the moriac theory in order to examine the phonological processes in Al Adwan Dialect (ADW), a Jordanian dialect. Therefore, this study aims to use the moraic theory in order to investigate three phonological processes in ADW, namely epenthesis, closed syllable shortening and syncope.

3. Methods

The data of the study are collected by recording the speech of 41 native speaker of ADW: 17 old women and 24 old men. The researcher sits with them and asked them to talk freely about their lives, experiences, and thoughts to be sure that their speech is spontaneous and natural. After collecting the data, the researcher transcribes the data and then analyzes it to indentify the phonological processes. Finally, the rules that govern these processes are formulated.

4. Results and Discussion

In this section, the syllable structure and syllabification of ADW will be discussed using the moraic theory. Moreover, three phonological processes in ADW will be analyzed, namely vowel epenthesis, closed syllable shortening, and vowel syncope.

4.1. Syllable Structure

Watson (2002) recognizes six syllable types that can be found in most Arabic dialects: CV, CVV, CVC, CVVC,CVCC and CVVCC. In ADW, all of these types exist except for the last one CVVCC:

CV   : /**da**-ras/   "he studied"

CVV   :**na:** -yim/   "asleep"

CVC   : /fa-**taħ**/   "he opened"

CVVC : /ma:t/   "he died"

CVCC : /galb/   "heart"

Moreover, three additional syllable types are recognized in ADW:
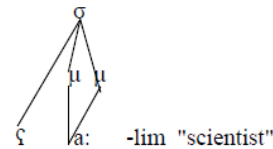
CCVC: / ʕnab/   "grapes"

CCV : / ʃdʒa-rah/ "tree"

CCVVC: /kta:b/ "book"

The minimal syllable in ADW is monomoraic CV (light syllable), while the maximal syllable is bimoraic CVV, CVC (heavy syllable). Consider the following examples:
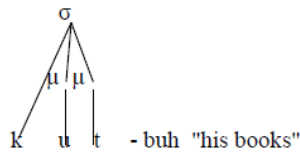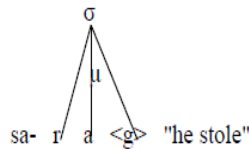
(4) CV syllable (light):

d a - ras "he studied'
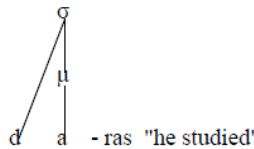
(5) CVV syllable (heavy):

ʕ ʕa: -lim "scientist"

(6) CVC (heavy): in word-internal position

k u t - buh "his books"

However, CVC syllables in domain final position in ADW are monomoriac. Consider the following example:

(7) CVC (light)

sa- r a <g> "he stole"

The final consonant in (7), which is associated directly with the syllable node, is considered extrametrical in word final position Under moraic theory, CVVC, and CVCC are superheavy syllables while

CVVCC is super-superheavy (Watson, 2002, p. 58). Consonants in domain final position in these syllable types are considered extrasyllabic.

Extrasyllabic consonants differ from extrametricl consonants in the sense that extrasyllabic consonant is not associated directly with the syllable node or to any adjacent syllable in the course of derivation (*Ibid.*):

(8)
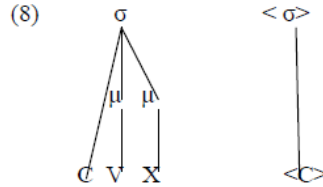
4.2. Syllabification

According to Watson (2002), syllabification within moraic theory framework takes place according to the following steps:

a. Consonant extrametricality (final consonant is considered extrametrical)

b. Associate moraic segments to a syllable nod

c. Given A (an unsyllabified segment) preceding B (a syllabified segment), adjoin A to the syllable containing B if A has a lower sonority rank than B.

d. Given B (a syllabified segment) followed by C (unsyllabified segment), assign a mora to C if C has a lower sonority rank than B. (weight-by-position)

e. Adjoin moraic C to the syllable containing B

To clarify how the syllabication works under moriac theory, consider the syllabification of the word /darsan/ "f. they studied" from ADW.
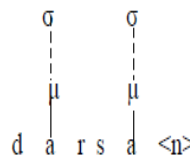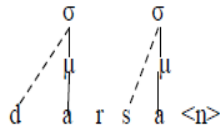
(9)

a. Domain final consonant
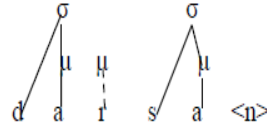   Extrametricality
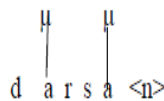
b. association of

moraic segments to a syllable node
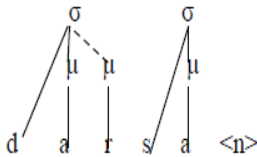
c. Association of onset to syllable node
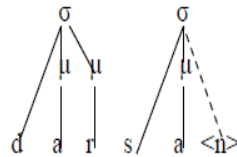
d. assignment of mora through
weight by position

e .Adjunction of weight-by-position
mora to syllable node

f. incorporation of extrametrical consonant
into preceding syllable

4.3. Phonological Processes
4.3.1. Vowel Epenthesis

In ADW, when two or three consonants are juxtaposed within the utterance, the vowel [i] is inserted between the first and second consonant. Consider the following examples:

(10) /badr/   ba-d[i]r   "full moon"

      /nisr/   ni-s[i]r   "eagle"

      /dʒamr/   dʒa-m[i]r   "embers"

      /fagr/   fa-g[i]r   "poverty"

      /ʕidʒl/   ʕi-dʒ[i]l   "calf"

      /naSr/   na-S[i]r   "victory"

      /kihl + ha:/   ki-h[i]l-ha   " her kohl" cosmetic powder used to darken the eyelids

   /gabl +hum/   ga-b[i]l-hum   "before m. them"

It is clear from the previous data that epenthesis in ADW applies to break two consonant cluster at word final position or to break three consonant cluster at word medial position. The rule of epenthesis would be formulated as follows:

$$\emptyset \longrightarrow [i]/C1\_\_\_\_C2 \begin{Bmatrix} \# \\ C \end{Bmatrix}$$

Condition: C2 > C1 on sonority scale
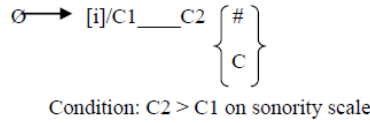
However, epenthesis rule is not applicable in the following examples:

(11)	/ħarb/	ħarb	"war"
	/bard/	bard	"coldness"
	/galb/	galb	"heart"
	/gilt + luh/	gilt-luh	" I told him"
	/ ʕilm + ku/	ʕilm-ku	"m. pl. your knowledge"
	Kalb + kum	kalb-kum	" m. pl. your dog"
	/biʕt/ + lak/	biʕt-lak	"I sold for m. sg. you"

Epenthesis in ADW rule is inapplicable as we seen in (11) if the first and second consonant in the consonant cluster does not violate sonority scale principle (SSP). SSP is a phonotactic principle which indicates that the peak of the syllable is the most sonorant element, while the onset rises in sonority towards the peak and the coda falls in sonority away from the peak (Spenser,1996, p. 89). Selkirk (as cited in Spencer, 1996:90) proposes a scale of sonority which grades sounds from the most to the least sonorous:

|	
Vowels	most sonorous
Glides	
Liquids	
Nasals	
Fricatives	
Affricates	
Plosives	least sonorous
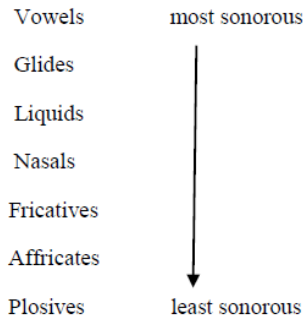
In /ħarb/ "war", for instance, epenthesis rule is not applicable because the sequence /rb/ does not violate SSP. The phoneme /r/, which is closer to the peak, is more sonorous than /b/.

As it is obvious from the previous data, we need to modify the rule of epenthesis in ADW. Epenthesis applies only if the first and second constant in two or three consonant cluster violate sonority Sequencing principle (SSP).

$$\emptyset \longrightarrow [i]/C1\_\_\_\_C2 \begin{Bmatrix} \# \\ C \end{Bmatrix}$$

Condition: C2 > C1 on sonority scale
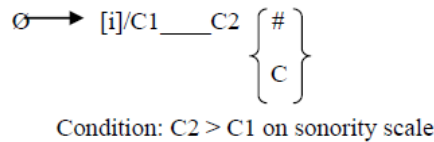
Within the framework of moriac theory, epenthesis is seen as a projection of a mora to the left of an unsyllabified consonant which is considered extrasyllabic in word final position. Consider the derivation of

/badir/ "full moon" below where the final consonant is considered extrametrical in (12b) after the application of epenthesis.

(12.a)　　　　　　(12.b)
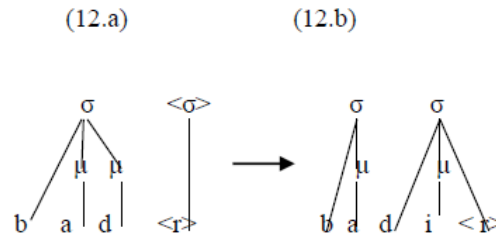
As it is mentioned early the vowel [i] is inserted between the first and second consonant whenever three consonants come together in medial position. Consider the derivation of /gabilhum/ "before m. them" :

(13)

4.3.2. Closed Syllable Shortening

In ADW, the maximum number of moras in a syllable is two, and to preserve the bimoraicity of the dialect, a long vowel becomes short in the following examples:

(14)　/ra:ħ/ ⟶ /ri:ħt/ ⟶ riħt　"I went"

　　/ga:l/ ⟶ /gi:lt/ ⟶ gilt　"I told"

　　/ba:ʕ / ⟶ /bi:ʕt/ ⟶ biʕt　"I sold"

　　/na:m/ ⟶ /ni:mt/ ⟶ nimt　" I slept"

In the above examples, the long vowel, in the underlying representation, is assigned two moras while the last consonant is considered extrasyllabic. Consider the syllabification of /ba:ʕ/ "he sold":

(15)
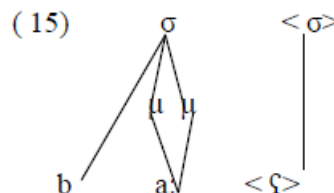
In (15), the requirement of syllable in ADW to have minimally one mora or maximally two moras is satisfied since /ba:ʕ/ consists of two moras.

However, if we add the suffix +t to /baːʕ/, the final consonant /ʕ/ is assigned a mora by weight-by-position principle. Consequently, the syllable /baːʕt/ will end up with three moras which is prohibited in ADW. Therefore, to preserve the bimoraicity syllable, a long vowel becomes short. Consider the derivation of /biʕt/ "I went"

(16)
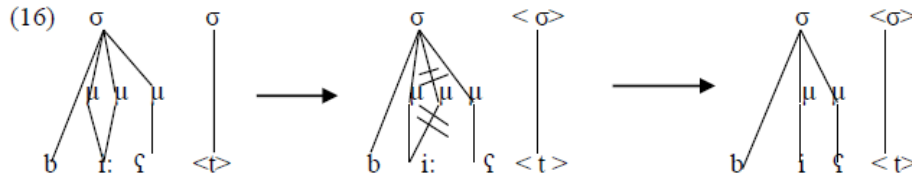
4.3.3. Vowel syncope

In ADW, unstressed high short vowel /i/ and /u/ in non final momomoraic syllable is deleted unless the output violates structure preservation. Consider the following examples:

(17) /ʕil[i]m+ak/ ʕilmak "m. sg. Your knowledge"

/kut[u]b+ak/ kutbak "m. sg. your books"

/radʒ[i]l + ik/ radʒlik "f. sg. your man"

/ħil[i]m+ at/ ħilmat "she dreamt"

/fih[i]m + at/ fihmat "she understood"

Under moraic theory, the derivation of /ħilmat/ "she dreamt", for example, is derived as follows:

(18.a) syncope   (18.b) output
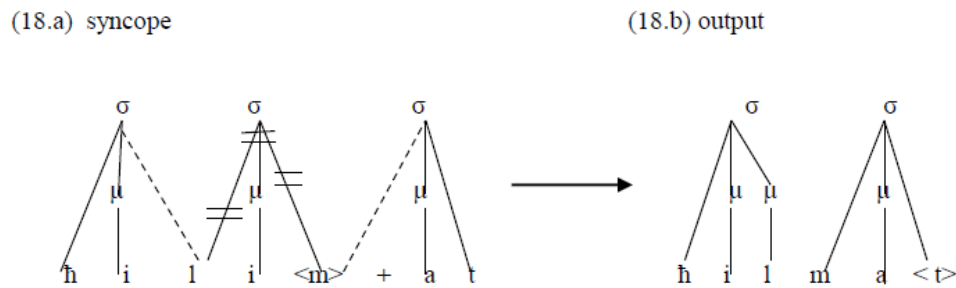
As it is clear from 18a&b, the motivation of vowel syncope is to maximize the number of bimoraic syllables and to minimize the monosyllabic syllable (Watson, 2002, p.70). Before the application of syncope rule, there are three monomoraic syllables, while in the output (18.b), there are two syllables: the first syllable /ħil/ is bimoraic and the second syllable /mat/ is monomoraic.

Conclusion

This study examines some phonological processes found in ADW by using the moriac theory. The analysis of the data finds that there are three phonological processes: namely, vowel epenthesis, closed syllable shortening and vowel syncope. In vowel epenthesis, the vowel [i] is inserted between the first and second consonant in two or three consonants only if the first and second consonant violate sonority scale principle. In closed syllable shortening, a long vowel becomes short in order to preserve the bimoraicity of the dialect. The last process is vowel syncope which refers to the deletion of unstressed high short vowel /i/ or /u/ in non final momomoraic syllable.

References

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