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Pharyngealization Effects in the Jordanian Arabic Dialect

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Abstract

Pharyngealized coronal consonants, or emphatics, are distinctive phonological phenomena in Arabic dialects. A word with an underlying emphatic consonant, pharyngealization, or emphasis, usually spreads to neighboring consonants. This study aims to ascertain whether the Jordanian Arabic (henceforth JA) pharyngealized coronal sounds carry over this emphasis to adjacent sounds across word boundaries. It examines how coronal sounds behave differently in the JA, especially how they are pharyngealized in patterns that may differ greatly from those in the Arabic Mother Tongue, known as Standard Arabic (henceforth SA). The study uses feature geometry as its theoretical framework for data analysis, based on McCarthy's (1991) model, which was then improved by Vaux (1993) as cited in Mahadin and Bader (1995). Thus the model utilized in the current study is the one proposed by McCarthy and then modified by Vaux. By investigating this phenomenon, the study demonstrates that JA's phonological techniques differ from the ones found in the SA and advances our understanding of how pharyngealization works in this language.

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آثار التفخيم في اللهجة الأردنية

وليد احمد صالح * انمار حمودي سعيد **

المستخلص

تُعَدُّ الأصوات التاجية أو ما يُعرف بالأصوات المُفخمة، ظاهرة صوتية مميزة في اللهجات العربية. فعندما تحتوي الكلمة على صوت تاجي مُفخم كامن، فإن البَلعمة، أو التفخيم، غالبًا ما يمتد إلى الأصوات المجاورة. يهدف هذا البحث إلى التحقق مما إذا كانت الأصوات التاجية في اللهجة الأردنية تحمل هذا التفخيم إلى الأصوات المجاورة عبر حدود الكلمات. كما يتناول البحث كيفية تصرف الأصوات التاجية بشكل مختلف في اللهجة الأردنية، لا سيما تفخيمها في أنماط قد تختلف بشكل كبير عن تلك الموجودة في اللغة الأم، اللغة العربية الفصحى.

*** قسم اللغة الانجليزية/كلية الآداب/جامعة الموصل/ الموصل – العراق**
**** قسم اللغة الانجليزية/كلية الآداب/جامعة الموصل/ الموصل – العراق**

يستخدم هذا البحث إطارًا نظريًا لتحليل البيانات يعتمد على هندسة السمات الصوتية، وفقًا لنموذج مكارثي (1991)، الذي تم تحسينه لاحقًا من قبل فوكس (1993) واستُشهد به في دراسة مهادين وبدر (1995). ومن خلال دراسة هذه الظاهرة، يُبرز البحث الفروق الصوتية بين اللهجة الأردنية والفصحى وربما لهجات عربية أخرى، مما يُسهم في تعزيز فهمنا لآلية عمل البَلعمة في هذه اللغة.

الكلمات المفتاحية: الأصوات التاجية, المفخمات, العربية الفصحى, اللهجة الاردنية

1. Introduction

Emphatics are a collection of pharyngealized coronal sounds that characterize Arabic dialects. These sounds are produced by constriction of the upper pharynx in the secondary articulation and main articulation at the dental/alveolar area (Davis, 1995).

Pharyngealization, also referred to as emphasis spread, is a highly productive process in most Arabic dialects phonologically speaking. Before analyzing pharyngealization, this research examines the typology of pharyngealization in the JA dialect (Al-Raba'a & Davis, 2020) as compared to SA.

changing world (April De Angelis). Churchill's life and career influenced her works, including *Cloud Nine* and *Top Girls*.

Cloud Nine is a play written in 1978 and premiered in 1979. It explores gender, colonialism, and sexuality themes. The playwright used cross-gender casting and non-naturalistic techniques to challenge traditional notions of identity and power. The structure of the play and its themes are influenced by affect theory because it delves into the emotional and social dynamics of its characters (Misbah . 11).

Traditionally referred to as emphatics, the four main emphatic coronal consonants in SA are (i) voiceless alveolar fricative (/ṣ/), (ii) voiced alveolar stop (/ḍ/), (iii) voiceless alveolar stop (/ṭ/), and (iv) voiced interdental fricative (/ð̣/). These emphatic consonants are produced by a primary articulation in the interdental or alveolar area and a secondary articulation characterized by the upper pharyngeal constriction identified in terms of extending the extra biotic feature Retracted Tongue Root, i.e. [RTR]. Emphatic sounds spoken in Jordan are the same as in the SA as referred to by Al-Raba'a and Davis (2020, p. 3). Still, their employment is asymmetric, i.e. a certain procedure is followed in SA but is not utilized in the Jordanian dialect.

2. Statement of the Problem

The phenomenon of emphasis spread, in which pharyngealized sounds transfer their emphatic features to adjacent segments, has been identified as a distinguishing feature of different Arabic dialects in the study of Arabic phonology. JA exhibits a wider application of this technique, frequently extending emphatic elements across word boundaries, in contrast to SA, which tightly controls emphasis dissemination within word boundaries. The phonological principles controlling accent spread, the variables affecting its acceptability, and the consequences for the composition and development of Arabic dialects are all seriously called into question by this divergence. In addition to highlighting the dynamic nature of accent spread, comprehending this phenomenon in JA also challenges the strict limitations seen in SA, providing a wealth of opportunities to study phonological theory and dialectal variety.

3. Research Questions

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dissemination within word boundaries. The phonological principles controlling accent spread, the variables affecting its acceptability, and the consequences for the composition and development of Arabic dialects are all seriously called into question by this divergence. In addition to highlighting the dynamic nature of accent spread, comprehending this phenomenon in JA also challenges the strict limitations seen in SA, providing a wealth of opportunities to study phonological theory and dialectal variety.

1. Does the phenomenon of pharyngealized coronal sounds in the JA dialect involve spreading emphasis to adjacent sounds across word boundaries?

2. Is the technique of emphasis spreading observed in the JA dialect permitted or prohibited in the SA, i.e. do the same constructions in the JA followed in the SA or not?

4. Aims of the Study

The unique pharyngealization behavior of coronal sounds in the JA is examined in this paper, with a focus on how they can extend emphatic qualities over word boundaries in particular syntactic and phonological environments. The Arabic Mother Tongue, i.e. SA, seems to exhibit less of this tendency or none at all, underscoring the distinctive phonological processes that define JA.

5. Literature Review

Alfozan (1989) discusses the phonological process of pharyngealization/emphasis spread in SA in his academic work. This study explores the linguistic and historical context of Arabic phonetics with an emphasis on understanding the unique properties of Arabic sounds and their articulation places. The study emphasizes Sibawayh and other early linguists who investigated Arabic phonetic phenomena, especially in reciting the holy Qur'an. The study presented by Alfozan (1989) aims to clarify pharyngealization as it appears in many phonetic circumstances, with a focus on classical Arabic.

This thesis aims to provide a better understanding of Arabic pharyngealization by examining how it functions within the language's sound system. Focusing on assimilation types and their linguistic significance.

The results show how pharyngealization and Arabic's phonological system are closely related. Pharyngealized sounds like /ṣ/, /ḍ/, /ṭ/, and /ð̣/ cause pronounced alterations when combined with other sounds. The study found that these strong sounds often change vowel realization and influence vowel features, which in turn leads to the more widespread phenomenon of stress spread. Furthermore, because pharyngealized consonants influence the assimilation process, nearby consonants are more susceptible to change based on the pharyngealized quality.

In his article, Walter (2006) analyzes the phonological effects of historical emphatics, or pharyngealized sounds, in Maltese Arabic with comparisons to other Arabic dialects. Emphatic consonants /ṭ, ṣ, ḍ, ð̣/ in Classical Arabic and most modern dialects have a "dark" or "heavy" feel due to pharyngealization. So Walter (2006) wishes to explore the phonological, articulatory, and perceptual aspects of these emphatics. The study uses feature geometry to illustrate pharyngealization effects and the interaction between guttural and strong sounds. The feature models considered include Davis's RTR (Retracted Tongue Root) and CP (Constrained Pharynx) feature models, as well as more modern representations that incorporate the Tongue Root Node. These models focus on advanced and retracted tongue root specifications and capture the articulatory characteristics of emphatics' interactions with vowels and other consonants. To understand how emphatics impact vowel phonology in Maltese Arabic, the study aims to evaluate feature geometric models that best represent these interactions. The enduring "backing and lowering" effects in historical Maltese Arabic are meant to illustrate how pharyngealized sounds still influence vowel patterns and quality even when they are no longer pronounced as emphatic. Despite the

loss of overt emphatic articulation in Maltese Arabic, the results demonstrate that pharyngealization effects are still noticeable in vowel qualities similar to the historical emphatic consonants. The study found that the emphatics of the Gozitan dialect, which are identical to those of other Arabic dialects, prevent vowels from rising and lowering nearby vowels.

Shar and Ingram (2010): "Pharyngealization in Assiri Arabic: An Acoustic Analysis"

This study examines the acoustic characteristics of Assiri Arabic, a dialect spoken in the southwest of Saudi Arabia, that differentiate emphatic (pharyngealized) consonants from their plain counterparts. In order to comprehend how pharyngealized consonants in Assiri Arabic differ from non-pharyngealized consonants within the same dialect, the study intends to give a thorough acoustic characterisation of these sounds. The spectral characteristics linked to pharyngealization are captured using an acoustic phonetic model that emphasizes formant frequency analysis.

Both pharyngealized and non-pharyngealized consonants were found in the words produced by native Assiri Arabic speakers in the study. Formant frequencies, especially F1 and F2, were measured during acoustic investigations in order to find distinctive characteristics.

According to the research, pharyngealized consonants in Assiri Arabic are distinguished by the first formant (F1) being raised and the second formant (F2) being lowered in adjacent vowels. This is consistent with the tongue retracting during articulation. Although specific values may differ, these auditory markers are consistent with observations in other Arabic dialects.

Al-Tamimi (2017): "Revisiting Acoustic Correlates of Pharyngealization in Jordanian and Moroccan Arabic"

The purpose of this exploratory study is to better understand the articulatory and auditory characteristics of pharyngealized sounds in Jordanian and Moroccan Arabic by determining if pharyngealization is linked to an epilaryngeal constriction. The study compares the acoustic correlates of pharyngealization between Jordanian and Moroccan Arabic and assesses the existence and function of epilaryngeal constriction in the production of pharyngealized consonants.

The study uses an articulatory phonetic model to evaluate the function of the epilaryngeal region in pharyngealization by combining physiological insights and acoustic data. Jordanian and Moroccan Arabic native speakers provided the data. While the acoustic signals and the body of current research on epilaryngeal activity were used to infer articulatory data, acoustic studies concentrated on formant frequencies and spectrum features. The results indicate that epilaryngeal constriction has a role in pharyngealization in both dialects, which contributes to the unique acoustic characteristics of emphatic consonants. The degree and expression of these articulatory and acoustic characteristics varied across the two dialects, indicating dialect-specific pharyngealization implementations.

6. Methodology

It is significant to remember that some linguistic constructions are missing from the Arabic Mother Tongue, i.e. SA, but have been confirmed in the JA. This divergence highlights JA's different phonological and syntactic features. To ensure a thorough and rigorous approach to the study, the following subsections offer a complete summary of the data collection resources, the analytical techniques used, the research tools used, and the overall research design.

6.1. Resources of Data

Mahadin and Bader (1995) provided the data used in this study to investigate the unique behavior of pharyngealized coronal sounds, relative to other sound classes—both coronal and noncoronal. The distinctive phonological processes connected to pharyngealization in the JA can be analyzed using this dataset as a starting point.

6.2. Procedures of Data Analysis

The following protocols have been implemented to analyze the collected data.

1. The words' pronunciation has been phonemically transcribed using phonemic symbols, and then further phonetically transcribed to show the variations that take place. Several programs allow for the completion of this process.

2. To arrive at the final perspective, the Arabic phonemes (consonants) that are being analyzed are separated, enclosed in square brackets, and then examined using a number of hierarchical figures.

3. To examine the distinct behavior of emphatic coronal sounds in the JA, the current study uses a multitiered, non-linear autosegmental hierarchical representation model that is based on the feature geometry framework. In light of some research fields, such as
4. pharyngealization (emphasis spread) and depharyngealization, their functions will be carried out.

6.3. Research Tools

An Android mobile phone program called "Dict Box - Dictionary & Translator App for All Languages" was developed by EVOLLY.APP on December 30, 2012 (Version: 8.9.7, updated on August 15, 2024), and Livio on March 21, 2012 (Version: 7.0.2-178yp, updated on September 21, 2024) as a user-friendly offline English dictionary Android app. To show the alterations that took place, they were later phonetically transcribed. Bibliographies and citations are also efficiently organized using EndNote 2020, a reference management tool. American Psychological Association [APA] 7th is the style employed.

6.4. Research Design

Based on the qualitative approach adopted, the structure and rationale are guided by its objectives and research questions. This approach makes in-depth qualitative insights that offer comprehensive pieces of information through detailed explanations. The study aims to combine these strategies to effectively address its objectives and provide strong evidence in support of its research goals.

6.5. Data Collection

With an emphasis on their unique patterns and contextual variations, this study explores the peculiar pharyngealization behavior of coronal sounds in the JA. According to meticulous documentation presented by Mahadin and Bader (1995), the data were taken from the JA variety to guarantee a thorough examination. Their research offers important insights into the mechanisms of pharyngealization in this dialect and offers a fundamental framework for comprehending the phonological and sociolinguistic complexities of JA. The study intends to clarify the precise mechanisms by which coronal sounds interact with pharyngealization processes, especially in contrast to other Arabic varieties, by expanding on this previous research. Some data that fit to this phonological process can be listed as:

/rabaṭ + hin/ → [rabaṭṭin] 'he tied them (fem.)'

/xabaṭ + tu/ → [xabaṭṭu] 'I hit him'

/ħafaḍ+ tu/ → [ħafaḍṭu] ‘I kept it’

/rabaṭ + tu/ → [rabaṭṭu] ‘I tied it’

6.6. Model of Analysis

This investigation is conducted within the framework of feature geometry. An eclectic approach is the data analysis paradigm that has been used. Mahadin and Bader (1995) cite McCarthy's (1991) and Vaux's (1993) model as an example of a multitiered, non-linear auto segmental model that embodies the hierarchical representations for Arabic's emphasis-spread and place assimilation. Thus the model of analysis that will be employed in this study is McCarthy’s (1991) version that is then modified by Vaux (1993) as referred to by Mahadin and Bader (1995). This model applies to both pharyngealized and nonpharyngealized (plain) consonants, and for pharyngealized consonants, the feature Retracted Tongue Root [RTR], which plain sounds lack, will be used.

These pharyngealized segments will be articulated in terms of a secondary articulation using distinctive features such as Retracted Tongue Root [RTR] and Constricted Pharynx [CP], which capture the articulatory facts involved in producing the emphatics, while plain sounds are produced without these characteristics. It is important to note that the models proposed by Sagey (1986) and Halle (1992) in conjunction with Vaux's (1993) approach will be the basis for the representation of some related distinctive features for a particular sound, with the consonants in question only containing relevant aspects.

An eclectic method is the paradigm of data analysis and description that has been used in the current investigation. It looks into the CVC layer that makes up the consonants' root node. Only consonants are used in this investigation. Vowels are disregarded. The place node and the manner node are the two primary branches that emerge from the root node in this model. The place node is separated into the upper vocal tract [UVT] and the lower vocal tract [LVT] by Vaux (1993), who works on emphatic (pharyngealized) and nonemphatic (plain) coronal sounds. According to Sagey (1986) and Halle (1992), the supralaryngeal node, which is further subdivided into labial, coronal, and dorsal, makes up the upper vocal tract. Labial is [± round]; coronal is [± anterior] and [± scattered]; dorsal is [± high], [± low] and

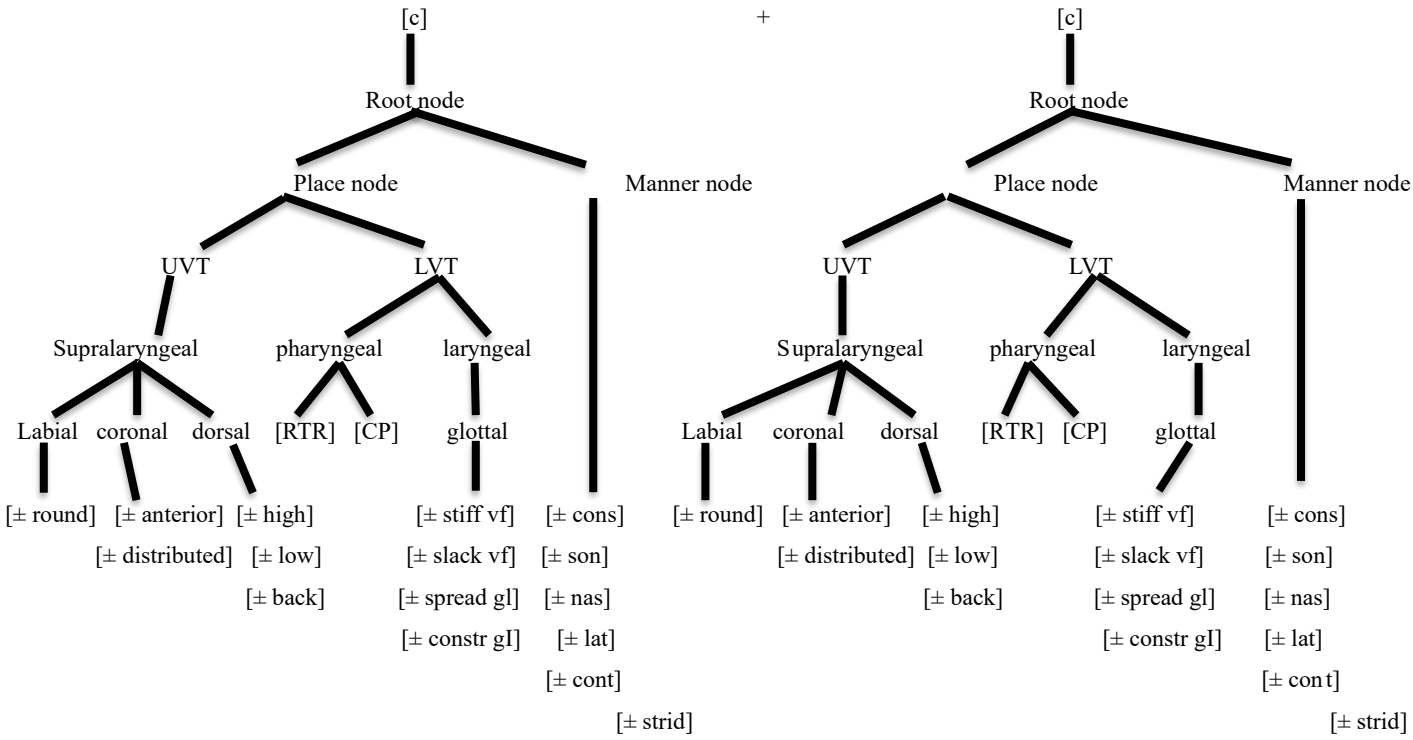
In addition, the pharyngeal and laryngeal nodes comprise the low vocal tract. Assimilation, according to phonologists like Hayes (1986) and McCarthy (1986), is a widespread process. The retracted tongue root [RTR], which is connected to emphatics, is part of the pharyngeal node.

The glottal node includes the laryngeal node, which includes the following sound characteristics found in the larynx (the voice box): [± stiff vf], [± slack vf], [± spread gl], and [± constr gI]. The characteristics linked to the way the sound is produced and articulated, whether it is triggering or target in both partial and complete assimilation, make up the consonant's method node. It includes characteristics such as [± cons], [± son], [± nas], [± lat], [± cont], and [± strid], following Clements (1985) and Katamba (1989). Certain nodes and features may be eliminated based on the sounds that are examined in the assimilation spreading environment; that is, only pertinent information will be addressed.

Figure (1) shows the hierarchical figure that has been adopted in analyzing data in the current research. It demonstrates the features that describe the sounds involved in general

Figure 1

Model of Analysis, Original Hierarchical Diagram

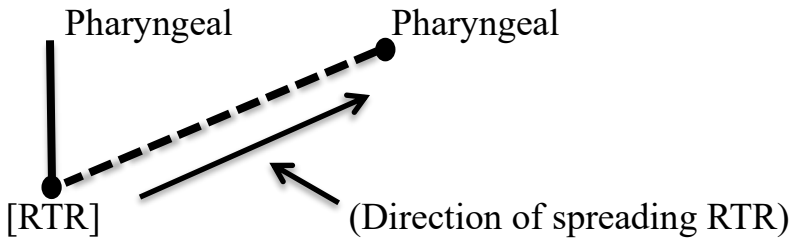


Note. Based on Mahadin and Bader (1995).

Based on the feature-geometry structure in (1), a rule like the one in (2) below can be devised to account for the spread of emphasis, that is, assimilation:

Figure 2

Spreading RTR



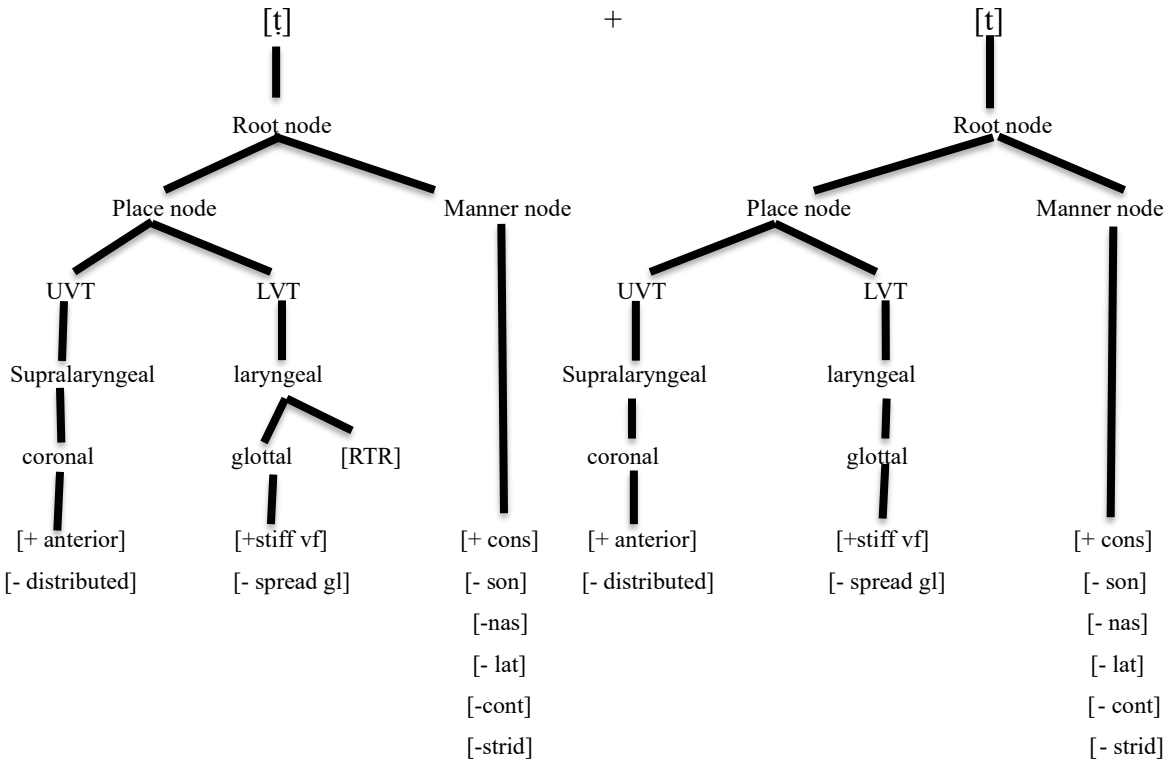
Note. Adapted from Mahadin and Bader (1995).

A better item that illustrates the phenomenon of pharyngealization in the Jordanian Arabic dialect is the phrase /rabaṭ+tu/ 'I tied' in which the emphatic stop /ṭ/ extends its extra biotic feature known as [RTR] to the plain stop /t/ coming eventually with geminate emphatics, i.e. /ṭṭ/ due to dialect-specifics. To elaborate

on the gradual development of the complete progressive assimilation of the text /rabaṭ+tu/, one can follow these figures. (See figure 3).

Figure 3

Model of Analysis, Complete Assimilation, Level 1

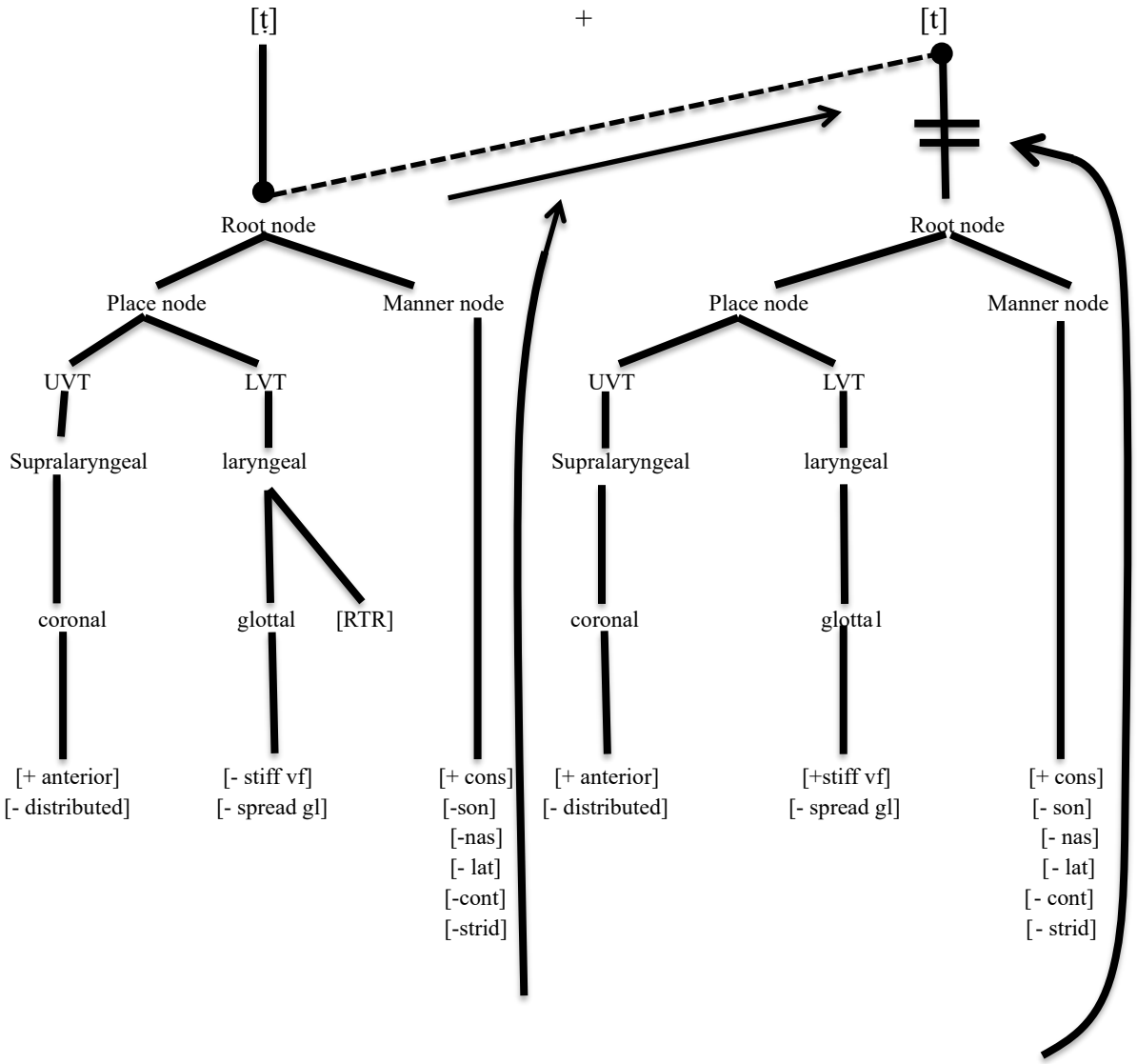


Note. Based on Mahadin and Bader (1995)

For further elaboration, spreading the root node can be revealed in Figure (4) below:

Figure 4

Model of Analysis, Complete Assimilation, Level 2, Spreading the Class Node



(Direction of Spreading the Class Node)

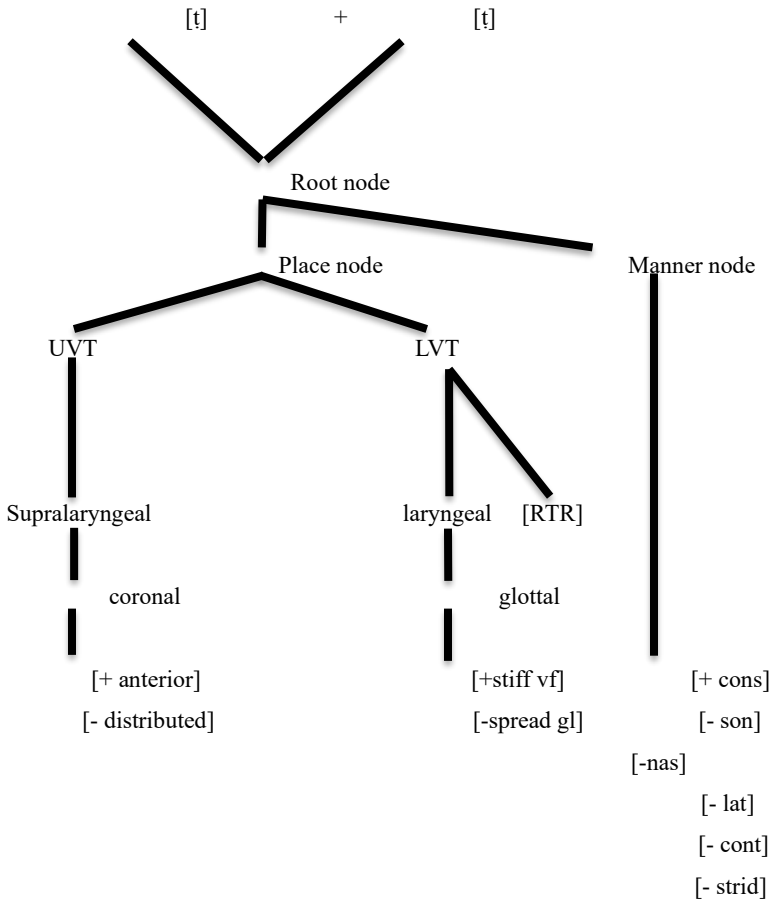
(These Crossed Lines Mean the Delinking of the Association)

Note. Based on Mahadin and Bader (1995).

For further explanation, the rule embodied in figure (4) can be illustrated in describing the item /rabaṭ+tu/ as [rabaṭṭu] 'I tied it' in terms of complete assimilation. (See Figure 5)

Figure 5

Model of Analysis, Complete Assimilation, Level 3, the Class Node Spread



Note. Based on Mahadin and Bader (1995).

7. Findings and Discussion

In some phonological settings, the pharyngealized alveolar stop /ṭ/ in Jordanian Arabic (JA) exhibits a strong propensity to transfer its emphatic quality to a nearby plain alveolar stop /t/. This phenomenon results in a process of total regressive assimilation and is discovered through careful data analysis utilizing a recognized phonological framework. The plain /t/ changes during this process, gaining the pharyngealization characteristic of /ṭ/, thereby combining their articulatory and auditory qualities. This action highlights how JA's pharyngealization is dynamic and establishes stress spread as a defining characteristic of its phonological uniqueness.

Variations in Pharyngealization by Dialect

The processes seen in SA, which takes a completely different approach to handling comparable structural configurations, contrast sharply with this trend in JA. When simple alveolar stops like /t/ are present, pharyngealized consonants like /ṭ/ undergo a process called depharyngealization, which neutralizes their emphatic quality. Examples of this divergence include the lexical word /rabaṭ+tu/ ("I tied it"), where the surface form /rabattu/ is produced when the emphatic /ṭ/ loses its pharyngealized quality. This change reflects a larger trend in SA to neutralize emphasis in situations when assimilation may otherwise take place in order to preserve phonological individuality.

Iṭbāq and Articulatory Dynamics

The articulatory characteristic of Iṭbāq, which consists of tongue-root retraction and a secondary constriction in the pharyngeal cavity, lies at the heart of these processes. It gives sounds like /ṭ/ their emphatic or "dark" aspect. The dialect's propensity to extend pharyngealization to adjacent segments, making emphatic articulation more salient, is exemplified by the preservation and extension of this trait in JA. On the other hand, SA's phonological emphasis on maintaining segmental clarity and contrast is consistent with the depharyngealization of /ṭ/, which suggests a preference for lowering articulatory complexity.

Effects of Emphasis Spread and Depharyngealization on Phonology

The significant influence of dialectal diversity on phonological processes is demonstrated by the difference between JA and SA in how they handle pharyngealized sounds. The focus spread in JA indicates a degree of assimilation-driven interaction between segments that is less restricted than in SA, in addition to reflecting a more favorable phonological environment for the propagation of secondary articulations. By preventing the overlap of emphatic elements across segments, SA's methodical attempt to maintain phonemic integrity is highlighted by the use of depharyngealization as a neutralizing technique.

Wider Linguistic Importance

This difference in how JA and SA handle pharyngealized sounds offers important information about the larger linguistic typology of Arabic dialects. It emphasizes how phonological systems adjust to maintain or change characteristics according to dialect-specific objectives, like emphatic feature augmentation, phonemic contrast, or articulatory economy maintenance. Additionally, it demonstrates how dialectal phonologies evolve according to historical, sociolinguistic, and geographic circumstances, creating distinct linguistic identities among Arabic-speaking people.

This study clarifies the intricacy and diversity of Arabic phonological processes by investigating the interaction between depharyngealization in SA and accent spread in JA. The results enhance the larger conversation on language variation and change along the Arabic linguistic continuum by providing a better grasp of how dialectal variation functions at the nexus of articulatory phonetics and phonological theory.

The table below comprises the matrix of distinctive features of consonant sounds in SA that serve to analyze sounds involved in phonological processes.

Table 1

The Matrix of Distinctive Features of SA

Note. Adapted from Saeed (2018).

	syll	cons	son	cont	delrel	stri	nas	lat	distr	voice	high	back	ant	lab	cor	dors	low
b	-	+	-	-	-	-	-	-	+	+	-	-	+	+	-	-	-
m	-	+	+	-	0	-	+	-	+	+	-	-	+	+	-	-	-
f	-	+	-	+	0	+	-	-	-	-	-	-	+	+	-	-	-
θ	-	+	-	+	0	+	-	-	-	-	-	-	+	-	+	-	-
ð	-	+	-	+	0	+	-	-	-	+	-	-	+	-	+	-	-
ð̞	-	+	-	+	0	+	-	-	-	+	+	+	+	-	+	-	-
t	-	+	-	-	-	-	-	-	-	-	-	-	+	-	+	-	-
ṭ	-	+	-	-	-	-	-	-	-	-	+	+	+	-	+	-	-
d	-	+	-	-	-	-	-	-	-	+	-	-	+	-	+	-	-
ḍ	-	+	-	-	-	-	-	-	-	+	+	+	+	-	+	-	-
s	-	+	-	+	0	+	-	-	-	-	-	-	+	-	+	-	-
ṣ	-	+	-	+	0	+	-	-	-	-	+	+	+	-	+	-	-
z	-	+	-	+	0	+	-	-	-	+	-	-	+	-	+	-	-
n	-	+	+	-	0	-	+	-	-	+	-	-	+	-	+	-	-
l	-	+	+	+	0	-	-	+	-	+	-	-	+	-	+	-	-
r	-	+	+	+	0	-	-	-	-	+	-	-	-	-	+	-	-
ʃ	-	+	-	+	0	+	-	-	+	-	-	-	-	-	+	-	-
dʒ	-	+	-	-	+	+	-	-	+	+	-	-	-	-	+	-	-
j	-	+	+	+	0	-	-	-	+	+	+	-	-	-	-	-	-
w	-	+	+	+	0	-	-	-	+	+	+	+	-	+	-	+	-
k	-	+	-	-	-	-	-	-	-	-	+	+	-	-	-	+	-
q	-	+	-	-	-	-	-	-	-	-	+	+	-	-	-	+	-
χ	-	+	-	+	0	+	-	-	-	-	+	+	-	-	-	+	-
ɣ	-	+	-	+	0	+	-	-	-	+	+	+	-	-	-	+	-
ḥ	-	+	-	+	0	+	-	-	0	-	-	+	-	-	-	0	+
ʕ	-	+	-	-	0	+	-	-	0	+	-	+	-	-	-	0	+
ʔ	-	+	-	-	-	-	-	-	0	-	0	0	-	-	-	0	+
h	-	+	-	+	0	-	-	-	0	-	0	0	-	-	-	0	+

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