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Gutturals, emphatics, and the phenomenon of emphasis spread in Fallaahi Jordanian Arabic: A non- linear analysis

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Abstract

The study aims to investigate guttural and emphatic sounds and the phenomenon of emphasis spread in Fallaahi Jordanian Arabic (FJA), a rural Jordanian dialect spoken in the north of Jordan. The study uses a non-linear approach, namely, the feature geometry approach to represent guttural and emphatic sounds and the phenomenon of emphasis spread. The data are collected by recording spontaneous conversations of twenty participants who are native speakers of this dialect. The analysis shows that gutturals in FJA are (/x, ʁ, ʕ, ħ, h, ?/) and the primary emphatics are (/T, D, S/). The analysis also shows that emphatic sounds can cause spreading of emphasis to other segments since they involve the back of the tongue and accompany a primary articulation at another place of articulation. Moreover, the study reveals that emphasis spread is bi-directional: leftward and rightward. Leftward emphasis is absolute, while rightward emphasis is blocked by the [+high, -back] segments (/i/, /i:/, /y/, and /f/) since they are incompatible with and antagonistic to the Retracted Tongue Root [RTR] feature. Finally, the study shows that the domain of emphasis is minimally over the syllable and maximally over the phonological word.

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Keywords: Fallahi dialect; gutturals; emphatics; emphasis spread; feature geometry approach

1. Introduction

1.1. Literature review

One of the significant issues in the phonology of Arabic is the study of Arabic emphatics, gutturals, and emphasis spread. Many linguists have investigated the nature of gutturals, emphatics and emphasis spread in different Arabic dialects, such as (Ladefoged, 1993; Kenstowicz, 1994; McCarthy, 1988; Watson, 2002; Rakhieh, 2009; Mashaqba, 2015; Huneety & Mashaqba, 2016; Al-Bataienh, 2019; Jaber et al., 2019), among others.

In the phonology of Classical Arabic, the term ‘gutturals’ refers to a group of sounds that includes

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the laryngeals /h, ʔ/, the pharyngeals /ħ, ʕ/, and the uvulars /x, ʁ/. Sibawayh (1898, p. 405) refers to (/x, ʁ, ħ, ʕ, h, ʔ/) as ‘ḥuruf al-ḥalq’, that is literally, ‘the letters of the throat’ (Wright, 1955, p. 5). According to Sibawayh, gutturals are produced at three points of articulation in the throat: at the top of the throat in the case of the uvulars /x/ and /ʁ/, in the middle of the throat in the case of the pharyngeals /ħ/ and /ʕ/, and in the bottom of the throat in the case of the laryngeals /h/ and /ʔ/.

On the other hand, gutturals are also investigated by McCarthy (1994, p. 1), he mentions that gutturals are “sounds produced with a primary constriction in the posterior regions of the vocal tract”. Hence, it can be said that gutturals in Arabic refer to a category of sounds that includes: the uvulars /x, ʁ / as in the words /xadaʕ/ ‘deceive’ and /ʁasal/ ‘clean’, the pharyngeals /ħ, ʕ/ as the words /ħalaf/ ‘swear’ and /ʕadal/ ‘be fair’ and the laryngeals /h, ʔ/ as in the words /hadam/ ‘destroy’ and /ʔakal/ ‘eat’.

In regard to emphatic sounds in Arabic, Sibawayh (1898, p. 406) assigns the category ‘muṭbaqah’ ‘cover’ to the emphatic consonants and the category ‘munfatihah’ ‘open’ to all other Arabic sounds. Therefore, Sibawayh distinguishes the emphatic phonemes from all the other phonemes in Arabic by using the term ‘al-ḥuruf al-munṭabiqah’ for the emphatic consonants, as opposed to the term ‘al-ḥuruf al-munfatifiyah’ for the open consonants.

The category of ‘al-ḥuruf al-munṭabiqah’ includes (/Ṭ, Ḍ, Ṣ, Ḍ/). Sibawayh (1898) explains that the term ‘muṭbaqah’ or ‘al-iṭbaq’ involves a double articulation: a primary articulation in the front of the oral cavity and a secondary articulation by placing the back tongue against the back part of the mouth cavity. He also realizes the importance of ‘?iṭbaq’ or ‘covering’ in the production of the emphatic phonemes. He asserts that, if there were no covering, /Ṭ/ would become /d/, /Ṣ/ would become /s/, /Ḍ/ would become /ð/, and /Ḍ/ would disappear from the Arabic language because no consonant sound exists with the same point of articulation. Therefore, the term ‘emphatics’, or the ‘coronal emphatics’, includes: the stops /Ṭ, Ḍ/ as the words /Ṭi:n/, ‘mud’ and /Ḍarr/ ‘harmful’, the fricatives /Ṣ, Ḍ/ as in the words /San/ ‘keep’ and /Dalam/ ‘persecute’.

The phenomenon of emphasis spread, on the other hand, is a phonological process that is widely common in many Arabic dialects. It is known as a secondary articulation process that involves the back of the tongue and can be accompanied by a primary articulation at another place of articulation (Davis, 1993). Several studies assert that emphatics affect adjacent sounds, i.e. the emphatic consonant spreads its emphatic feature across the neighbouring segments (Davis, 1995; Watson, 1999).

Therefore, due to the importance of studying the guttural and emphatic sounds and the phenomenon of emphasis spread, this study will provide an adequate explanation to these subjects in Fallahii Jordanian Arabic (Henceforth FJA) which has never been studied before by applying the feature geometry approach. FJA is a rural Jordanian dialect, spoken by almost 120,000 people who live in the province of Jerash in the north of Jordan, nearly 70 miles away from Amman, the capital of Jordan.

1.2. Theoretical framework

The last few decades have seen substantial changes in the nature of research in the field of the phonological theories. These changes have been noticed by the development of several theoretical approaches, such as the standard generative phonology (the linear phonology), the nonlinear phonology including several approaches, such as the metrical, the autosegmental and the feature geometry, and the Optimality Theory (OT) approach.

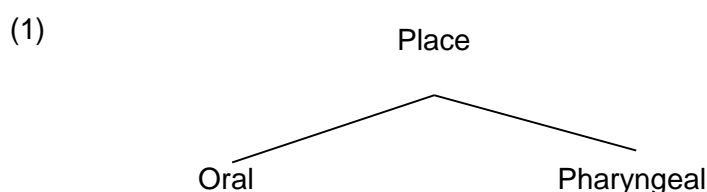
Nonlinear phonology is a crucial phonological theory that emphasises on the hierarchical nature among the phonological units. The nonlinear phonology posits a richer architecture in that the phonemic representation is described as consisting of two or more tiers of the phonological representation. The tiers are linked to each other with association lines in a standard autosegmental way (McCarthy, 1979).

Within the nonlinear phonology, the feature geometry approach is considered as one of the main phonological theories which shows the distinctive features as a structured hierarchy rather than a matrix. The feature geometry approach is a modification of the autosegmental phonology. This modification provides a new conception of the theory of distinctive features which asserts the autonomous nature of the distinctive features and the non-uniform relationships among them (McCarthy, 1994). However, the representation of the features in this approach is organized not as unstructured matrixes but as features that work as a unit in rules and constraints. These constraints are grouped into ‘constituents’ which are hierarchically organized. The organization of the features is based on their gestural and acoustic properties as well as their function, while taking into consideration the operations of certain phonological rules and constraints that affect certain units but not others.

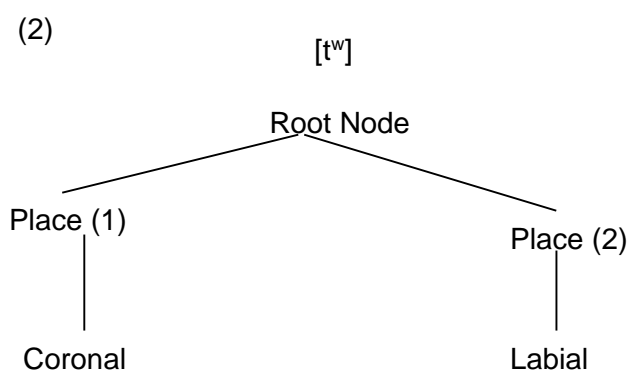
Mieke and Hume (2006, p.726) mention that "the observation that certain features commonly pattern together motivated the idea that there are 'natural groupings' of features that form higher level functional units". For instance, the features [dorsal], [labial] and [coronal] have a natural class behavior in several languages; hence, they function as one unit under the Place node. Feature geometry formally encodes sets of features under nodes in a tree: features that usually pattern together are said to share a parent node, and operations on this set can be encoded as operation on the parent node (Halle, 2002).

As a result to the feature geometry's importance, several models have been developed by many scholars, such as (Sagey, 1986; Halle, 1995; Herzallah, 1990; Clements, 1991; McCarthy, 1994; Davis, 1995), among others. The feature geometry approach includes different models that can be classified into two types: the articulator-based model and the constriction-based model. Pioneers of the first type are (Halle, 1988; McCarthy, 1994; Davis, 1995). In this model, the hierarchical organization of features is based on the articulator in the vocal tract that executes these features. Pioneers of the second model are Herzallah (1990) and Clements (1985; 1991). In this model, features are represented hierarchically into groupings according to the vocal tract constriction.

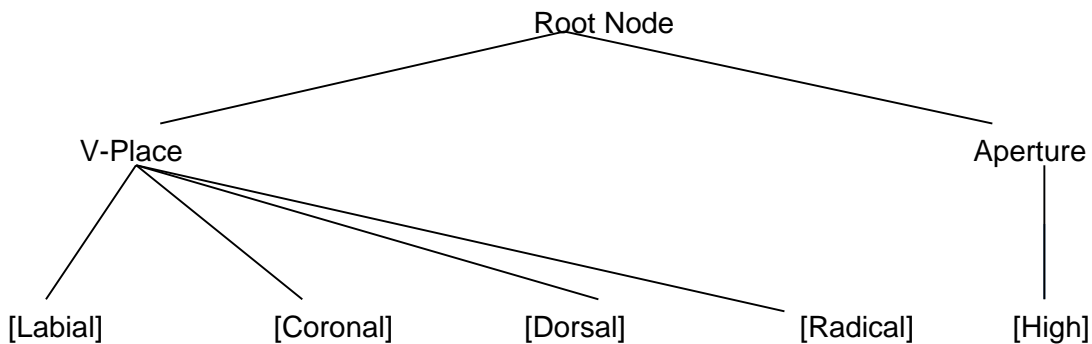
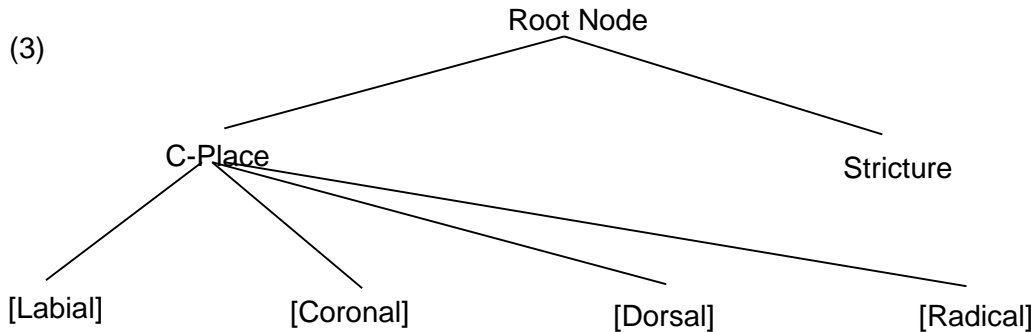
With regard to the articulator-based model, McCarthy (1994) suggests one of the leading proposals for consonants with secondary articulation. This model splits the Root Node of the Place Tier into two branches: Oral and Pharyngeal as in:



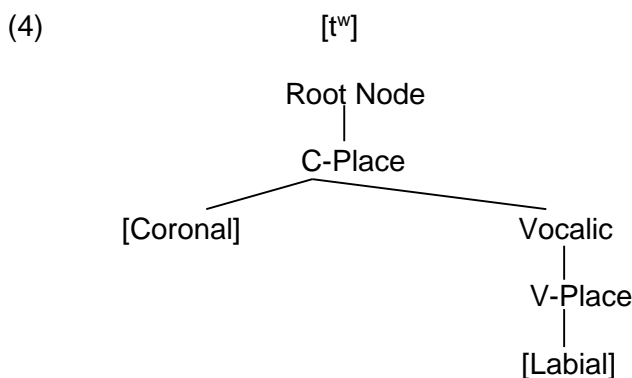
On the other hand, (Davis, 1995) modifies this model by dividing the Root Node into Place (1): the primary articulation, and Place (2): the secondary articulation. Thus, in this model, the labialized coronal consonants with secondary articulations can be represented as follows:



According to the constriction-based model, Clements (1991) proposes his synthesis approach, which combines a unified set of articulators for both vowels and consonants. He posits a Pharyngeal Node which accounts for pharyngeal consonants and vowels as shown in the feature geometry trees (Kenstowicz, 1994, p.463):



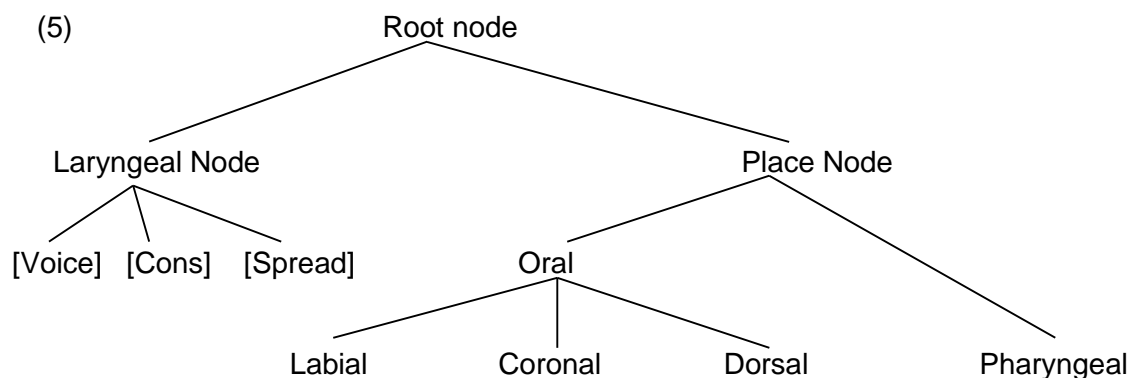
Therefore, the labialized coronal consonant with secondary articulation can be represented with both C-Place and V-Place nodes as follows:



Each model of the feature geometry has several advantages and can be applied to represent many phonological issues. In this study, the researcher will follow the feature geometry of McCarthy (1994). The reason for choosing McCarthy's model (1994) is related to the fact that it overcomes the problems posed by Semitic gutturals through modifying the place node of articulator-based model in order to keep these segments as a natural class since all gutturals are formed by a constriction in the same place of the vocal tract. This place includes the larynx, the tongue root, and the tongue. McCarthy (1994) called this

feature ‘pharyngeal’ and proposed his model depending on the articulation in the vocal tract; he splits the root node of place tier into two branches: oral and pharyngeal.

Thus, applying McCarthy’s (1994) model can best explain Arabic data with double articulations, i.e. the phonological behaviour of emphatics and gutturals support McCarthy’s analysis of Arabic language and Arabic dialects. The diagram in (5) is taken from Kenstowicz (1994, p. 458):



Therefore, the researcher opts for applying the non-linear phonology, namely, the feature geometry approach because of the merits of this approach when analyzing and describing the guttural and emphatic sounds and the phenomenon of emphasis spread in FJA.

2. Method

2.1. Sample /participants

To properly characterize the guttural and emphatic sounds and the phenomenon of emphasis spread in FJA, the researcher recruited 20 participants 10 males and 10 females; who live in Souf village in the north of Jordan and are natives of FJA. These twenty participants were purposely selected as a sample for this study to represent the various demographic factors such as age, gender, level of education, occupation, and marital status. In addition, the age of the participants is 35 years old or above to ensure that they maintain the key features of the dialect, i.e., to make sure that they are not influenced by the modern life which have changed some of the linguistic features of the young generation’s speech (Huneety, 2015). The researcher also made sure that the participants are mentally healthy and they have no speech impediments in order to provide authentic and reliable data.

2.2. Data collection procedures

To investigate the guttural and emphatic sounds and the phenomenon of emphasis spread in FJA, the researcher collects data from recordings of conversations and dialogues from the twenty participants who are native speakers of this dialect. This source is obtained by the researcher herself. Given that the nature of this study is a descriptive and a qualitative one, the purposive sampling technique is, thus the most appropriate one because it gives the researcher the needed control on her sample to meet the nature and the objective of the study.

The data from these participants were collected by using a sophisticated mobile phone in the process of recordings in order to clearly capture the guttural and emphatic sounds and the phenomenon of emphasis spread of the speakers through their speech. The participants’ spontaneous conversations were recorded during either family meetings or individual meetings, allowing them to talk freely about different social subjects, such as, Fallaahi ‘rural’ patterns of life, the types of food and the way of cooking, the situation and methods of agriculture used in the village, among other subjects. During these

conversations, the researcher asked several questions that involved participants to use the words that include the guttural and emphatic words. The observation of how people speak this dialect is also considered as a source of the data.

Then, the conversations were transcribed by using the International Phonetic Alphabet (IPA) transcription and the words that displayed the guttural and emphatic sounds and the phenomenon of emphasis spread were isolated and analyzed in regard to their types.

3. Results

3.1. Gutturals

In modern phonology, Ladefoged (1993, p. 162) mentions that the uvular fricatives are produced by raising the back of the tongue towards the uvula. Watson (2002, p. 38) also states that uvular fricatives are produced through the retraction of the tongue-root to the posterior wall of the upper pharynx, while Kenstowicz (1994) indicates that they are produced by a tongue-dorsum constriction at the posterior wall of the oropharynx.

Pharyngeal sounds, on the other hand, are formed by pulling the root of the tongue back towards the back wall of the pharynx (Ladefoged, 1993, p. 163), while Kenstowicz (1994) asserts that pharyngeals are formed by the retracting of the tongue root at the lower pharynx.

McCarthy (1994) states that the entire burden of producing the laryngeal sounds /h, ʔ/ falls on the larynx since there is no clear evidence for pharyngeal or uvular constriction accompanying the glottal gesture. However, despite that there are several views about the articulation of gutturals; the articulation of gutturals indicates that they are produced in the posterior region of the vocal tract.

In Arabic, as in other Semitic languages generally, gutturals form a natural phonological group since they share a number of aspects. First, guttural consonants lower the adjacent vowels. Sakarna (1999) states that in Aabba:dy Arabic, speakers lower the high vowel of the imperfect prefix /yi/ into /ya/ when they are word-initially, as in the imperfect verb /yi-ħlif/ ‘he swears’, which is realized in Aabba:dy Arabic as /ya-ħlif/. Secondly, root co-occurrence restrictions in Semitic languages show an avoidance of root- building from two different members of the gutturals. Thirdly, some Semitic languages such as, Tigre and Tiberian Hebrew- forbid guttural geminates (McCarthy, 1994). Phonetically, gutturals pattern together because they share a high F1 value and constriction in the back of the vocal tract (Watson, 2002).

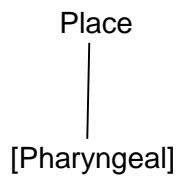
The findings of this study show that guttural sounds in FJA include: one stop and five fricatives. They are of three types: pharyngeals, laryngeals, and uvulars, as the following table shows:

Table 1. The guttural sounds in FJA

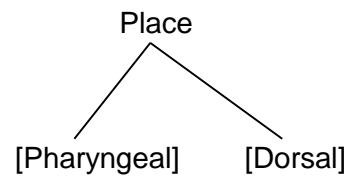
Gutturals	Description
/x/	Voiceless uvular fricative
/ʁ/	Voiced uvular fricative
/ħ/	Voiceless pharyngeal fricative
/ʕ/	Voiced pharyngeal fricative
/h/	Voiceless laryngeal fricative
/ʔ/	Voiceless laryngeal stop

In terms of the feature geometry approach, McCarthy (1994) represents gutturals as follows:

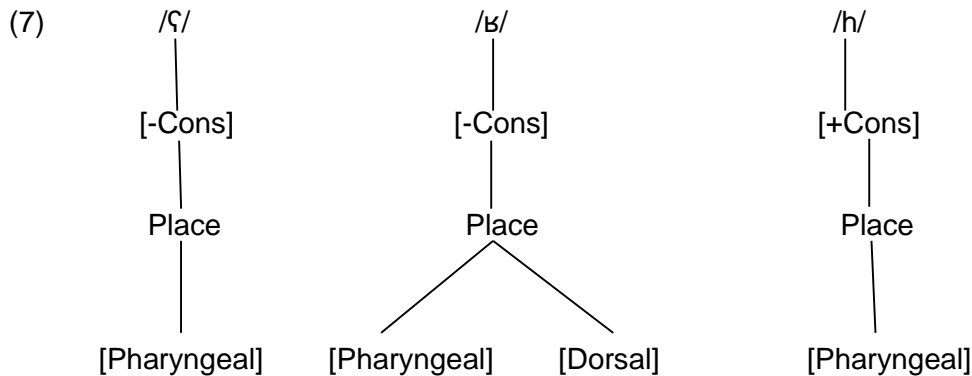
(6) Low gutturals (/ħ, ʕ, h, ?/)



Uvular gutturals (x, ʁ)



Thus, the pharyngeal fricative sound /ʕ/, the uvular fricative /ʁ/, and the laryngeal fricative /h/ are represented in the following way:



Moreover, the study shows that guttural sounds behave as a natural group in FJA. The evidence includes the following:

1. Measure 1 perfect verbs in FJA have two types: CaCaC as in /*katab*/ ‘he wrote’, and /*sarag*/ ‘he stole’, and /CiCiC/ as in /*ʕirib*/ ‘he drank’ and /*liʕib*/ ‘he played’, these verbs are realized as /*yu-ktub*/, /*yi-srig*/, /*yi-frab*/ and /*yi-lʕab*/ in the imperfect, respectively. The quality of the second vowel in the imperfect of this measure shows a change in the height of the vowel; imperfect [u, i] correspond to perfect [a], imperfect [a] corresponds to perfect [i]. However, in FJA, with /CaCaC/ verbs that have a guttural sound in the second or the third position, the quality of the vowel does not undergo any change. Consider the following examples in (8):

(8) Perfect	Imperfect		Perfect	Imperfect	
[<i>fataħ</i>]	[<i>yi-ftaħ</i>]	‘open’	[<i>samaħ</i>]	[<i>yi-smaħ</i>]	‘forgive’
[<i>naħar</i>]	[<i>yi-nħar</i>]	‘slaughter’	[<i>laħas</i>]	[<i>yi-lħas</i>]	‘lick’
[<i>laxam</i>]	[<i>yi-lxam</i>]	‘hit’	[<i>Sarax</i>]	[<i>yi-Srax</i>]	‘scream’
[<i>nahab</i>]	[<i>yi-nhab</i>]	‘steal’	[<i>ðaħab</i>]	[<i>yi-ðħab</i>]	‘go’
[<i>saʔal</i>]	[<i>yi-sʔal</i>]	‘ask’	[<i>zaʔar</i>]	[<i>yi-zʔar</i>]	‘roar’
[<i>ladaʕ</i>]	[<i>yi-ldaʕ</i>]	‘sting’	[<i>dabaʕ</i>]	[<i>yi-dbaʕ</i>]	‘tan’
[<i>fakaʕ</i>]	[<i>yi-fkaʕ</i>]	‘bite’	[<i>baʕaθ</i>]	[<i>yi-bʕaθ</i>]	‘send’
[<i>manaʕ</i>]	[<i>yi-mnaʕ</i>]	‘prohibit’	[<i>fazaʕ</i>]	[<i>yi-fzaʕ</i>]	‘scare’

The previous examples in (8) show that the second low vowel /a/ in the perfect form of /CaCaC/ is not changed into the high vowels /i/ or /u/ in the imperfect form. Kenstowicz (1994, p. 456) states that “members of the deviant [a]/[a] class almost all have a guttural in the second or third position and can be understood as reflecting a rule spreading a [low] tongue body feature to the vowel, which either preempts or reverses the change in height”.

2. In FJA, the nominal (feminine singular) suffix is performed as [ih]. Adjectives such as the masculine singular adjectives /*gawi*/ ‘strong’, /*ʕaki*/ ‘smart’, and *kari:m*/ ‘generous’ are realized as

/gawi-ih/ ‘strong fem. s.’, /baki-ih/ ‘smart fem. s.’, and /kari:m-ih/ ‘generous fem. s.’, respectively. However, in FJA, this suffix is realized as [ah] when the nominals end in a guttural consonant. Consider the following data:

(9)

[fallah]	[fallah-ah]	‘farmer’	[dʒari:h]	[dʒari:h-ah]	‘injure’
[nazi:h]	[nazi:h-ah]	‘honest’	[nabi:h]	[nabi:h-ah]	‘clever’
[Tammaʕ]	[Tammaʕ-ah]	‘greedy’	[baya:ʕ]	[baya:ʕ-ah]	‘seller’
[mansu:x]	[mansu:x-ah]	‘copied’	[manfu:x]	[manfu:x-ah]	‘blown’
[maSbu:ʔ]	[maSbu:ʔ-ah]	‘dyed’	[maldu:ʔ]	[maldu:ʔ-ah]	‘nettled’

3. Finally, in FJA, as in most Arabic dialects, roots never contain adjacent homorganic consonants. For instance, the occurrence of the dental (/t, d, θ, ð/) in the same root is avoided since the segments in this set are homorganic dentals. Therefore, because the set of the guttural sounds (/x, ʁ, h, ʕ, h, ʔ/) share the same region of articulation, they are subject to ‘root-consonant co-occurrence restrictions’ (See Kenstowicz, 1994, p. 165). As a result, this excludes the possibility of having two guttural consonants (or more) within the same root in FJA.

3.2. *Emphatics*

Several Linguists have agreed that there are at least four emphatic/pharyngealized coronal consonant sounds in Arabic language; these are /T/, /dʕ/, /S/, and /D/ (McCarthy, 1994; Davis, 1995; Sakarna, 1999; Watson, 2002; Huneety & Mashaqba, 2016; Jaber et al., 2019), among others. These linguists have also recognized four pairs of contrasting non-emphatic consonants: /t, T/, /d, dʕ/, /s, S/, and /ð, D/. All studies emphasize that emphatics have a secondary articulation beside their primary articulation which these emphatic consonants share with their counterparts. The following examples show the contrast between the emphatic and their plain consonants (these examples are taken from FJA):

(10)	/Su:f/	‘wool’	/su:f/	‘name of a village in Jerash’
	/Sa:d/	‘he hunted’	/sa:d/	‘he controlled’
	/Ta:b/	‘he healed’	/ta:b/	‘he repented’
	/haTT/	‘he put’	/hatt/	‘he eroded’
	/Dallal/	‘he misguided’	/ðallal/	‘he humiliated’
	/Dill/	‘shadow’	/dill/	‘guide .v.’

In regard to the production of emphatics, Shaaban (1977) mentions that the production of emphatic sounds in Arabic is characterized by the following physiological features: First, light retraction of the root of the tongue toward the back of the pharynx results in faucal and pharyngeal constriction. Second, rising of the back of the tongue gives emphatics the term ‘velarization’. Third, slighting lip protrusion and rounding of the lip. Finally, muscular tension of the tongue and of the oral and pharyngeal musculature. Then, he indicates that, acoustically, emphatic sounds are described as thick, heavy, and grave. Spectrographic analyses showed that the second formant of emphatic sounds is lower than it is for their non-emphatic counterparts.

Furthermore, Finch (1984, p. 32) defines emphatic consonants as a group of velarized or pharyngealized interdental and dental consonants. McCarthy (1994, p. 218) indicates that Semitic languages have a group of sounds called emphatics, with what is traditionally known as a secondary pharyngeal constriction. Furthermore, Watson (2002, p. 268) states that: “the presence of a set of pharyngealized coronals attested in the Central Semitic languages and their effect on consonants and vowels minimally within the syllable and, in general, maximally within the phonological word is one of

the most widely recognized features of Arabic phonology”. Then, she clarifies that “these consonants are referred to as emphatics”.

In general, Arabic emphatic consonants are traditionally classified in two types: primary and secondary emphatics. The primary emphatics include (/T, d^ɕ, S, D/). Traditionally, these consonants can cause the spreading of the emphatics to other segments (Davis, 1995; Watson, 1999; Bellem, 2007). Secondary emphatics, on the other hand, include /R, L, M, B / and refer to segments that show phonemic contrast in certain environments when they are adjacent to the low vowels /a/ and /a:/ (Bellem, 2007). In other words, where the group of coronal emphatics (/T, d^ɕ, S, D, R/) occurs in other vocalic environments, the rest of the emphatics occur only in the vicinity of the low back vowel /a/, such as /RokBa/ ‘knee’, /ʔaBB/ or /ʔaBBo/ ‘father’, /yaMMa/ ‘mother’, /guLLa/ ‘ball’ and /ħuku:Ma/ ‘government’, in which the emphatics in these words occur near the low back vowel /a/.

The study shows that FJA is similar to many modern Arabic dialects in having the primary emphatics /T, D, S/, and the secondary emphatics /R, L, M, B /. However, the analysis in this study will be limited to the primary emphatic consonants and their occurrence in FJA. The emphatic consonants in FJA include: one stop and two fricatives. As most Jordanian dialects, the voiced dental emphatic stop /d^ɕ/ and the voiced interdental emphatic fricative /D/ are merged in FJA into /D/, such as the words /d^ɕayi:f/ ‘guest’ and /fad^ɕa/ ‘sky’, which are realized as /Dayi:f/ and /faDa/, respectively. The following table illustrates the emphatic sounds in FJA:

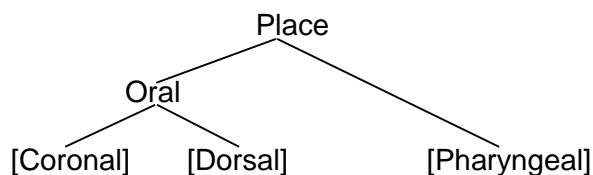
Table 2. The emphatic sounds in FJA

Emphatics	Description
/T/	Voiceless dental emphatic stop
/D/	Voiced interdental emphatic fricative
/S/	Voiceless alveolar emphatic fricative

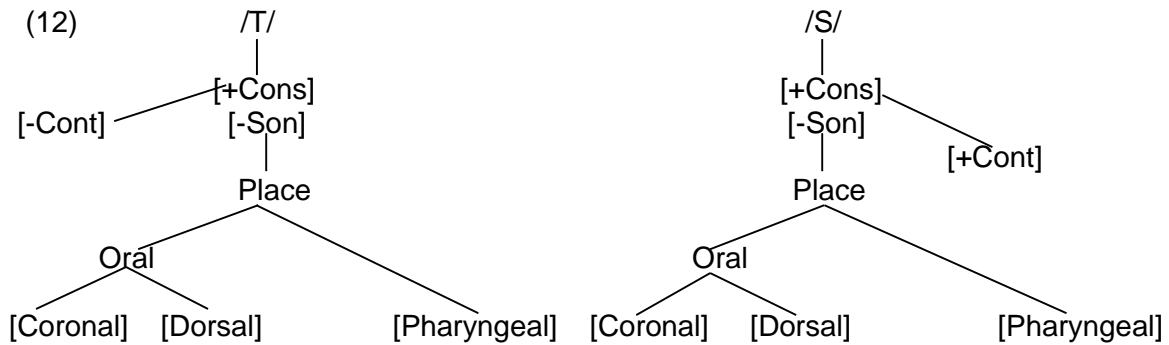
It is worth mentioning that McCarthy’s feature geometry approach (1994) is one of the leading models for consonants with secondary articulation. He points out that emphatics are complex segments that bear an oral articulation of [coronal], [dorsal], and a [pharyngeal] one.

He modifies the place node in a way that maintains the status of the guttural and the emphatic segments as a natural class. Thus, he divides the place node into oral and pharyngeal ones. McCarthy (1988, p. 83) states that: "there must be at least one feature that characterizes speech sounds in the terms of place of articulation rather than major articulator". Hence, he calls this feature ‘pharyngeal’ and it is defined (1988:83) as “the orosensory pattern of constriction anywhere in the broad region of the pharynx”. Thus, in terms of the feature geometry approach, McCarthy (1994) represents the emphatic sounds as follows:

- (11) Coronal emphatics /T, d^ɕ, S, D/



Therefore, the voiceless dental emphatic stop /T/ and the voiceless alveolar emphatic fricative /S/ are represented as follows:



This study also shows that emphatic sounds in FJA behave as a natural class since they share several common features that can be summarized as follows:

1. One of the prominent features of emphatic sounds in FJA, as well as most Arabic dialects, is that emphatics have a particular influence on adjacent vowels. They usually lower the frequency of F2 of adjacent vowels. Many studies such as (Ghazli, 1977; Card, 1983; Watson, 2002; Jaber et al., 2019) all agree that F2 frequency of the vowels next to the emphatic consonants is lower than the corresponding non-emphatic consonants, in particular, and non-emphatic sounds, in general. Notice the difference between the following data in (13a) and (13b):

(13a)	<i>[madrasah]</i>	'school'	(13b)	<i>[ʕari:Dah]</i>	'broad'
	<i>[maktabih]</i>	'library'		<i>[xaya:Tah]</i>	'dress maker'
	<i>[kabi:rih]</i>	'large'		<i>[giSah]</i>	'story'
	<i>[daradʒih]</i>	'step'		<i>[liSah]</i>	'thief. fem.'
	<i>[θagi:lih]</i>	'heavy'		<i>[bala:Tah]</i>	'cobble'
	<i>[xafe:feh]</i>	'light'		<i>[ʕaDah]</i>	'a bite'

The data in (13 a) show that all the words end with the feminine suffix /ih/ since they do not include emphatic consonants, while the data in (13 b) show that all the words end with the feminine suffix /ah/ because they are preceded by an emphatic consonant. This indicates that the feminine suffix /ih/ is realized as /ah/ when it is preceded by an emphatic consonant, i.e. the high vowel /i/ is lowered to /a/ after the emphatic consonants.

2. In FJA, emphasis assimilation is found with measure VIII verbs. These types of verbs are recognized by the presence of the infix /-t-/ directly after the first radical of the root. In this dialect, emphatic consonants that occupy the first radical position of measure VIII verbs trigger the assimilation of the infix /-t-/ in the perfect and the imperfect forms of such verbs. By contrast, when the emphatic consonant is the second or the third radical of the verbal root, it does not trigger this assimilation (as it will be clarified in section (3.3.2)).

3. The last common feature of emphatics is that emphatic consonants play a major function in the complex phenomenon of backing or spreading in Standard and Modern Arabic dialects 'the phenomenon of emphasis spread' (as it will be clarified later in this paper).

As for the distinctive features that characterize the emphatic segments, there is no clear-cut evidence to determine which distinctive features can be used to describe emphatics. For instance, Chomsky and Halle's features (1968) [+back, +low, -high] were refuted by Brame (1970) on the basis that they do not explain how the /i/ in /Ti:n/ 'mud' could be characterized since it is emphatic but neither back nor low.

Thus, he suggests the features [-high, -low, +back] and states that using the features [+rhizo, -lingual] is a good solution. However, Broselow (1979) refutes Brame's suggestion because such features suggest treating the uvulars like other emphatics. Hence, Broselow (1979) suggests an alternative feature [+constricted pharynx] since she thinks that it characterizes emphasis better than tensing of the root of the tongue does. On the other hand, (Davis, 1993) and (Watson, 1999) utilized the feature [RTR] (Retracted Tongue Root) to differentiate between emphatic and non-emphatic sounds. The emphatic sounds in FJA are similar to many Jordanian dialects, in which they are formed with a constriction of the pharynx. In this regard (Mashaqba, 2015; Al-Bataineh, 2019; Jaber, et al., 2019) indicate that all emphatic sounds are formed with a constriction of the pharynx. Hence, they are represented as the feature [+RTR] and cause the spreading of this character to other sounds in the phonological word. Therefore, this study will use the feature [RTR] since this feature seems to include all the necessary features of these segments.

3.3. *The spread of emphatic sounds in Arabic dialects*

The phonological spread of the emphatic sounds is a controversial process since many phonologists who have studied Arabic phonology disagree on a unified definition of this process. Accordingly, there are different terms used to refer to the process of emphasis. For instance, the term 'tafxi:m' 'thickness' is used by traditional Arabic linguists to refer to 'an auditory quality'. However, Card (1983) points out that the term 'tafxi:m' is 'mistranslated' into English as 'emphasis', and it is an inaccurate description of this process.

The term pharyngealization is also used to refer to emphasis since the production of the sound requires a degree of constriction in the pharynx (because of the existence of general pharyngeal constriction (Ghazali, 1977)). However, not all emphatic consonants are pharyngealized. Watson (1999) indicates that although most emphatics are pharyngealized, some emphatic sounds are labialized as it is the case of /m/ in Yemeni Arabic. The term uvularization, on the other hand, is used by Herzallah (1990, p. 52) to refer to the phenomenon of emphasis spread. She states that: "the back of the tongue body, or more precisely its dorsum, approximates the upper part of the pharynx in the production of both the emphatics and the uvulars". Finally, the term 'velarization' is also used to describe the secondary articulation properties of the emphatic segments and is defined by El-Dalee (1984, p. 4) as "the surface area of the middle part of the tongue covers the velum either by complete contact (obstruction) as in /T/ and /d^h/ or by leaving a narrow slit as in /S/ and /D/".

For the source of emphasis, linguists attribute the source of emphasis to a specific segment in a word. Davis (1993) and Watson (2002) show that the identity of the source that triggers emphasis is located in certain consonants, namely, the primary emphatic segments (/T, d^h, S, D/) and in some dialects the secondary emphatic segments /R/, /M/, /B/, and /L/. On the other hand, others see that the system of vowels is the source of emphasis (Khalafalla, 1961), while Harrel (1960) mentions that emphasis is a suprasegmental characteristic that includes all consonants and vowels in a relevant word (as cited in Sakarnah, 1999).

With regard to the domain of emphasis, studies show that the domain of emphasis differs from one Arabic dialect to another. For instance, in Lebanese Arabic (Haddad, 1984) and in Omani Arabic (Shaaban, 1977), the syllable is the source of the spread of emphatics. By contrast, in Tunisian Arabic (Ghazali, 1977) and in Palestinian Arabic (Herzallah, 1990), the source of emphasis is the whole word. And in some dialects, emphasis is blocked by certain morphemes or certain high vowels and consonants (Davis, 1993; Watson, 2002; Algryani, 2014; Huneety & Mashaqba, 2016).

As for the direction of emphasis spread, most Arabic dialects display asymmetries in terms of leftward and rightward spread of emphasis. In other words, emphasis is not a unique phenomenon cross-dialectally. Davis (1995) shows that in two Palestinian dialects, namely, the north and the south dialects,

the spread of emphatics is bi-directional within the phonological word, but it displays a leftward/rightward asymmetry: Rightward spread is prevented by a set of sounds for each dialect, such as /i/, /y/, /ʃ/, and /dʒ/, whereas leftward spread is generally unbounded in the two dialects. Watson (1999) indicates that in Sana:ni Arabic, emphasis is known not only with pharyngeal constriction, but also with simultaneous labialization. She argues in regard to emphasis spread, the labial feature of emphatic consonants spreads rightward, while the [+RTR] feature propagates leftward. Rightward spread is restricted by some sounds, while leftward spread is unrestricted.

Finally, Huneety and Mashaqba (2016) point out that emphasis spreads bi-directionally in Juffi:n Arabic. Whereas leftward emphasis is absolute over the entire word, rightward emphasis is restricted by the segments /i/, /y/, and /ʃ/.

Generally speaking, after surveying several studies on emphasis spread. It is found that Arabic dialects show several differences in the direction, source, and blockers of emphasis. Therefore, this study will investigate the direction, the triggers, and the blockers of spread of emphatics in FJA and show how this dialect is different from the other Arabic dialects. The feature geometry approach will be utilized to represent these issues.

3.3.1. Emphasis spread in FJA

The findings show that emphasis spread in FJA is an assimilatory process since the sounds carry the [+RTR] feature from the neighbouring emphatic sound. This process causes the assimilation to spread through many adjacent sounds and in some cases to the whole phonological word. In other words, the emphatic consonant can cause the spreading of the [+RTR] feature to the next sound, which can in turn spread this feature to the next sound and so on.

The data provided in (14) show that in FJA, the set of primary emphatics include /T/, /S / and /D/. These consonants exhibit a phonemic difference respectively with /t/ and /d/; /s/ and /z/; and /ð/ and /θ/ in all vocalic positions as follows:

(14)	/T/, /t/	/Ta:b/	‘to recover’	/ta:b/	‘to repent’
	/T/, /d/	/ʃaTTal/	‘to take a day off’	/ʃaddal/	‘to adjust’
	/S/, /s/	/Sa:m/	‘to fast’	/sa:m/	‘poisonous’
	/S/, /z/	/Sa:r/	‘it happened’	/za:r/	‘he visited’
	/D/, /ð/	/Dill/	‘shadow’	/ðill/	‘humiliated’
	/D/, /θ/	/Da:r/	‘harmful’	/θa:r/	‘revenge’

Moreover, these primary emphatics occur word- initially, word- medially, and word- finally in different vocalic environments as the examples in table (3) show:

Table 3. The distribution of emphatics in FJA

Word-initially	Word-medially	Word-finally
Saba:h ‘morning’	ħaSa:d ‘harvesting’	raguS ‘dancing’
Su:rah ‘picture’	na:Siħ ‘fat’	naguS ‘decrease’
Ta:za ‘fresh’	ħaTab ‘firewood’	baTT ‘ducks’
Tabul ‘drum’	guʃTah ‘butterfat’	guTT ‘cat’
Da:n ‘sheep’	kaDab ‘anger’	ħaDD ‘luck’
Darub ‘hitting’	gaDi ‘judge’	ʃaDD ‘he bit’

In addition, data (15) show a group of minimal pairs that are completely different in their [RTR]. The first column includes emphatic segments that cause the spread of emphasis on the words while in

the second column the plain segments do not cause any spreading on the words. The spread of emphasis in the data is clarified by the underlines.

(15)	Emphatic segments		Plain segments
	<u>/Saffar/</u>	‘to whistle’	/saffar/ ‘to make someone travel’
	<u>/ba:S/</u>	‘bus’	/ba:s/ ‘he kissed’
	<u>/Da:ll/</u>	‘lost’	/ða:ll/ ‘humiliated’
	<u>/Dumm/</u>	‘hug, imperative’	/θumm/ ‘mouth’
	<u>/Ta:r/</u>	‘it flew’	/da:r/ ‘he rounded’
	<u>/haTT/</u>	‘he put’	/hatt/ ‘to uncover’

The study also shows that emphasis spread in FJA is bi-directional: leftward and rightward. Leftward spread begins from the emphatic coronal consonant and extends to the beginning of the word, while rightward spread starts from the emphatic coronal consonant to the end of the word. The data in (16 a& b) clarify the leftward and rightward emphasis spread patterns.

(16 a)	<u>/naT/</u>	‘jump’	(16 b)	<u>/Tu:b/</u>	‘blocks’
	<u>/faT/</u>	‘shout’		<u>/Ta:r/</u>	‘flew’
	<u>/xa:S/</u>	‘special’		<u>/Sa:r/</u>	‘became’
	<u>/nagaS/</u>	‘decreased’		<u>/Sa:d/</u>	‘he hunted’
	<u>/baʔaD/</u>	‘he hated’		<u>/Dalam/</u>	‘he oppressed’
	<u>/faraD/</u>	‘he imposed’		<u>/Darab/</u>	‘he hit’
	<u>/ʕaTʔa:n/</u>	‘thirsty’		<u>/Taffa:n/</u>	‘escaped’

The data in (16a) show that the direction of emphasis spread is bi-directionally, i.e., from right to left as the word /xa:S/ ‘special’, while the data in (16b) show the direction from left to right as the word /Ta:r/ ‘it flew’.

With regard to the suffixes and the prefixes in FJA, emphasis spreads over the suffixes only when they are immediately near the emphatic trigger as shown in (17a), while it does not spread when it is not adjacent to an emphatic segment as shown in (17b). Prefixes, on the other hand, do not function as emphatics even if they are tautosyllabic with an emphatic trigger, as shown in (17c).

(17)

(a)	<u>/gaSS-hum/</u>	‘he cut them’	<u>/ganaS-ha/</u>	‘he hunted her’
	<u>/haTT-hum/</u>	‘he put them’	<u>/faraT-ha/</u>	‘he scattered her’
	<u>/haDD-ak/</u>	‘your luck’	<u>/ʕaDD-hum/</u>	‘he bit them’
(b)	<u>/Sa:d-ha/</u>	‘he hunted her’	<u>/Sa:r-at/</u>	‘she became’
	<u>/Damm-ak/</u>	‘he embraced you’	<u>/Dalam-hum/</u>	‘he oppressed them’
	<u>/Tall-u/</u>	‘they looked’	<u>/Tu:b-ak/</u>	‘your blocks’
(c)	<u>/l-Ta:hir/</u>	‘for Ta:hir, a person’s name’	<u>/y-Su:m/</u>	‘to fast’
	<u>/t-Salli/</u>	‘to pray’	<u>/y-Salliḥ/</u>	‘to repair’

In FJA as many Jordanian and modern Arabic dialects, such as Libyan Arabic (Algryani, 2014), Wadi Ramm Arabic (Mashaqba, 2015), and Wadi Mousa Arabic (Huneety, 2015) leftward spread of emphasis is absolute in these dialects, i.e. emphatic sounds can spread without being blocked or prevented by any sound. Consider the data in (18):

(18)	<u>/lahaT/</u>	‘he ate’	<u>/rabaT/</u>	‘he tied’
	<u>/maxxaT/</u>	‘he blew his nose’	<u>/naʔa:T/</u>	‘an activity’

<i>/ganna:S/</i>	‘a sniper’	<i>/ragga:S/</i>	‘a dancer’
<i>/xabba:S/</i>	‘delusive’	<i>/maxbu:S/</i>	‘mixed’
<i>/ge:D/</i>	‘hot weather’	<i>/baya:D/</i>	‘whiteness’
<i>/sari:D/</i>	‘wide’	<i>/faraD/</i>	‘he imposed’

On the other hand, rightward emphasis in FJA is bounded in the dialect. There is a group of opaque sounds that can block the rightward emphasis, such as the palatal vocoids /y/, /i/, /i:/ and the palato – alveolar /ʃ/. This result is different from (Mashaqba, 2015) and (Sakarneh, 1999). Mashaqba also (2015) indicates that rightward emphasis is blocked optionally by the dorsal vocal sounds /y/, /i/ and /i:/, as in /Si:t/ ~ /Si:t/ ‘reputation’, whereas, Sakarneh (1999) argues that emphasis spread in Aabba:dy Arabic is absolute in the two directions because there are no blockers in this dialect. Consider the data in (19) which show that the rightward spread in FJA is without any restrictions, while the data in (20) show that how certain segments, such as /i/, /i:/, /y/, and /ʃ/ can block the rightward spread of emphasis in this dialect:

(19)	<i>/Tandzarah/</i>	‘utensil for cooking’	<i>/Ta:za/</i>	‘fresh’
	<i>/Tbu:l/</i>	‘drums’	<i>/Tabux/</i>	‘cooking’
	<i>/Darub/</i>	‘hitting’	<i>/DaguT/</i>	‘pressure’
	<i>/Dulum/</i>	‘injustice’	<i>/Daba:b/</i>	‘fog’
	<i>/Sabur/</i>	‘patience’	<i>/Subuh/</i>	‘morning’
	<i>/Sa:h/</i>	‘he shouted’	<i>/Samad/</i>	‘he endured’
(20)	<i>/Sinif/</i>	‘brand’	<i>/Si:dif/</i>	‘honsety’
	<i>/Syyaf/</i>	‘to get warmer’	<i>/Sya:m/</i>	‘fasting’
	<i>/Dill/</i>	‘shadow’	<i>/Di:m/</i>	‘unfair’
	<i>/Dyi:f/</i>	‘guest’	<i>/Dayyaʃ/</i>	‘to miss’
	<i>/Tyi:r/</i>	‘bird’	<i>/Tawi:l/</i>	‘tall’
	<i>/Tifi:l/</i>	‘kid’	<i>/Ta:yil/</i>	‘proper name’
	<i>/ʃaTfa:n/</i>	‘thirsty’	<i>/Taffih/</i>	‘going out’
	<i>/Tu:ʃih/</i>	‘fighting’	<i>/Taffa:n/</i>	‘escaped’

The data in (19) indicate that emphatic sounds spread rightward from the emphatic sound to cover the whole sounds in the word, while the data in (20) show that the sounds /y/, /i/, /i:/ and /ʃ/ can block the rightward spread of emphasis in FJA. Consequently, emphatics cannot spread forward when they are followed by the sounds /y/, and /ʃ/, or when the high vowels /i/ and /i:/ meddles between the emphatics and the adjacent sounds.

In fact, the reason that these phonemes are opaque to the spread of emphasis can be explained that all these sounds are [+high, -back] which suggests strongly that emphasis does indeed involve the feature [RTR], since Archangeli and Pulleyblank (1994) indicate that the retraction of the tongue root for the [RTR] is most antagonistic and incompatible to a high (non- back) tongue body position. Moreover, Davis (1995, p. 478) states that: “one would predict that if there are phonemes that are opaque to the spread of emphasis, they would be [+high] (and/or non- back) phonemes.” Thus, these phonemes performed as a natural class in that they are opaque to rightward spreading of emphasis. These sounds are all coronals and they can be characterized by the tongue height or tongue position feature [+high, -back].

To clarify this point, an evidence for this process lies in the change of the plain counterparts into emphatics when they happen near an emphatic sound. For example, the words /Sa:m/ ‘he fasted’ and /Su:m/ ‘fasting’ are pronounced as [Sa:M] and [Su:M], the /m/ surfaces in these two words as an

emphatic /M/ because of the presence of the underlying emphatic /S/. However, examining other forms of the same word, /m/ is realized as plain /m/, such as [Sa:ym- i:n] ‘fasted. mas. pl.’, [Sya:m] ‘fasting’, and [Sa:ym- at] ‘they are fasting. fem. pl.’

To sum, the domain of emphasis spread in FJA is bi-directional, minimally over the syllable and may extend within the phonological word-boundary. For instance, in the word /ʕaTfa:n/ ‘thirsty’, the consonant /ʕ/ blocks the spreading of the emphatic segment to the entire word, causing the spreading to the first syllable only. On the other hand, in the words /Darab/ ‘he hit’ and /lafaD/ ‘he articulated’, the spreading is over the entire words because there are no segments that block the spread of emphasis. Suffixes are in two types in reference to the spread of emphasis: if the stem ends in an emphatic sound, the following suffix will be emphatic; however, if the stem does not end with the emphatic sound, the suffixes are not influenced by the spread of emphasis. Prefixes, on the other hand, do not play a major influence in the spread of emphasis.

3.3.2. Emphasis assimilation in FJA

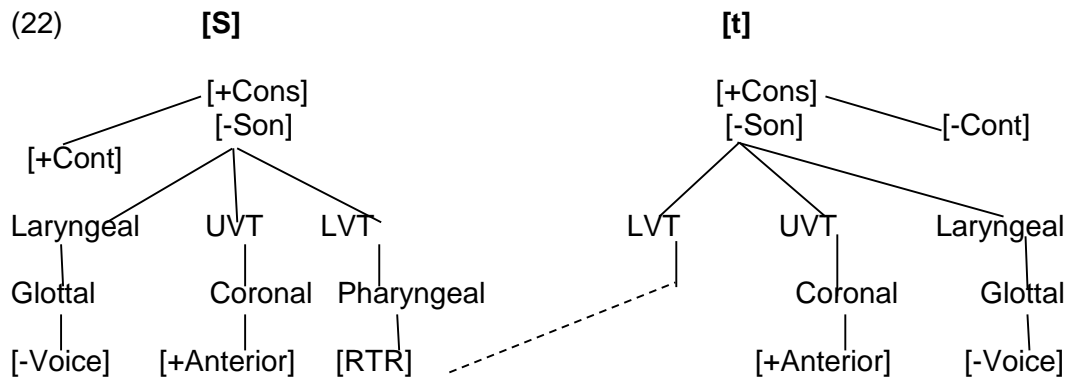
Emphasis assimilation is a progressive assimilation since it influences the following sound. Emphasis assimilation in FJA is found in measure VIII verbs which have an emphatic sound. These types of verbs are recognized by the presence of the infix /-t-/ directly after the first radical of the stem. They are derived from measure I verbs and usually have the /CtaCaC/ pattern in the perfect and the pattern /yi-CtaCiC/ in the imperfect. In FJA, if we take the verbs of this measure in which the first radical is emphatic and add the infix dental stop /-t-/, the /-t-/ is changed to a dental emphatic [-T-]. This change is triggered by the presence of the emphatics as the first radical in the root in the derivation of measure VIII from measure I verbs as the data in (21) show:

(21) Measure VIII verbs in FJA

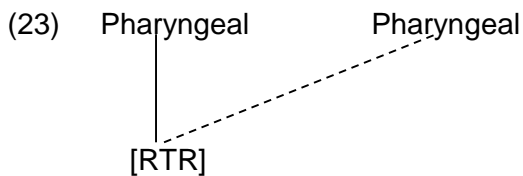
Perfect		Imperfect		
/S-t-aħab/	[STaħab]	/yi-S-t-aħib/	[yiSTaħib]	‘accompany’
/S-t-adam/	[STadam]	/yi-S-t-adim/	[yiSTadim]	‘clash’
/T-t-allaʕ/	[TTallaʕ]	/yi-T-t-alliʕ/	[yiTTalliʕ]	‘look forward’
/T-t-ahharr/	[TTahhar]	/yi-T-t-ahhir/	[yiTTahir]	‘purify’
/D-t-afar/	[DTafar]	/yi-D-t-afir/	[yiDTafir]	‘victory’
/D-t-aḏaʕ/	[DTaḏaʕ]	/yi-D-t-aḏiʕ/	[yiDTaḏiʕ]	‘lie down’

It is clear from data (21) that in FJA, the infix /-t-/ is changed to a voiceless dental emphatic stop /-T-/ in both the perfect and the imperfect forms of measure VIII verbs that start with a coronal emphatic. For example, the non-emphatic consonant /t/ in the word /S-t-aħab/ ‘accompany’ changes into the emphatic consonant /T/, and thus it is realized as /STaħab/ in FJA because of the existence of the emphatic consonant /S/ at the beginning of the word.

For a clear representation of the emphasis assimilation processes, the modified version of McCarthy’s model (1994) will be followed to explain this type of assimilation. Thus, in regard to the feature geometry approach, the representation of the verb /S-t-adam/ ‘clash’, which is realized as /STadam/, where the consonant /t/ assimilates into the emphatic consonant /T/ by the operation of emphasis spread, is represented in (22), (UVT= Upper Vocal Tract and LVT= Lower Vocal Tract):



As a result of the spread of emphasis of the emphatic consonant [S], the consonant [t] assimilates into the emphatic consonant [T] as in (23):



However, the infix /-t-/ does not undergo this assimilation process if the coronal emphatic is the second or the third radical of the verbal root. The data in (24) show that the emphatic consonant is the second radical of the verbal stem and data (25) show that the emphatic consonant is the third one.

(24) Measure I	Measure VIII/perfect	Measure VIII/imperfect	
/xaTab/	[xtaTab]	[yi-xtaTib]	'spout, speak'
/saTaḥ/	[staTaḥ]	[yi-staTiḥ]	'cracked, split'
/raSaʕ/	[rtaSaʕ]	[yi-rtaSiʕ]	'insert, press'
/naSar/	[ntaSar]	[yi-ntaSir]	'win'
/kaDam/	[ktaDam]	[yi-ktaDim]	'to suppress passion'
/laDam/	[ltaDam]	[yi-ltaDim]	'to put a string into a needle'

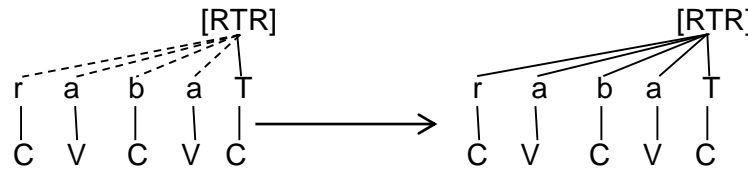
(25) /xalaT/	[xtalaT]	[yi-xtaliT]	'mix'
/faraT/	[ʃtaraT]	[yi-ʃtariT]	'stipulate'
/nagaS/	[ntagaS]	[yi-ntagiS]	'reduce'
/ganaS/	[gtanaS]	[yi-gtaniS]	'hunt'
/garaD/	[gtaraD]	[yi-gtariD]	'lend'
/waʕaD/	[wtaʕaD]	[yi-wtaʕiD]	'preach'

3.4. The representation of emphasis spread in the feature geometry approach

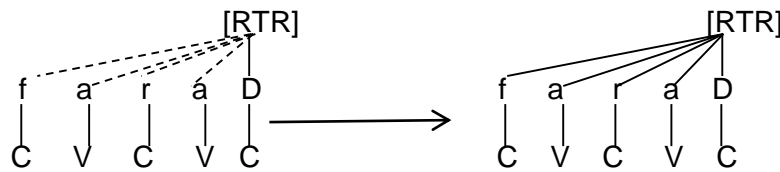
Emphasis spread can be explained in the feature geometry approach as the base of feature spreading. Therefore, the researcher supposes that the sounds near the emphatic consonants are not associated with the feature [RTR] until this feature spreads over them and makes them surface as emphatic sounds.

Applying the feature geometry approach on some collected data from FJA clarifies how emphasis spreads to the adjacent segments. Consider the following representations:

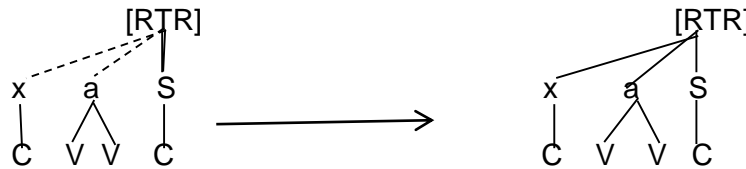
(26) /*rabaT*/ [*rabaT*] ‘he tied’



/*faraD*/ [*faraD*] ‘he imposed’

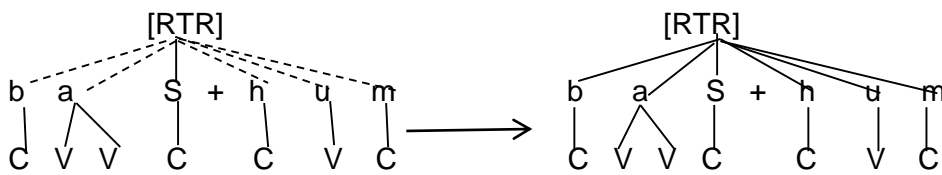


/*xa:S*/ [*xa:S*] ‘special’

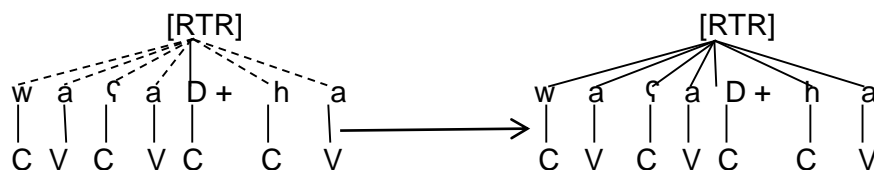


The representations in (26) show that the feature [RTR] spreads from the emphatic consonants /T/, /D/, and /S/ leftwards into the neighbouring segments turning them into emphatic ones, i.e. emphasis spreads to cover the whole word without any blockers or restrictions. The representations in (27) can be clarified also in the same way as in (26) taking into account that in addition to the stem, emphasis spreads to cover the suffixes when they are adjacent to an emphatic segment.

(27) /*ba:S-hum*/ [*ba:S-hum*] ‘their bus’



/*wafaD-ha*/ [*wafaD-ha*] ‘he promised her’

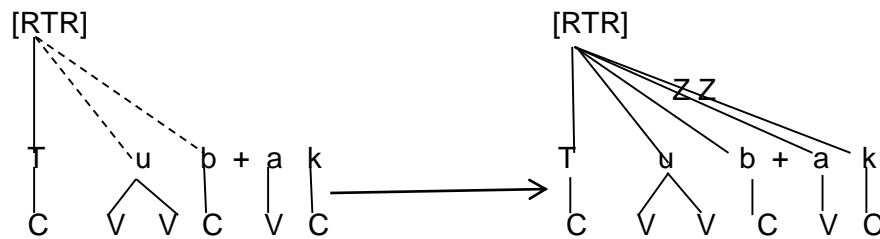


/naT+at/ [naT+at] ‘she jumped’

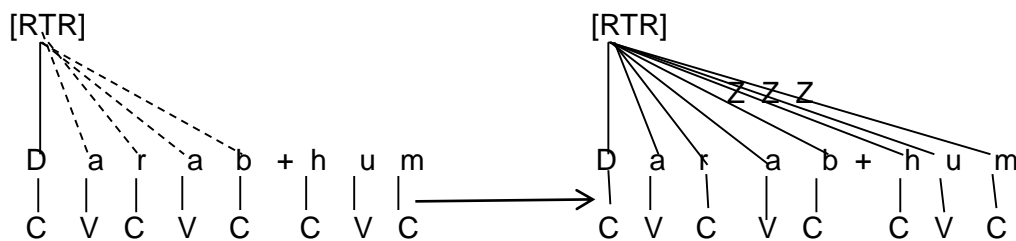


However, when the suffixes are not adjacent to the emphatic segments, the emphasis does not spread to cover these suffixes. Consider the following examples in (28):

(28) **/Tu:b-ak/ [Tu:b-ak] ‘your blocks’**

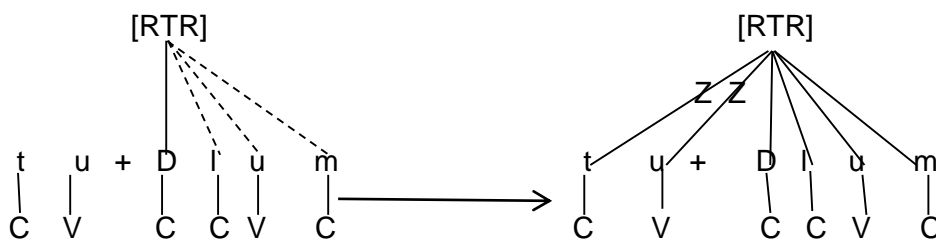


/Darab-hum/ [Darab-hum] ‘he hit them’



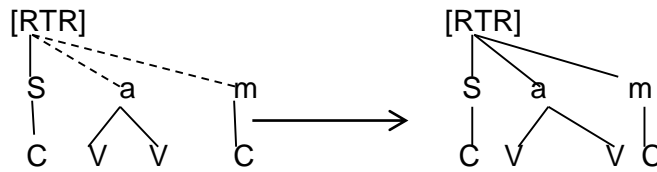
Regarding the prefixes in FJA, they are not influenced by the spread of emphasis as mentioned earlier. That is to say, they do not function as emphatic sounds even if they are tautosyllabic with an emphatic trigger as the following representation shows:

(29) **/tu-Dlum/ [tu-Dlum] ‘she oppressed’**

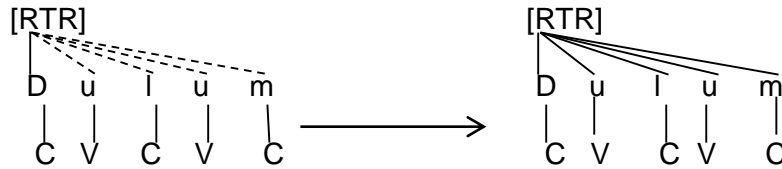


As for the rightward spread in FJA, it begins in a normal way from the emphatic consonant and moves to the end of the word influencing the sounds that follow the emphatic sound as the examples in (30) show:

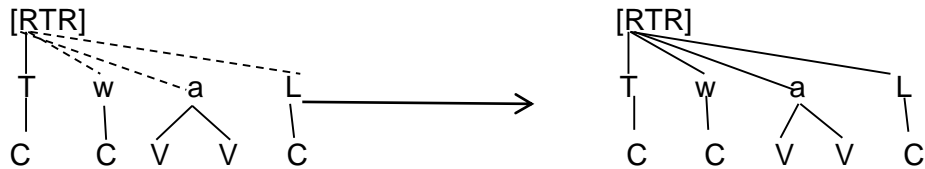
(30) /Sa:m/ [Sa:m] ‘he fasted’



/Dulum/ [Dulum] ‘oppression’

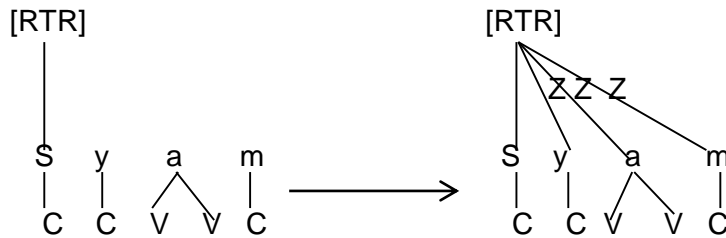


/Twa:l/ [Twa:l] ‘tall. pl.’

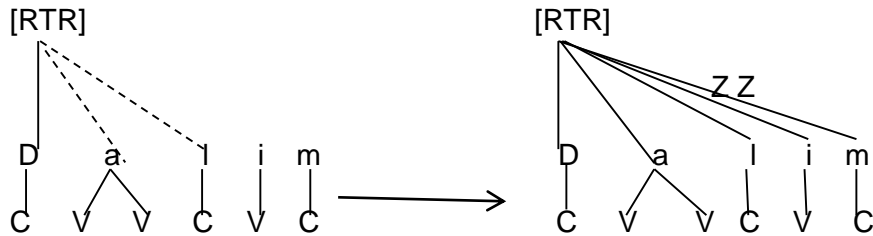


By contrast, not all the cases in the rightward emphasis spread display the same result as the previous examples in (30). If we consider the following examples in (31), we notice that the rightward emphasis does not spread to cover the whole word as the examples in (30) show.

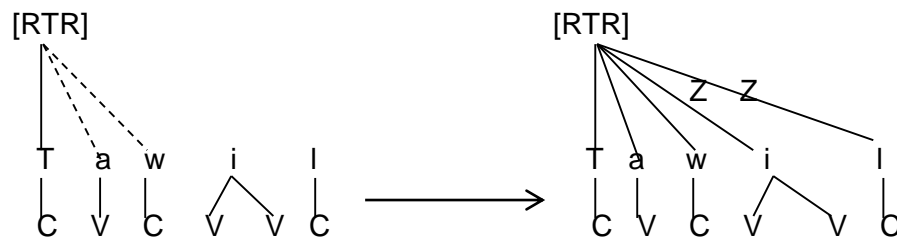
(31) /Sya:m/ [Sya:m] ‘fasting’



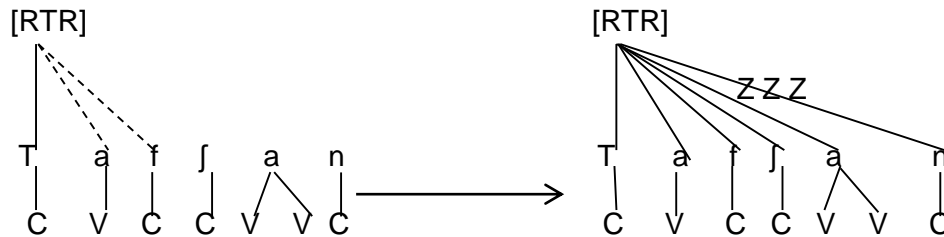
/Da:lim/ [Da:lim] ‘oppressor’



/Tawi:l/ [Tawi:l] ‘tall’



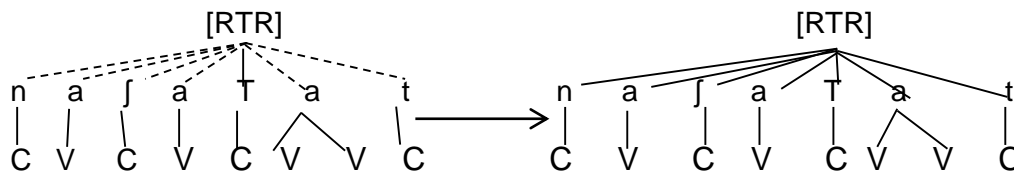
/Taffa:n/ [Taffa:n] ‘escaped’



The representation in (31) emphasizes that there are some segments in FJA that can block and prevent the rightward emphasis spread. These segments are /y/, /i/, /i:/, and /j/, which they can block the rightward emphasis spread of the emphatic segments /S/, /D/, and /T/ to cover the whole word. For instance, emphasis spread is present in the word /Sa:m/ ‘he fasted’ while it is absent in the word /Sya:m/ ‘fasting’. The word /Dulum/ ‘oppression’ is influenced by the emphasis spread while the word /Dalim/ ‘oppressor’ is not. The word /Twa:l/ ‘tall. pl.’ is also influenced by this process but the word /Tawi:l/ ‘tall .sing.’ is not influenced. Finally, the last syllable of the word /Taffa:n/ ‘escaped’ is not influenced by the emphasis spread process because the segment /j/ blocks the rightward spread to cover the entire word.

It is worth mentioning that the segment /j/ in FJA blocks the rightward spread of emphasis when it happens after the emphatic segment, as in /Taffa:n/ ‘escaped’ and /ʕaTfa:n/ ‘thirsty’. However, when /j/ occurs before the emphatic segment it does not block the spreading of the emphatic segment on the whole word, i.e. it does not restrict the rightward spread when it happens before the emphatic sounds as the following example in (32) shows:

(32) **/nafTa:t/ [nafTa:t] ‘activities’**



4. Conclusions

In conclusion, it can be said that FJA is similar to many Arabic dialects in having the guttural sounds /x, ʁ, ʕ, ħ, h, ʔ/ and the primary emphatic sounds /T, D, S/. It is also similar to other dialects in the existence of the phenomenon of emphasis spread, but with some differences in the direction of spreading and the domain of emphasis.

The study reveals that gutturals in FJA include one stop and five fricatives. They are of three types: pharyngeals, laryngeals, and uvulars. Gutturals are those sounds which are produced at three points of articulations in the ‘throat’: at the top of the throat in the case of the uvulars /x, ʁ/, in the middle of the throat in the case of the pharyngeals /ħ, ʕ/, and in bottom of throat in the case of the laryngeals /h, ʔ/.

Moreover, the study shows that guttural sounds in FJA constitute a natural class since they have several common features: for example, all guttural consonants have the ability of lowering adjacent vowels, and the restrictions on the root co-occurrence show an avoidance of root built from two distinct members of the guttural set.

With regard to emphatics, the study concludes that emphatics in FJA involve double articulation. These are: the primary articulation in front of the oral cavity and the secondary articulation by placing the back tongue against the back part of the mouth cavity. The primary emphatic sounds are /T, D, S/ which occur in different vocalic environments and cause spreading of emphasis to other segments, while the secondary emphatic sounds are /R, L, M, B / which occur near the low vowels /a/ or /a:/.

Furthermore, the study shows that emphasis spread in FJA spreads bi-directionally: Leftward and rightward. The domain of emphasis is minimally over the syllable if there are some sounds that block the emphatic sounds from spreading, and maximally over the entire word when there are no blockers. Leftward emphasis spread is absolute while the rightward emphasis is blocked by the palatal vocoids /y/, /i/ and /i:/, and the palato –alveolar /ʃ/, in which these segments are all share the features [+high, -back]. As for the suffixes and the prefixes, the emphasis spreads to cover the suffixes when they are only adjacent to an emphatic segment. However, when the suffixes are not adjacent to the emphatic segments, the emphasis does not spread to cover these suffixes. In regard to prefixes, they are not influenced by the phenomenon of emphasis spread. In addition, the study indicates that emphasis assimilation is common in FJA and is found in measure VIII verbs in the dialect. These types of verbs are recognized by the presence of the infix /-t-/ directly after the first radical of the stem. In these verbs when the first radical of the root is emphatic, emphasis assimilation changes the infix dental stop /t-/ to the dental emphatic/T/.

Finally, the feature geometry approach which is applied in this study shows an adequate representation of the guttural and emphatic sounds and how the emphatic sounds can spread rightward and leftward over the syllable or over the entire word in FJA.

5. Ethics Committee Approval

The author(s) confirm(s) that the study does not need ethics committee approval according to the research integrity rules in their country (Date of Confirmation: December 11, 2020).

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Boğazsıl seslerin, vurgulu seslerin ve vurgu olgusu'nun Fallaahi Ürdün Arapçası'nda yayılması: Doğrusal olmayan bir analiz

Öz

Çalışma, Ürdün'ün kuzeyinde konuşulan kırsal bir Ürdün lehçesi olan Fallaahi Ürdün Arapçasında (FJA) yayılan gırtlaksı ve empatik sesleri ve vurgu olgusunu incelemeyi amaçlamaktadır. Çalışma doğrusal olmayan bir yaklaşım, yani gırtlaksal ve empatik sesleri temsil eden özellik geometrisi yaklaşımı ve vurgu yayılma olgusunu kullanır. Veriler, bu lehçenin anadili olan yirmi katılımcının spontane konuşmaları kaydedilerek toplanır. Analiz, FJA'daki boğazsılların (/ x, ʁ, ʕ, h, h, ? /) olduğunu ve birincil empatiklerin (/ T, D, S /) olduğunu göstermektedir. Analiz ayrıca, empatik seslerin, dilin arkasını içerdikleri ve başka bir artikülasyon yerinde birincil artikülasyona eşlik ettikleri için vurgunun diğer bölümlere yayılmasına neden olabileceğini göstermektedir. Dahası, çalışma vurgu yayılmasının iki yönlü olduğunu ortaya koyuyor: sola ve sağa. Sola vurgu mutlak, sağ vurgu ise Geri Çekilmiş Dille uyumsuz ve Kök [RTR] özelliğine karşıt olduğu için [+ yüksek, -geri] bölümler (/ i /, / i: /, / y / ve / ʃ /) tarafından engellenir. Son olarak çalışma, vurgu alanının asgari düzeyde hece üzerinde ve maksimum olarak fonolojik sözcük üzerinde olduğunu göstermektedir.

Anahtar Sözcükler: Fallahi lehçesi; bağırsaklar; empatik; vurgu yayıldı; özellik geometri yaklaşımı

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