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**Consonantal Phonological Variation in Kut Iraqi  
Arabic: A Generative Study**

**A B S T R U C T**

The present study is a descriptive, analytic and experimental one. It deals with one of the topics in the scope of generative phonology which is phonological variation. Phonological variation is one of the versions that causes differences in the pronunciation of the speech in the varieties of Iraqi Arabic as it is the case in other languages. This study attempts to give a full explanation of phonological variation in Kut in Wasit Governorate, in the middle of Iraq. It tackles the process of substitution as a best phonological phenomenon causing such variation and it is restricted to consonants only. It is linguistic and applied study because it states a precise linguistic description of phonological variation in terms of the Kut Iraqi Arabic dialect. This sort of variation will be explored and analyzed within the framework of Feature-Geometry based model, one version of generative phonology. Concerning the statement of the problem, the researcher finds it difficult to deal with such a topic since it has not been tackled before. Specifically, no one has conducted a study to investigate phonological variation in Kut Iraqi Arabic dialect. There are many phonological aspects in this variety which merit a generative phonological study. Therefore, it is hoped that the current study will fill these research gaps. There are some hypotheses in order to achieve the aims of this study. The first one is that phonological variations in Kut dialect exist in the consonant. The second one is that the linguistic variables of gender, education and age have a remarkable influence on the phonological variation in such dialect but the domains of education and age have more effects as compared with gender.

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**التباين الصوتي للحروف الصحيحة في لهجة الكوت العراقية العربية : دراسة توليدية**

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**الخلاصة:**

هذه الدراسة هي دراسة وصفية وتحليلية وتجريبية. تناولت أحد الموضوعات في نطاق علم الأصوات التوليدي وهو التنوع الصوتي. التنوع الصوتي هو أحد الصور الصوتية التي تسبب اختلافات في نطق الكلام في لهجات اللغة العربية العراقية كما هو الحال في اللغات الأخرى. تحاول هذه الدراسة إعطاء شرح كامل للتنوع الصوتي لهجة الكوت بمحافظة واسط وسط العراق. تتناول الدراسة عملية الابدال بوصفه أبرز

ظاهرة صوتية تسبب الاختلاف الصوتي والتي اقتصر على الحروف الساكنة فقط. هي دراسة لغوية وتطبيقية لأنها تنص على وصف لغوي دقيق للاختلافات الصوتية من حيث لهجة الكوت العراقية العربية. سيتم دراسة هذا النوع من التنوع وتحليله في إطار نموذج الملامح الهندسي التعميمي؛ إذ إنه نظرية في علم الأصوات التوليدي. وفيما يتعلق ببيان المشكلة ، يجد الباحث صعوبة في التعامل مع مثل هذا الموضوع؛ لأنه لم يتم التطرق إليه من قبل. وبالتحديد لم يتم أحد بإجراء دراسة للتحقيق في التنوع الصوتي في لهجة الكوت العربية العراقية، إذ إن هناك العديد من الجوانب الصوتية في هذا التنوع والتي تستحق الدراسة الصوتية التوليدية. لذلك تسعى هذه الدراسة الى أن تسد هذه الثغرات البحثية. وهناك بعض الفرضيات لتحقيق أهدافها. الأولى : يوجد التنوع الصوتي في لهجة الكوت في الحروف الساكنة، والثانية: هي أن المتغيرات اللغوية للجنس والتعليم والعمر لها تأثير واضح في التنوع الصوتي في هذه اللهجة ولكن مدى تأثير متغيرات التعليم والعمر ، لها تأثير أكثر مقارنة بالجنس.

**الكلمات المفتاحية :** التنوع الصوتي ، علم الصوت التوليدي ،انموذج الملامح الهندسي التعميمي ، اللهجة العربية العراقية ، الابدال.

## 1. Generative Phonology

A generative phonology (GP) is a subfield of generative grammar, which encompasses the entire field of language theory. According to Kenstowicz and Kisseberth (1979:1-2), “phonologists state that the study of acoustic systems is examined through the lens of a single theory called generative phonology”. Generative phonology assigns phonetic representations to utterances in accordance with the internalized grammar of a native speaker.

The most well-known school of phonology is called generative phonology, despite the fact that there are several other schools of phonology. Generative phonology has become a standard theory, and it is against this theory that the vast majority of other phonological research has been examined and evaluated. (Al-Hindawi, 2018). Generative means rules that explain possible outcomes in language, grammar, or phonology; they are created to examine the phonological structures of

various languages. These rules are put forth as a fundamental procedure of GP by Chomsky and Halle (1964). This theory seeks to define and explain how native speakers of a language can produce, perceive, or comprehend utterances in that language.

## **2. Phonological Variation**

Phonological variation is a term that refers to the circumstance in which a single morpheme can take different phonetic forms in the same environment (Coetzee, 2008). Phonological variation refers to some differences in the pronunciation of the same sound without any effect on the word meaning. Phonological variations can occur due to the difference in manner of articulation or place of articulation.. The main reason for such variation is to ease pronunciation and to avoid heaviness in the Arabic utterance (Alsiraih,2020).

### **2.1. Types of Phenomena in Phonological Variation**

Linguists provide an explicit manner of expressing the broad principles of several phonological processes that cause phonological variation in speech, including 1) assimilation, 2) dissimilation, 3) substitution 4) deletion, 5) addition, and 6) metathesis. (Obied,2016:170). Chomsky and Halle (1968: 55) regard substitution and metathesis and as “obvious sorts of phonological variation in early generative phonology”. The current study is restricted to the process of substitution. It should be noted that the Arabs used to stay away from what causes the tongue to be heavy, and tend to speak lightly. Therefore, these types of phonological variation come to ease the heaviness in the pronunciation.

### **2.2. Substitution (Al-Ibdaal)**

Substitution is defined as a phonetic-semantic linguistic phenomenon that means placing a letter in place of another letter and preserving the rest of the letters of the word. Substitution results from the convergence in a place of articulation, or in a

manner of articulation and or in both properties together or voicing among the sounds in language varieties and dialects (Ibn Al-Sakeet,1978; Ibn Jinni,1954: 69; Al- Ibn Faris,1997: 333 and Al-Akbari, 2001:9). For example, the substitution of the sound [G] (غ) with [q] or the sound [dʒ] (ج) with [j] (ي) as , respectively, in 1. [Gurfa / عُرفه ~ qurf / قُرفه ] ‘room’ and 2. [did3aad3a / دجاجه ~ dijaaja / ديايه ] ‘chicken’. Such variation does not cause change in meaning. Thus, variation in the first example occurs because the sounds [G] and [q] have the same manner of articulation which is both are uvular whereas the sounds in the second example carry the same property of voicing (voiced) as it is analyzed and illustrated by Feature-Geometry based model.

### 3. Theories of Variation

#### 3.1. Generative Phonology

As it has been mentioned in the first section that generative phonology is one of the theories of phonological variation. It indicates that pronunciation (or surface phonetic output) is derived from the application of phonological rules to a set of fundamental underlying forms which are information-rich, i.e., they include the information needed to determine the contrasts by which a certain lexical item might be anticipated to participate. Variation is produced by the optional rule not the obligatory one.

#### 3.2 Natural Phonology

Natural phonology (NP) is a theory proposed by Stampe (1979: 64) in the middle of 1970s. That is, phonology, according to Stampe, is “based on innate constraints that are either active or suppressed based on a specific language”. These laws are regarded as natural since they are phonetically plausible. Hayes (2009:26-27) states that they are “Untaught and unconscious: Speakers adopt these rules

unconsciously, and they acquire them early in life without explicit instruction”. Natural phonologists have used the term ‘process’ to denote a natural phonetic constraint simplifies articulation.

Stampe’s (1979) clarification of phonological variation is that it arises from how natural processes are suppressed to a variable success, examples of which are “syllables have no final consonants” and “if final obstruent consonants are allowed, they are voiceless” (Hooper,1976:114)

### **3.3. Articulatory/Gestural Phonology**

According to Articulatory Phonology, every utterance is composed of more gestures than phonemes (Browman and Goldstein, 1986, 1990, 1992). Examples include velar opening, tongue-tip and movement vocal cord approximation. These are generated in a timing pattern that results in sequences of consonants and vowels. The gestures overlap more when one speaks more quickly, therefore more coarticulation is anticipated. It may appear as though a segment has been removed if gestures entirely. However, Browman and Goldstein disagree that such deletion is even theoretically feasible. That is, the gestures are merely indistinguishable from one another because they start and finish at the same time. Accordingly, phonology is unrelated to segment boundaries and can therefore explain phenomena like partial devoicing of a vowel or partial nasalization .

### **3.4. Variation Theory**

Variation theory has been saved for last even though it isn't the most recent historically since it directly influences a lot of the phonological work being done by sociolinguists nowadays. It is based on the theories of Labov (1969) and is essentially a subset of generative phonology. That is, the application of a rule that

is governed by the linguistic, sociological, and psychological environment in which an utterance is produced.

Variation theory indicates that variation comes from optional rules rather than obligatory ones. The theory is expanded by Cedergren and Sankoff (1974) to incorporate the possibility that a rule will apply is influenced by the presence or absence of a certain factor or a combination of factors (Bailey, 1973 and Fasold, 1990:244).

#### **4. Iraqi Arabic**

Iraqi Arabic (IA), often known as “Mesopotamian Arabic”, is a dialect of Arabic that belongs to the Afro-Asiatic language family, which is a subgroup of the Arabic language family (Muter, 2009). IA is the native language spoken by the majority of Iraqis. As a general rule, it is only used for informal daily contact which is not taught in schools or even standardized (Habash, 2010). IA is divided into three distinct sub-dialects that are spoken throughout the country: Baghdadi, Southern, and Maslawi dialects.

#### **5. Previous Related Studies**

##### **5.1. Studies on Phonological Variation in Standard Arabic and Arabic Dialects**

Many studies have tackled phonological variation in standard Arabic and Arabic dialects and reached many findings addressed such variation in a language. Some of them are presented below:

**Rajab (2021)** conducts a study entitled “Phonological Variation in Hijazi and Cairene Arabic: The Case of the Uvular Stop /q/.”. This study tackles phonological variation in spoken Arabic from two regions: Saudi Arabia (Hijazi Arabic-HA) and Egypt (Cairene Arabic- CA). The study investigates such variation according to

age, gender, and education. The collected qualitative data are transcribed and coded by voice pattern.

This study's findings shows that CA varies more than HA. Males use the standard variant more in CA, but females do so in HA. Younger speakers of CA use the less standard variant than older speakers. The variations of these two varieties require more data from various tasks. This study lays the groundwork for future research on Arabic phonological variation, particularly Hijazi Arabic. A positive correlation between standard variant usage and speaker education is not supported by this study. It also finds that younger generations produce more non-standard variants than older generations. It also states that the educational level does not have a role to influence the choice of variant the speaker chooses in both CA and HA. In addition, the /g/ variant is used by speakers from Jeddah (HA), while the /ʔ/variable is used by Cairo (CA).

**Morsi (2020)** conducts a study entitled “Gender and Phonological Variation in Cairene Arabic”. This study has investigated the effect of gender on realizing phonological variation in Colloquial Cairene Arabic in long vowel /aa/, /ee/, /aa/ among the LWC members in Greater Cairo. It has proved that the social class, sociocultural norms and the social every day practices have interplayed with gender to construct the social identity of women in these local communities. The study finds out that women use extra-long variants [aa: and ee:] more than men. Women in Greater Cairo use non-standard long vowels, while men use standard forms.

A woman's vowel lengthening reflects that they are family breadwinners and seek social identity with a voice. Studies on older men and women are needed to understand this stigmatized linguistic feature. The phonological contexts of vowel lengthening ought to be studied in the future. In Egypt and other Arab countries with similar phonological variation, gender influences vowel production.

**As-Sammer (2010)** conducts a study entitled “Phonological Variation in Modern Standard Arabic: The Case of the Affricate /dʒ/: Oman as a Sample”. This study investigates the affricate /dʒ/ as pronounced by Omani speakers approaching a formal style in MSA. The study concludes that (i) native dialect habits are deeply rooted and have a great impact on speakers' performance regardless of the formality of the context (ii) formal style has only a slight impact on coda position (iii) distribution of the standard variant shows great predictability of the standard form (iv) non-standard variants /g/ and /dʒ/ have registered free distribute.

In formal and conscious settings, it is hypothesized that speakers adhere to standard pronunciation. The findings here cast doubt on Labovian's claim that formal style and situational artificiality are related. The speaker's performance in the coda is not affected by the performance's formal or social context. A dialect or sub-dialect's distinctive phonological feature is the use of certain variants of the same variable as a marker of regional identity. The /g/ variant is common in both dialects, but more so in Al-Dakhilyya. Unlike /g/, the variant /dʒ/ reads higher in the first region (Al-Batina). It occurs frequently in both dialects, the rates determined that the Al-Batina area uses /dʒ/ rather than /g/. There are no clear linguistic distinctions between regional varieties. This is due to the high mobility of people in nearby areas, made possible by transportation and communication technologies like mobile phones and the internet.

## **5.2. Studies on Phonological Variation in Iraqi Arabic**

Many studies have tackled phonological variation in Iraqi Arabic dialects and reached many findings addressed such variation in a dialect. Some of them are presented below:

**Ahmed (2018)** conducts a study entitled “Phonological Variation and Change in Mesopotamia”. This study examines the current phonological variation and change in Mosul Iraq Arabic dialect (MIA). Two consonants and two vowels from



traditional MIA are chosen for analysis: Consonant variables include /g/ and /k/ for (q) the two vocalic variables are word-final vowel. The study finds that traditional variants are widespread and defy previously described constraints. The results show that Malwis use the variables with linguistic and social variability. Speakers use the traditional variant [g] to produce the (q) variable. The results also show that traditional MA phonological forms are becoming recessive in younger generations' speech, though not uniformly. The use of local forms of the rhotic variable (i.e. uvular realization) decreases in the presence of supralocal apical for. The traditional (in terms of height, advancement, and duration) realizations of MOSUL vowels and word-final (a) also decreased. Many sociopolitical and economic factors have brought Mosuli residents into contact with large swaths of migrants, most of whom are Bedouin.

**Addai (2002)** conducts a study entitled “Investigating Variation in Wasiti Iraqi Arabic”. This study suggests that Wasiti Iraqi Arabic is a sub-dialect of Iraqi Arabic. The study investigates Wasiti Iraqi Arabic linguistic variation in terms of morphological, phonological, and syntactical variation.. The study finds that WIA has shown to have regional, sociolinguistic and striatal variations. Variation in WIA is sometimes linked to formal /informal situations as well as urban and rural regions. The study concludes WIA speakers are more selective in choosing vocabulary items for various settings or conversational situations. Formal vocabulary is urban whereas informal or friendly vocabulary is informal rural

The drawbacks of this study shows that other variation-related factors such as gender , education and age that can be studied to highlight their role in the WIA variation. The study has tackled variation across Wasit Governorate with no focus on any single city or area. Moreover, this study has explored morphological, phonological, and syntactical variation in general. Hence, the current study will

investigate only phonological variation in Kut dialect and will take into consideration the social factors of gender, education and age.

## **6. Methodology**

The present study adopts a mixed method. It combines both qualitative and quantitative designs. The current study involves investigating sounds or phonemes of Kut Iraqi Arabic, therefore a qualitative method suits the study overall goal. So, the area under consideration in this study includes only the dialect of Kut in Wasit Governorate. The classification of the participants is illustrated according to three non-linguistic variables : gender, education and age. The participants are native Iraqi Arabic speakers.

Data are collected by recording interviews of the participants started from 5/9/2022 up to 1/11/2022. A total of only 60 participants with 30 males and 30 female are selected as the sample for the present study. Participants are divided into different levels of education : Educated (bachelor, master , Ph.D. degrees), Half educated (intermediate and secondary) and Uneducated (preliminary and those who just read and write). The age of participants range from 35 to 65 year. There are also three groups of the age variable of. In this study, the purpose of interviews is to elicit phonological variation in one variety of Iraqi Arabic. Since the main purpose of the present study is to investigate variations in language, semi structured interviews are done. The participants' interviews are recorded and transcribed, then analyzed by Feature-Geometry Based Model and statistically by SPSS Software.

### **6.1. Linguistic Variables**

The linguistic variable that will be investigated in terms of the substitution process, in this study, is [q] (ق) that can be substituted by four variants [g (ك), k (ك), d3 (ج), G (غ)].

## 6.2. Feature Geometry- Based Model (Literature Review)

Feature geometry is a version of generative phonology that is defined as a phonological theory which signifies distinctive features as an organized hierarchy rather than a matrix or a set. It sprung out of auto-segmental phonology to emphasize the non-uniform relations between distinguishing features and their autonomous nature. Thus, feature geometry formally organizes sets of features beneath nodes in a tree: features that pattern together frequently are shown to share a parent node, and treatments on this set can be encoded as treatments on the parent node (Sagey 1986; Clements-Hume 1995; Bernhardt 1992). Following Nathan (2008: 141) model, “segmental features are grouped into a hierarchical array of functional classes, where the feature values are arrayed on two separate tiers (place of articulation tier and manner of articulation tire). By doing so, features enter into non-linear relations with each other”.

## 7. Data analysis and discussion

All of these sounds are analyzed according to the adopted model for the current study, i.e., the General Feature-Geometry based method. It is one of the well-known theories of the generative phonology and it is considered as a basic version of Auto-segmental phonology which is used for investigating phonological variation in language. Then, the elicited data are described and analyzed statistically by SPSS software as it is shown in the next section.

## 7.1. Analysis of Consonantal Substitution Via the Feature-Geometry Based Model

Consonant sounds are sounds whose articulation involves the contact of the organs of speech. They are also described and analyzed according to three tiers : 1. place of articulation, 2. manner of articulation 3. Voicing.

As mentioned above, a representative sample is chosen to be examined by the Feature-Geometry based model. Consonantal substitution occurred (520) times in the elicited data in Kut. Following, a number of diagrams dedicated to examine this type of substitution in various consonants of the IA.

1. /q/ (ق)

[g] (ك)

+ uvular  
+ plosive  
- voice

+ velar  
+ plosive  
+ voice

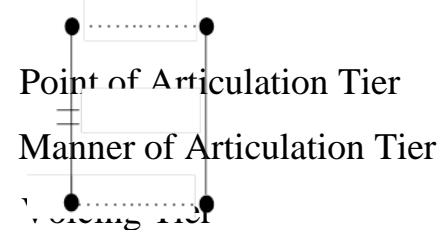


Diagram (1) : The Substitution of the voiceless uvular plosive consonant /q/ into the voiced velar plosive [g] in the phonetic representation [gumar] from the phonological representation /qamar/ in the sentence in [t3annha gumar] “She looks like moon” which is considered as a phonological variation for the sound [q].

This variation can be found in different positions in the context of the words as illustrated below:

- Initial syllables : [grunfuL] in [ʔtrajt t3iis grunfuL] “I bought a sack of grunfuL”.
- Medial syllables : [mugaS] in [9indii mugaS] “I have scissor”.
- Final syllables : [marag] in [ʔHib marag ʔlsimat3] “I like the stew of fish”.

Applying the Feature-Geometry based model indicates that the features of place of articulation and voicing tiers have been affected in this substitution where uvular

is substituted by velar, and voiceless (-voice) is substituted by voiced (+voice), respectively whereas the feature of manner tier is the same (plosive).

2. [q] (ق) →

[k] (ك)

+uvular  
+plosive  
-voice

+velar  
+plosive  
-voice

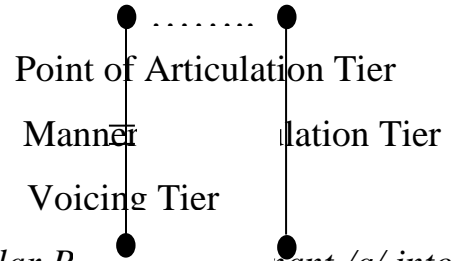


Diagram (2) : The Substitution of the Voiceless Uvular Plosive Consonant /q/ into the Voiceless Velar Plosive [g] in the phonetic representation [wakit] from the phonological representation /waqit/ in the sentence [jg9id min wakit ] “He wakes up early”, which is considered as a phonological variation for the sound [q].

This variation can be found only in two positions in the context of the words as it is illustrated below:

- a. Initial syllables : [kital] in [kital ?IHaraamii] “He kills the thief”.
- b. Medial syllables : [wakit] in [jg9id min wakit ] “He wakes up early”.

Applying the Feature-Geometry based model indicates that the features of place articulation and tiers have been affected in this substitution where uvular is substituted by velar whereas the features of manner voicing tiers are the same (plosive and voiceless, respectively).

3. [q] (ق) →

[dʒ] (ج)

+uvular  
+plosive  
-voice

+palate-alveolar  
+affricate  
+voice

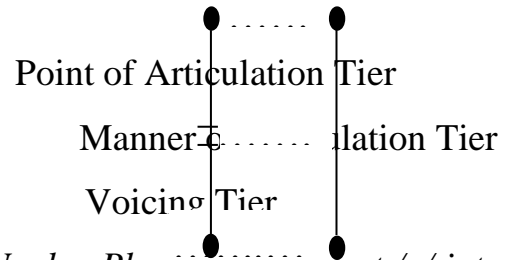


Diagram (3) : The Substitution of the Voiceless Uvular Plosive Consonant /q/ into the Voiceless Palate-alveolar Affricate [dʒ] in the phonetic representation [riidʒ] from the phonological representation /riiq/ in the sentence [sawjt soonaar 9ala

?lriid3] “I made sonar on an empty stomach”, which is considered as a phonological variation for the sound [q].

This variation can be found only in all the three positions in words’ context as it is illustrated below:

- a. Initial syllables : [d3iriib] in [?lmadrisa d3iriiba 9ala ?lbajt] “The school is near the house”.
- b. Medial syllables : [rad3d3ii] in [naakil rad3d3ii] “We eat watermelon”.
- c. Final syllable : 40. [silid3] in [nizra9 silid3 ] “We plant chard”.

Applying the Feature-Geometry based model indicates that the features of all tiers have been affected in this substitution where uvular is substituted by palate-alveolar, plosive by affricate and voiceless by voiced for the place, manner voicing tiers, respectively.

4. [q] (ق) [G] (غ)



Diagram (4) : The Substitution of the Voiceless Uvular Fricative [q] into the Voiced Uvular Fricative [G] in the phonetic representation [GaSiida] from the phonological representation /qaSiida / in the sentence [kitabit GaSiida] “I wrote a poem”, which is considered as a phonological variation for the sound [q].

This variation can be found in all the three positions in words context as it is illustrated below:

- a. Initial syllables : [Gmaaʃ] in [haaða ?lGmaaʃ ?ilit3] “This cloth if for you”.
- b. Medial syllables : [fiqir - fiGir] in [9inda fiGir damm] “He has anemia”.

c. syllable : [findiG] in [ga9adna bilfindiG] “We lived in the hotel”.

Applying the Feature-Geometry based model indicates that the features of manner and voicing tiers have been affected in this substitution where plosive is substituted by fricative and voiceless, respectively whereas the feature of place tier (uvular) has not been affected.

## 7.2. Results and Discussions of Data

The preliminary findings of the current study point that phonological variation are realized by a number of phonological phenomena the most common of which is substitution. The limitation of substitution is embodied to the process of consonantal substitution only. Consequently, such substitution is in turn limited to the consonant [q] and its substitution with [g] , [k] , [d3] and [G]. They existed frequently in the pronunciation of speakers in so many words in Kut dialect. Thus, there are a lot of different words carrying the same sort of substitution (consonantal ) , moreover, it can be found in different positions in the context of the word, initially, medially or finally as it is illustrated in the matrix (1). The following table represents the frequencies of the total consonantal substitution. It is noted that the consonantal substitution occurs about (520) times in Kut dialect:

Table (1): Frequencies of the Consonantal Substitution Process

Dialect	Frequency
Kut	520

The types of phonological variation existed in the speech of the participants score different ratings and exhibit different hierarchical scaling in Kut dialect. The substitution of [q] with [g] is placed at the top of phonological variation scale in such dialect. That is, the mean and standard deviation of such substitution is

consonantal are (5.317) and (4.508) in Kut dialect. The substitution of [q] with [d3] type is posited at the second scale. The substitution of [q] with [k] and [q] with [G] occur at the third and fourth levels, respectively. As it is shown in the following table (2) that represents the mean, standard deviation to test the variation in general :

Table (2): Testing Variation in Kut Dialect in General

Phonological Rep.	Phonetic Rep.	Mean	Std. Dev.
q	G	5.317	4.508
	d3	0.433	0.927
	K	0.288	0.493
	G	0.000	0.000

There is no significant difference between the Kut's males and females in terms of the substitution of [q] with [g] , [q] with [k] , and [q] with [d3]. Furthermore, the substitution of [q] with [G] has never been noticed neither in Kut's males nor in females. As it is illustrated in table (3) below :

Table (3): Testing Variation between the Categories of Gender Variable

Phonological Rep.	Phone Phonetical Rep.	Dialect	Mean	Std. Dev.	P-Value	Significance
q	g	Female	5.500	3.919	0.756	None
		Male	5.133	5.090		
	k	Female	0.276	0.528	0.853	None
		Male	0.300	0.466		



	d3	Female	0.367	0.490	0.582	None
		Male	0.500	1.225		
		Male	0.000	0.000		
	G	Female	0.000	0.000	-	-
		Male	0.000	0.000		

There is no significant difference between the Kut’s education levels in terms of the substitution of [q] with [g] , [q] with [k] and [q] with [d3]. Furthermore, the substitution of [q] with [G] has never been noticed in all of the three levels of education in Kut’s speakers. As it is illustrated in table (4) below :

Table (4): Testing Variation between the Categories of Education Variable

Phonological Rep.	Phonetic Rep.	Dialect	Mean	Std. Dev.	P-Value	Significance
q	G	Uneducated	5.800	5.386	0.369	None
		Half-educated	4.150	3.964		
		Educated	6.000	4.026		
	K	Uneducated	0.350	0.489	0.623	None
		Half-educated	0.300	0.470		
		Educated	0.200	0.523		
	d3	Uneducated	0.700	1.380	0.232	None
		Half-educated	0.400	0.598		
		Educated	0.200	0.523		

		Half- educated	0.000	0.000		
		Educated	0.000	0.000		
	G	Uneducated	0.000	0.000	-	-
		Half- educated	0.000	0.000		
		Educated	0.000	0.000		

There is no significant difference among the Kut’s age categories in terms of the substitution of [q] with [k] and [q] with [d3]. Furthermore, the substitution of [q] with [G] has never been noticed in all of the three categories of age in Kut’s speakers. However, only the substitution of [q] with [g] is found in the pronunciation of Kut’s (55 – 65) years speakers more than the other two categories. As it is illustrated in table (5) below :

Table (5): Testing Variation between the Categories of Age Variable

Phonological Rep.	Phonetic Rep.	Dialect	Mean	Std. Dev.	P- Value	Significance
q	g	35 – 44	3.550	4.286	0.019	55 – 64
		45 – 54	4.950	3.692		
		55 – 64	7.450	4.785		
	k	35 – 44	0.350	0.587	0.623	None
		45 – 54	0.300	0.470		
		55 – 64	0.200	0.410		
	d3	35 – 44	0.400	0.681	0.981	None
		45 – 54	0.450	1.356		
		55 – 64	0.450	0.605		

		45 – 54	0.000	0.000		
		55 – 64	0.000	0.000		
	G	35 – 44	0.000	0.000	-	-
		45 – 54	0.000	0.000		
		55 – 64	0.000	0.000		

## 8. Conclusions

The results in Kut dialect indicate that there is not much variation in consonantal substitution among its speakers. The results of this study does not support all the hypotheses presented earlier. However, this study confirms the first hypothesis that indicates the phonological variations in Kut dialect exist in the consonants. The domain of education has more effects on phonological variation as compared with gender and age in Zubaidiyya (with percentages: 45.5%, 4.5%, 4.5%, respectively). This result falsifies the second hypothesis which indicates that “the non-linguistic variables of gender, education and age have a remarkable influence on the phonological variation in both dialects but the domain of gender has more effects as compared with education and age”. That is, the percentage of the influence of each variable is low, gender (4.5%), education (4.5%) and age (9.1%) and it seems that the domain of age is larger than both gender and education.

The results come in line with Trudgill (1972), Labov (1990) and Holes (1995) where the data of these studies show that age and educational level trigger phonological variation whereas they show no gender significance. Contrastively, they disagree with Rajab’s (2021) study where the educational level does not seem to influence the choice of variant the speaker chooses. The results state that all the variants of [q] have existed in Kut dialect except the variant [G] has never been noted in the speech of the participants. More data needs to be gathered from

different tasks to truly understand the nature of variation in such variety. Also, the results of the study also support findings from previous findings on Arabic and other languages as well. Overall, this study serves as a starting point in looking at phonological variation in Kut Iraqi Arabic specifically the rest of consonants where have not been investigated. The results are divided into three sub-sections based on the non-linguistic factors in question: gender, educational level and age. As it is illustrated below:

### **1. Gender**

The results indicate that the gender variable does not seem to affect phonological variation in the speech of Kut dialect. In results, there is no significant difference in phonological between Kut's males and females in terms of consonantal substitution process. However, female speakers have more variation than male Kut. Table (3) summarizes the mean percentages of each one of them and its relation to the gender variable.

### **2. Education Level**

The results indicate that the education variable does not seem to affect phonological variation in the speech of Kut dialect. In results, there is no significant difference in phonological among the Kut's education levels (educated, half-educated and uneducated) in terms of consonantal substitution processes. Uneducated speakers have more variation than educated in Kut and, in turn, educated have more variation than half-educated ones as it is clarified by table (4).

### **3. Age**

The results indicate that there is no significant difference in phonological variation in terms consonantal substitution among the Kut's age categories. However, only the substitution of [q] with [g] is found in the pronunciation of Kut's (55 – 65) years speakers more than the other two categories. Additionally, the category (35-

45) years has more variation than (45-55) and (55-65), respectively in Kut as it is indicated by table (5).

The analysis of results states that the domain of age variable is larger than that of education and the domains of both age and education variables respectively are larger than that of gender in Kut.

The analysis of data via the feature geometry-based model offers applicable and practicable results in terms of phonological variation and specifies the articulation tiers (place, manner and voicing) and determines which ones have been affected due to this phonological variation. It can be applied to all the mentioned types of phonological processes (substitution, metathesis and elision).

This finding verifies the fourth hypothesis which indicates that “the feature geometry based model elicits the category and directionality (position) of the phonological variation of the dialects under study”. This model works on segmental change (tiers’ features) and supra-segmental features (syllable-structure). The former is connected with the substitution and metathesis whereas the latter is concerned with elision.

Concerning the contexts in which these types of substitutions occurred in the elicited data of the participants, they are summarized in the following matrix (1).

Matrix (1) A Summary of Consonantal Substitution Contexts

Consonantal Substitution	Context		
	Initial Position	Medial Position	Final Position
q → g	+	+	+
q → k	+	+	-
q → d3	+	+	+

q → G	-	-	-
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There are some transcribed words that carrying the phonological variation in Kut dialect from the elicited data in the study shown in the following table (6):

Table (6) : Transcribed Data of Consonantal Substitution Process

Consonantal Substitution	The Phonological Form	Meaning in English	The Phonetic Form
q → g	qabuL	Before	gabuL
	muqaS	Scissors	mugaS
	Qahwa	Coffee	Gahwa
	?qarruD	I clip my nails	?garruD
	qiSab	Reeds	giSab
q → d3	Riiq	Saliva	riid3
	Qiir	Cere	d3iir
	Sadiiqii	My friends	Sidiid3ii
	Baaqila	Green beans	baad3ila
	Raqqii	Watermelon	rad3d3ii
q → g	Waqit	Time	Wakit
	Qatil	Killing	Katil
q → G	No data	No data	No data

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