ISSN: 1817-6798 (Print)
Journal of Tikrit University for Humanities
available online at: http://www.jtuh.tu.edu.iq

Nasal Assimilation in Standard Arabic With Reference To English/ A Phonological Analysis

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Keywords:
In
fi
C
M
F

A R T I C L E I N F O

Article history:
Received 4 July. 2021
Accepted 17 Aug 2021
Available online 25 Jan 2022
E-mail
journal.of.tikrit.university.of.humanities@tu.edu.i
E-mail : adxxxx@tu.edu.iq

A B S T R A C T

The present study deals with nasal consonants in modern standard Arabic . Modern standard Arabic ; that is used by broadcasters, newspapers and also used in Arabic movies. The study concentrates on nasal consonant manner in connected speech . The study hypothesizes that : (1) Arabic nasals are highly-sensitive i.e. they are liable to be assimilated in place to the following non nasal consonants . (2) Nasal assimilation in nasal consonants (NC)sequences is always regressive. (3) Variants of nasals are highly expected in Arabic.

The conclusions show that Arabic nasals consonant especially /n/ is very much influenced by the feature of place of the consonant that follows. Consequently , different variants of /n/ occur as a result of regressive assimilation in nasal consonant (NC) contexts. Thus, variants such as [ɱ] ,[ɲ],[n̪] and [ɴ]are frequent in the connected speech of Modern Standard Arabic speakers. In addition, the study confirms the universality of the linear phonological rules of assimilation.

DOI: http://dx.doi.org/10.25130/jtuh.29.1.1.2022.25

الادغام الانفي في اللغة العربية مع الاشارة الى اللغة الانكليزية/ تحليل صوتي

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الخلاصة:

تتناول الدراسة الحالية الاصوات الصحيحة الانفية في اللغة العربية الحديثة ويقصد بها اللغة المستخدمة من قبل المذيعين وجرائد الصحف وكذلك الافلام .حيث تركز الدراسة على حالة النطق للأصوات الانفية الصحيحة في الكلام المتواصل. تفترض الدراسة ما يلي :

1. الأصوات الأنفية في اللغة العربية تكون ذات احساس عالٍ . اي إنها مسؤولة في أن تكون

مدغمة في مكان الاصوات الصحيحة غير الأنفية التي تليها

2. الإدغام الأنفي في سلسلة الاصوات الصحيحة الانفية يكون دائما رجعيا.
3. الاختلافات في الاصوات الانفية موجودة بشكل عالٍ في اللغة العربية.

تبين النتائج ان الاصوات الصحيحة الانفية في اللغة العربية وخاصة صوت (ن) يتأثر كثيراً بصفة المكان للصوت الصحيح الذي يليه. وبناءً على ذلك, اختلافات عديدة لصوت (ن)تقع كنتيجة للإدغام الرجعي في نصوص الكلام الذي تأتي فيه الأصوات الصحيحة. لذلك فالأصوات المختلفة مثل (م) و (ن) حالات متكررة في الكلام المتواصل لمتكلمي اللغة العربية الحديثة بالإضافة لذلك الدراسة تؤكد عالمية القواعد الصوتية للإدغام .

Key words : nasal , assimilation, phonology, consonant, Arabic, articulation

الكلمات المفتاحية : أنفي , إدغام , علم الصوت , صوت صحيح , اللغة العربية , نطق

Consonants of Modern Standard Arabic, taken from Amayreh(2009:518)

No	Arabic letters	Consonantal phonemes	Description
1	ء-أ	/ʔ/	Voiceless glottal stop
2	ب	/b/	Voiced bilabial stop
3	ت	/t/	Voiced alveo –dental stop
4	ث	/θ/	Voiceless interdental fricative
5	ج	/ʤ/	Voiced palatal affricate
6	ح	/ħ/	Voiceless pharyngeal fricative
7	خ	/χ/	Voiceless uvular fricative
8	د	/d/	Voiced alveo – dental stop
9	ذ	/ð/	Voiced inter – dental fricative
10	ر	/r/	Voiced alveo – dental trill
11	ز	/z/	Voiced alveo – dental fricative
12	س	/s/	Voiceless alveo – dental fricative
13	ش	/ʃ/	Voiceless palatal fricative
14	ص	/ s̲ /	Voiceless alveo – dental emphatic fricative
15	ظ	/d̲/	Voiced alveo – dental emphatic stop
16	ط	/t̲/	Voiceless alveo – dental emphatic stop
17	ض	/đ̲/	Voiced inter – dental emphatic fricative
18	ع	/ʕ/	Voiced pharyngeal fricative

19	غ	/ɣ/	Voiced uvular fricative
20	ف	/f/	Voiceless labio – dental fricative
21	ق	/q/	Voiceless uvular stop
22	ك	/k/	Voiceless velar stop
23	ل	/l/	Voiced alveo – dental lateral
24	م	/m/	Voiced bilabial nasal
25	ن	/n/	Voiced alveo – dental nasal
26	ه	/h/	Voiceless glottal fricative
27	و	/w/	Voiced bilabial glide
28	ي	/j/	Voiced palatal glide

Chapter One

1.1 Introduction

The study tries to shed light on an interest subject of not only concern contemporary Arabic phonetics, but, also to phonological universal. It studies the nasal sounds /m/ and /n/ in modern standard Arabic (MSA) phonetically and phonologically. Linear assimilation rules are applied to examine the process of nasal assimilation which clearly shows how /n/ is changed or assimilated phonetically in various contexts due to the impact of the nature of the following consonants .

1.2 The Problem

The realization of assimilation in English and Arabic is not an easy task. Assimilation is a problematic phenomenon whether it occurs in the word or two words connected together. Moreover, nasal consonants are also important in determining assimilation in both English and Arabic therefore, this research is conducted to explain all the above mentioned aspects.

1.3 The Aims

The study aims at :

a- Describing Arabic nasal assimilation with references to English ones.

b- Identifying nasal variants resulting from place assimilation .

1.4 Procedures

a- Rules of linear assimilation are applied to describe procedures of nasal place assimilation in nasal consonant (NC) sequences.
b- Phonemic as well as allophonic changes of /n/ and /m/ are described so as to identify the variants of the nasals particularly /n/ in different phonetic contexts.

1.5 Hypotheses

The study is directed to testify the following hypotheses:

a- All nasal assimilations are regressive in NC sequences.
b- /n/ is more liable to change its place feature than /m/ ; Therefore, more variants of /n/ are expected in Arabic.

1.6 Value of the study

The study is expected to be useful to learners of English and Arabic for the following reasons:

a- The study helps the learners to be acquainted with the application of assimilation rules in the analysis of nasals.
b- It makes them aware of the phonological patterns in which a nasal is assimilated to the following non nasal consonant in nasal consonant (NC)sequences.

Chapter two

Nasal Assimilation in Modern standard Arabic

2. 1 Definition of Assimilation

Assimilation in Arabic is defined linguistically is the entering of one thing into another .It can be defined idiomatically as the mixing of two identical or neighboring letters that they are pronounced as one letter (Ibn Manzur, 1956 : 435). Assimilation is defined as an " influence exercised by one sound upon the articulation of adjacent sounds, so that the sounds become more alike or identical" (Sãher, n. d; Anis, 1975 : 178) .).

2.2 The Description and Distribution of /m/ and /n/

There are two nasals in Arabic, are /m/ and /n/ . They can be described as follows:

1-/ n /is a voiced alveolar nasal. Nasals are produced with a lowered velum in the nose (Fant, 1960 ; Hassan,1984 ; Johnson, 2003 ; Rabiner and juant, 1993) The Arabic bilabial /m/ is produced when the lips come together while the alveolar nasal /n/ is formed with the front of the tongue on the alveolar ridge. In both cases the air releases through the nose because the soft palate is lowered and the air path to the mouth is blocked.
Let us Examine their distribution below:

1- Initial position -/ maktab / ‘ office ‘

2- Medial position -/ jaʔmal / ‘ he works’

3- Final position -/ kam / ‘ how much’

- /n/ distribution :

1- Initially - / ‘namir / ‘ tiger ‘

2- Medially - / ‘ ʔanta / ‘ you ‘

3- Finally - / ‘ Isˈa:n / ‘ tongue ‘

2.3 Place Assimilation of nasals in Modern

Standard Arabic :

The phenomenon of assimilation particularly, place assimilation of non-nasals, is widely studied in Arabic. This chapter, however investigates the pattern nasal consonant -NC- in modern standard Arabic (MSA) which undergoes place assimilation of nasals in connected speech. (yousif, 2001 ; Al- Jawari, 1997).

Assimilation is spread throughout the entire language and can be found almost in every word in different degrees of assimilation. Whenever the words are articulated in connection assimilation is always employed (Anis , 1975 : 178 ; Al-Hamad , 1986 : 386) .

It is noted that nasal consonants clearly show place assimilation more than non-nasals do, particularly in -NC -sequences (Al- Hamad , 1986 : 426) . The following section will be devoted to examine the behavior of /n / ;thus, it will focus on phonemic and allophonic changes of / n / .

2.3.1 Phonemic changes of / n /

The behavior of /n/ in – NC – sequences will be examined in this context, N is sãkine since it is not followed by a vowel . kew (2001) uses the diacritic [°] to indicate the absence of a vowel after the base consonant. This ‘ ring ‘ stands for sukun .

2.3.1.1 Complete Assimilation :

When / n / immediately precedes / I / or / r /, complete assimilation occurs . The place feature of / n / is easily affected by the place feature of the following consonant . The direction of assimilation is regressive as in the following instances from MSA :

/ ʔin ‘rabiha / → / ʔir rabiħa / if he won .

/ man ‘ la:mahu / → / mal ‘la:mahu / ‘ who blamed him ‘

The phonological process occurs at word boundary and has the following rules : / n / → /r / ——— r

/ n / → /I / ——— I

Complete assimilation may also occur when / n/ is followed by either/ w / or / j/ . In this case , regressive assimilation is found in the following examples :

/ ‘ man ‘jaʕmal / → / ‘maj ‘ jaʕmal / who works ?

/ ‘ man ‘waqafa/ → / ‘maw ‘waqafa / who stood ?

The rules describing this process can be written as follows :

/ n / → / j / ——— j

/ n / → /w / ——— w

Nasalization in these examples are quite noticeable. Thus, the geminates – jj – and – ww – can be said with nasalization . Astũti (2003), studying regressive assimilation, argues for the opinion that / j / has tendency to be nasalized when it comes into contact with nasals just like the tendency of vowels when nasalized before or after nasal consonant . In consonant Arabic (CA), this assimilation is called (idgham bi ghunna) (nasalized

coalescence) (Al-Qaysi , 1990 : 27). When / n / is followed by / m/ complete assimilation occurs which yields a geminate [- mm-] for example : / ‘ man ‘ maʕi : / → / ‘mam maʕi: / who with me ? Thus, the rule describing this type of assimilation can be stated as follows : / n / → / m/ / – m

2.3.1.2. Partial Assimilation :

Sometimes, /n/ is followed by /b/ either at syllable boundary constituting the abutting consonant - nb – or at word boundary. In both cases, / n/ is changed into / m / under the influence of the following bilabial stop so that both sounds become alike with respect to place of articulation .

The rule account for this process can be stated as follows : / n / → / m / / - b

Let us examine the following instances:

a- At syllable boundary:

/ man’bu:ð / → / mam’bu:ð/ ‘discarded’

b- At word boundary:

/ muta’ʕalliqu:n ‘bihi/ → / muta’ʕalliqu:m ‘bihi/ ‘connected with’

In CA, this assimilation is called “iqlãb’ (see, Anis, 1975: 73; Al- Hamad, 1986: 443; Al- Aqrabãwi , 2003: 59).

2.3.2. Allophonic changes of / n / :

At this point in investigation, I will try to cover all the allophonic or variants of / n / that may occur during speech whether at syllable or word boundary in – NC – sequence. The phonetic contexts for this assimilation make it necessary for the phoneme / n / to occur before sounds whose places of articulation are labiodental, interdental, dental or alveolar, velar and uvular . Arab phoneticians have studied this type of / n / in their investigation and called / nu:n alkhafiffa / or / ?alekh‘fa / , i.e. the light or hidden (n) .The whole assimilation process is called ‘ikhfa’ (see Anis , 1975 : 70f ; Bakalla , 1980 : 5 ;

Al-Qaysi , 1990 : 28f ; Al-Aqrabãwi , 2003 : 61f) . The following section presents / n / variants or realizations in MSA

2.3.2.1 The multiple realizations of / n / :

(a) / n / + / f / :

When / n / is followed by the labiodental fricative / f / , an audible [ɱ] occurs which is characterized as labiodental nasal. (Bakalla , 1980: 5 ; jansen , 2005 : 20) / ʔan'fa:l / →] ʔaɱf' ['works of supererogation' This sequence of nf can also be noticed in Arabic words having the structure cvcc : /ʔanf / → [ʔaɱf'] 'nose' /ʕunf / → [ʕuɱf] ' violence '

It is found that [ɱ] is frequent MSA , this is because – nf – is permissible especially in medial position. The two sounds – nf – are close to each other with respect to place of articulation. Examples : /'dʒalsatun fil 'jawmi / →] dʒalsatuɱ fil 'jawmi ['a session per day' The rule describing this variant can have the following form : [n] → [ɱ] / – f

(b) / n / + / ð , θ ,ð /:

Sometimes, / n / occurs before the interdental Arabic sounds /ð , θ , ð / In [-nð] , [-n θ-] and [-nð] sequences, / n / does not retain its place features as when said in isolation (Al-Aqrabãwi , 2003 : 16f). The dental features is anticipated in the production of / n / . Thus, it becomes dental.

The rule can be stated as follows : / n / → [n̪] / – ð , θ , ð / At syllable boundary : / ' munðu / → [mun̪ðu] 'since' /ʔunθa:/ →['ʔun̪θa:] 'female' /ʔunður / → ['ʔun̪ður] 'look' (for mas , sing, imp) 'earthen' [3: θn̪] , 'southern' [sʌðn̪] (Gimson , 1970 : 197). The rule specifying dental nasal is : / n / → [n̪] / – θ , ð /

M	**Labial**
ɱ	**Labiodental**
n̪	**Dental**
N	**Alveolar**
Ŋ	**Velar**

Table (1) : The Allophonic of Standard English Nasals

2.4.Place changes of / m / :

Great attention is directed to investigate the manner of the Arabic nasal / m / in speech, particularly in – NC – sequences. The analysis presents an indication that / m / is less liable to be changed or assimilated than / n / is .

2. 4.1 Complete phonemic changes :

When word-final /b/ is followed by another word starting with / m / , complete assimilation occurs with / m / . This process of assimilation yields a geminate – mm – (Anis , 1975 : 185) ; hence / b / →/ m / / – m /

The following examples are found in MSA :

/’ʔiIʕab ‘maʕahu / → [‘ʔilʕam ‘ma:ʕahu] ‘ play with him ‘

/’ʔuktub ma :’ʕindaka/ →[ʔuktum ma :’ʕindaka] ‘write what you have in mind ‘

The sound / b / is assimilated to / m / resulting in a regressive assimilation.

(c) / n / +/ʃ ,ʤ/:

When / n / occurs before one of the two palatal consonants, i.e. /ʃ/ and /ʤ/ , a palatal nasal occurs. (Bakalla, 1980: 5 ; Al-Aqrabãwi , 2003 : 16f).

The following instances illustrate this variant.

- /ʔin ‘ʃa:ʔ / → [ʔiɲʃa:ʔ] ‘ construction ‘ .
- /ʔin ‘ʃa:ʔal’la:h/→ [ʔiɲʃa:ʔl’lãh] ‘ If Allah will ‘ .
- /χinʤar / →[χiɲʤar] ‘dagger’

This assimilation rule can be stated as follows :

[n]→[ɲ]/ – ʃ ,ʤ /.

(d) / n / + / k / :

When / n / is followed by a velar consonant / k / , a velar nasal variant occurs (Bakalla , 1980 : 5). The assimilation rule can be stated as follows : [n] → [ɲ] /---- / k /

as in the following examples :

/ ʻʔinʼkasara / → [ʔiɲʼkasara] ʻbroken'

/ ʻman "kataba / → [ʻmaɲ ʻkataba] ʻwho wrote ?'

(e) / n / + / q / :

When / n / precedes the Arabic uvular consonant / q /, the uvular nasal / n / can be heard which is a variant or member of phoneme / n / (Bakalla ,1980 : 5) . This process of assimilation is called 'Ikhfã' as stated before (Al-Qaysi , 1990 : 39) .

- The uvular nasal can be found in the following examples :

/ ʻʔanqa :/ → [ʻʔaɴqa:] ʻ purer ʻ

/ ʻmanʼqa:la / → [ʻmaɴʼqa:la] ʻwho said ?'

- The rule formed as follows : [n] → [ɴ] / – q

(f) /n/ + /χ , ɣ/ :

The framework of the traditional Arabic rules, / χ / and / ɣ / are considered pharyngeal sounds, and therefore, / n / before them should be uvular nasal (Sayf , 1987 : 20 ; Al-Qasyi , 1990 : 21 ; Al-Aqrabãwi , 2003 : 51) . However it seems that identifying the place of articulation of these two sounds has been controversial (see Al-Nu'aymi, 1980 : 307)

-This variant can be heard in the connected speech of speakers of Arabic , for example :

/ ʻminχa:r / →[ʻmiɴ ʻχa:r] ʻa nose ʻ

/ ʻmanʼχaradʒa/→[ʻmaɴʼχaradʒa] ʻ who went out ʻ

- The uvular [ɴ] may come before / ɣ / as a result of assimilating / n / to the following / ɣ / . It is possible to have the following pronunciation in connected speech.

/ʔin'ɣamasa/ →[ʔiɴ' ɣamasa] 'be plunged '

/ 'man' ɣa:ba/ → ['maɴ' ɣa:ba] 'who was absent '

Arabic uvular consonants, on the other hand, are articulated with a constriction location at the level of the uvular , and the constriction is formed by backing the tongue dorsum toward the uvular (Ghazeli , 1977)

2.4.2 Partial Allophonic changes :

When / m / is followed by / f / , there may be a tendency to assimilate / m / to the following labiodental fricative, thus / ɱ / may be heard in the articulation of the following examples :

/ 'hum fa:ʔl'zu:n/ → ['huɱfaʔl'zu:n] 'they are winners '

/lamf/ → [laɱf] ' lymph ' .

Here in these examples, we observe the fact that the places of articulation of /m / and / f / are close to each other. Thus, the rule can be stated as follows : [m] → [ɱ] / – f / .

ɱ	**Labiodental**
n̪	**Inter Dental**
n̠	**Alveo_ dental**
ɲ	**Palatal**
ŋ	**Velar**
ɴ	**Uvular**

Table(2): The Variants of / n / in Connected Speech

Chapter Three

3.1 Assimilation in standard English

Assimilation in English generally is defined as the change of one sound into another sound under the influence of a neighboring sound. (Abercrombie , 1967

:133). This section focuses on the effect of the adjacent sounds on the articulation of the preceding English nasals. Also, it gives an account of the different allophones of the nasal phonemes in nasal consonant (NC) sequences.

The basic characteristic of a nasal consonant is that the air escapes through the nose. For this to happen, the soft palate must be lowered; in the case of all the other consonants and vowels of English, the soft palate is raised and the air cannot pass through the nose, (see Roach, 2009: 46).

Assimilation in English is classified into three types. (Roach 2009:111), defines two kinds of assimilation:

1- Regressive assimilation: if the final consonant changes to become like the initial one in some way, then the assimilation is called regressive in other words the phonemes that comes first is affected by the one that comes after it.
2- Progressive assimilation: if the initial sounds changes to become like the final one in some way, then the assimilation is called progressive.
3- Coalescent assimilation: When two sounds mutually influence one another and become combined to produce a sound other than themselves, coalescent assimilation is said to have taken place. (Zahfarani, 2009: 65).

3.2 The Distribution of English nasals

/m/

Initial /m/ as in : map

Medial /m/ as in : remain

Final /m/ as in : problem

/n/

Initial /n/ as in :nasal

Medial /n/ as in : manner

Final /n/ as in : soon

/ŋ/

It has unusual distribution, it doesn't occur initially. Medially, ŋ occurs quite frequently as in : bank → [bæŋk]

Finally as in : sing [sɪŋ] (Roach, 2009 : 46-47).

3.2.2 Place Assimilation of nasals in Standard English

One of the most common forms of place assimilation is found with nasals assuming the place of articulation of the following non nasal consonant (Roach , 2009: 107). There are indeed, many well- known instances where nasal consonants show more place assimilation than non- nasals. Such assimilation may occur within the same word or at word boundary. It seems that the variable behavior of - n- is not random, there are statistically favored patterns. In this regard, Locke(1983) finds that 93.3% of NC clusters in English are homorganic. Changes in voicing, place and manner of articulation yield different phonemes. Thus, English has the three nasal sounds [m] , [n] and [ŋ] (Christophersen, 1956: 111;O'Grady et al , 1997 : 27).

3.2.3.1 Phonemic changes /n/

There is a noticeable tendency among speakers of English to assimilate /n/ to /m/ and this happens when /n/ occurs in word-final position followed by words starting with a bilabial stop or nasal (Carr, 1993 : 72). The following instances are noticed :

‘ ten pairs ; /’ tem ‘peəz/
‘ ten balls ‘ / ‘ tem ‘ bo:Is/
‘ ten mats’ / ‘ tem mæts/.
The phonemic rules specifying this type of assimilation is :
/n/ →/ m/ — / m, p , b/
the alveolar nasal may be assimilated to /ŋ / at word boundary or in word (Carr, 1993 : 72).
Thus / n / in ‘ten’ , for example, is assimilated to / ŋ /if it is followed by a word starting with velar sounds – like / k , g /.
Example :
1- ‘ ten cups ‘ [teŋ kʌps]
2- ‘ ten girls ‘ [teŋ gʒ:Iz]

The rule describing this assimilation can be stated as follow: / n / → / ŋ / / ——— k , g /

3.2.3.2 Allophonic Changes :

As mentioned earlier, there is a mutual influence of sounds exerted on each other in connected speech. This tendency towards assimilation results in phonetic variations which, mostly depend on the nature of the phonetic context in which they occur (Gimson , 1970 : 290). In connected speech, English nasals, undergo many variations which mostly exhibit striking changes of the nasals' phonetic features. These variants of nasals may occur at syllable or word boundary. Table (1) below shows the nasal variants in SE.

The following nasal assimilation rules accounting for the behaviour of nasal variants are allophonic mostly based on LadeFoged (1993):

1- In English, a labiodental nasal [m] may occur when / m / or / n / comes before / f / or / v /. Such an allophone occurs in words or phrases like : - ' comfort ' → [kʌɱfət] - 'triumph' → ['traɪəɱf] - ' on fire ' → [oɱ'faɪə] - 'ten forks' → [teɱ 'fɔ:ks] Thus, the rule for labiodental nasal can be stated as follows : / m / , / n / → [ɱ] → / ——— f , v /

2- English dental nasal [n̪] may occur only allophonic before the two dental fricative phonemes / θ , ð / . This allophonic variant can be heard in the pronunciation of the words or groups of words : ' tenth ' [teṉθ] , ' ninth ' [naɪn̪θ] . And sometimes when following / θ , ð / for instance

Chapter Four

Conclusions:

So far, the study has dealt with MSA nasals with their behavior in different phonological context. It mostly examines the variants of / n / in NC sequence. The findings of the study can be summarized as follows:

1- The sequence the alveolar nasal forms with the following consonant viz NC is quite regular in Arabic.

2- In such sequences, the nasal is assimilated in place to the following consonant. The process is called nasal assimilation which is widespread in both SE and MSA.
3- / n / undergoes nasal assimilation at syllable or word boundary resulting in complete assimilate or partial assimilation (i.e. Allophonic variation).
4- The linear assimilation rules are regressive.
5- Referring to SE, more nasal allophones occur in MSA and the most retracted allophone in MSA is [ɴ] which is uvular, besides the palatal nasal .
6- [ŋ] is an allophonic of / n / in Arabic while it is a phoneme in SE though there is an increasing tendency to consider it an allophone of / n / .

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