Exploring The Phonetic And Phonological Nature of Neutralisation

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Abstract:

Neutralisation is a phonological term referring to the conditioned limitation on the distribution of a system's contrastive values. It involves the dynamic reduction and / or the static limitation of contrastive values within lexical form.

The notion of neutralisation is important . It's importance concerns the status of the phonemic principle . And once we established the status of phonemic principle, then we have to confront the fact that two (or more) sounds are in parallel distribution and of different phonemes .

- Key Words:- Neutralisation , opposition , Archiphoneme , Vowel Epenthesis.

1- introduction:

Phonology has shown that it is not so important to oppose form to meaning , but to distinguish within form between what can be identified , i.e. linguistic reality. That there is a difference between the two , opens new insights to the study of neutralisation, which is , ignoring some complexities a phonological term used to refer to the loss of the distinction between two phonemes in a particular environment , as when the /I/ and /i:/ are neutralized to /i/ in final-word syllables ending with – Y or – ey , generally known as happy words .

The general theme of this paper is to understand the place of neutralization within phonology as a field of study and to show the relationship between phonetics and phonology as far as neutralisation is concerned .

2- A Theoretical Survey:

The concept of neutralisation derives originally form the work of the Prageanphonologist Nikolai Trubetzkoy(1890-1939) who first investigated the neutralization of contrast . Lass (1984:40)assumes that Trubetzkoystarts from the fact that segment can appear in three cases : 1) segments can be in parallel distribution, i.e. they are potentially distinctive as in the case of English /p/ and /b/ .2) segments can be in parallel distribution , where they are not in complementary distribution ,

as when /p/ versus the aspirated /p^h/ sound and 3) the case where there are some oppositions which are relevant only in particular position , because only in these position can one or the other member appear .

Fischer-Jørgensen (1975:29) claims that Trubetzkoy distinguishes between context – determined neutralization which is dependent on the surrounding phonemes as in the case of voiced / voiceless sound preceding stops or fricatives, and structure – determined which depends on the position in a word or a syllable or an accent as in the case of voiced / voiceless in syllable-final position.

Clark and Yallop (1995:111) add that Trubetzkoy distinguishes three kinds of neutralisation :1) neutralisation can be inoperative or neutralized word-finally in the case of voiced and voiceless plosives when they are unconstructed in this position, 2) neutralisation may be represented by alternation among the contrasting phonemes which are in free-variation as in the case of contrast between /au/ and /auə/ which is neutralized before /r/ where there may be indeterminate variation between the diphthong and the triphthong, and3)neutralisation may be represented by a sound distinct from both of the contrastive phonemes as in the English tendency to reduce all vowels to the so-called intermediate schwa sound.

Jones (as cited in Fischer-JΘrgensen;1975:55) assumes that when confronted with a sound occurring in a position where an opposition is suspended, one has to decide which of the two members it should be identified with, mostly it is identified with the member it resembles most. He explains this giving the example of /z/ and /s/ which do not have opposition word-finally after stops and fricatives. For instance, after an unvoiced sound,,e.g. "puts" /puts/, it is often a lenis /s/ which should be marked as /ẓ/ and which may be identical with initial /z/ as in "zeal" /zi:l/which is opposed to /s/ as in "seal" /si:/. In this case, the final /z/ according to Jones should be identified with/ẓ/.

Thisleads to the premise that the concept of neutralisation is based primarily on that of phonological opposition which was originally flourished in the work of the Prague School, Functional Phonology, Glossematics and then was incorporated into Generative Phonology

through the influence of Jakobson(Akamats,1992:81 Hawkins,1984:104, Fischer-JΘrgensen;1975:29).

3-Types of Opposition:

Since in cases of neutralisation, the opposition between the two phonemes contrasted disappear in certain cases-it is important to know what opposition is and what are its types and subtypes.

Crystal(2003:327) defines opposition as" a phonological term used to refer to the contrasts between distinctive features of sounds, or between the presence or absence of a feature". It is to be mentioned that that there is a difference between contrast and opposition, the former referring to the distinction within the chain of phonemes; whereas the latter to the distinctions in the system(Malmberg,1963:93).

Lass(1984:43) and crystal (ibid) give a thorough explanation of the types of opposition . starting with the main types; opposition can be :1) bilateral, and / or 2) multilateral . Bilateral opposition is restricted to two phonemes only as a basis for comparison. Thus , in English , the opposition between /t/ and /d/ is bilateral since these are the only units in the system which are alveolar/plosive , and they are differentiated by voicing . Likewise , the opposition between /k/ any /g/ is bilateral since the features velar/ plosive are common to no other member of the system . A multilateral opposition , on the other hand , depends on the basis for comparison that occurs in more than two segments . So the opposition between /t/ and /Θ/ is multilateral because there is more than one parameter of contrast as /t/ is alveolar / plosive ; Whereas /Θ/ is dental / fricative .

Opposition has itsown subtypes , these are : 1) proportional Vs. isolated , 2)privative , gradual and equipollent , and 3) constant and neutral sable.Proportional opposition refers to a sequence of at least two oppositions implemented in the same way ; requiring at least four members as in /p/ : /b/ : /t/ :/d/ ; Whereas isolated opposition uses only one pair in the whole system ,so the distinction between /v/ and ,

fricative sound ; whereas /l/ is a voiced , lateral , i.e. there are no other segment that are contrasted in this way .

Sommerstein (1977:52) expounds that a privative opposition is termed the marked pole as one member is characterizedby the presence of and the other by the absence of some feature, i.e. it is a binary one. Thus, /m/:/b/, /n/:/d/ are privative as each pair is nasal vs. non-nasal. A gradual opposition, on the other hand depends on degrees or graduation of some property as in the property of vowel height. Moreover, the distinction between /p/ and /k/ cannot be analyzed as a difference along a single phonetic continuumfor /p/ cannot be seen as non-alveolar, nor /k/ as non-bilabial, so here the opposition is one of logical equivalence.

We are left with a contrast opposition which exists in pairs whose members can occur in all possible positions as in the case of /p/ which might be found in contrast with /b/ in English language; whereas the distinction between /t/ and /d/ is neutralisablesince there is no such contrast in some position as when /t/ follows initial /s/ as in "stick" /stIk/ which does not contrast with *"sdick" /zdIk/.

4- Cases of Neutralisation

Gimson(1980:53), Hawkins(1984:104-6) and Collins and Mees(2008:72) state that there are certain cases of neutralisation of the allophone of /m/ and /n/ before /f/ or /v/, in words like "emphatic" /ImfætIk/, "infatuated"/InfætʃueItId/, "symphony" /sImfənI/, and "infant" /Infənt/. In each case, the nasal consonant is [ɱ] in rapid speech, which is a labio-dental sound anticipating the labio-dental /f/. So, there is no way of knowing whether /ɱ/ stands for /m/ or /n/ as both are nasal and voiced; /m/ is bilabial and /n/ is alveolar.

Another case of phonemic neutralisation is the realization of stops in syllable- initial clusters after /s/ in English in"spar" /spɑ:/, "star" /stɑ:/ and "scar" /skɑ:/, where after /s/, the fortis stops have none of the energy and aspiration of the other allophones of /p, t, k/. Generally speaking, English has aspirated stops at the beginning of stressed syllables, e.g. "top" /tʰɒp/ but lacks aspiration after /s/ as in "stop" .

When /p, t, k/ follow an initial /s/,however, they are realized with no aspiration which accompanies /b, d,g/. So words like"spin" /spIn/, "steam" /sti:m/, "scum' /skum/, can be phonemically transcribed as /sbIn/, /sdi:m/, and /sgum/ respectively without ambiguity since /p, t, k/ are never opposed to /b, d,g/ following /s/ in this position. The voicing contrast is also neutralized in these instances:1)initially, "tip/dip" /tIp/, /dIp/, 2)finally "cat/cad" /kæt/, /kæd/,3) after /l/ s in "kolt/cold" /kɒlt/, /kɒld/,4)after nasals as in "shunt/shunned" /ʃʌnt/, /ʃʌd/ , and 5) the rule of devoicing that devoices /z/ of the English plural suffix to /s/ after voiceless obstruents as when "cat-s" /kæt-z/ is changed to /kæts/ (Gussenhoven and Jacobs,1998:54).

A further neutralisation can be observed in the formation of English plurals as in "ropes/robes" /rɒps/, /rɒbz/, "docks/dogs" /dɒks/, /dɒgz/, "bits/bids" /bIts/, /bIdz/, although professor Dr. Ghalib B.M Ghalib (in his Ph.D.lectures) assumed that these are quite evidently morphophonemic instances.

Neutralisation is also found in the final sounds in words like "happy" /hæpi/, "valley" /væli/, and "coffee" /kɒfi/, which are generally called"happy words" and can be realized as the /i/ of "kit" /kIt/ or the /i:/ of "fleece" /fli:s/. So phoneticians used the special symbol /i/ with the effect termed "happy tensing" as a way of solving this problem since both pronunciations are correct.

5-The Archiphoneme:

Phonologists (Crystal;2003:31, Fischer- JΘrgensen,1975:30; Clark and Yallop, 1995:112 and Trubetzkoy 1969:69 as cited in Hawkins,1984:108) seem to agree that the archiphoneme may be realized as a sound which is phonetically identical with one of the members of the opposition, or a sound intermediate between two members or it may vary, i.e. when the contrast between the phonemes islost in certain positions in a word as in the cases of plosives following initial /s-/ . So, to choose either the voiceless transcription /skin/ or the voiced one /sgin/ would be to attribute the element with a contrastive status it does not possess. The solution suggested by Trubetzkoy

(1969:108-as cited in Lass , 1989:41) is to use a capital letter /K/ in /SKIn/ to stand for the archiphoneme .

Trubetzkoy (1969:69) – as cited in Hawkins , 1984:108 –states that the archiphoneme " consists of the shared feature of two (or more) closely-related phonemes, but excludes the feature which distinguishes them" . Thus , the archiphoneme of /P:b/ consists of the features bilabial and plosive , but excludes voicing which separates them .

Giegerich (1992:245) assumes that there are three crucial conditions under which an archiphoneme analysis is possible :1) an archiphoneme may be posited where two or more phonemes fail to contrast . Thus English /ə/ might be judged to be an archiphoneme representing the neutralisation of vowel contrasts exhibited in stressed syllables , 2) the phonemes that fail to contrast must constitute a natural class and 3) the realizations of an archiphoneme are context – specific and this is only relevant where an archiphoneme has more than one realization .

6 - Vowel / Zero neutralisation in Iraqi Arabic:

In Iraqi Arabic , vowel epenthesis , that is the insertion of a sound or an unetymological letter within a word ,neutralizes vowel / zero contrasts in accordance to the quality of the inserted vowel. More specifically , epenthesising [a] in a word – final cc-cluster obliterates the underlying contrast on the surface . For example [daras] can be the output of either /daras/ 'he was taught' or /dars/ 'lesson' (with epenthetic [a]) . What is important here is that the epenthetic [a] which may either be a zero and / or a lexical /a/ are both described and transcribed as being the same as they behave the same towards phonological processes .

Dinnsent and Charles- Lucc (1984:49) assume that neutralisation values phonetically obliterate the differences between segments which are phonologically contrastive in other contexts and other levels of representation , but little or no empirical evidence has been offered in support of neutralisation rules .

As such , this paper shows such rules of neutralisation mainlyby studying the underlying vowel/zero contrast which is apparently neutralized though vowel epenthesis in Iraqi Arabic .

7- The Experiment :

7-1 Design:

7.1.1 Participants:

Ten native speakers of Iraqi Arabic aged between 20 and 50 (median age=25) participated in this experiment.

7.1.2Materials:

The stimulus set in this experiment is composed of ten [cv1cv2c] minimal pairs. Those pairs were contrasted with their v2 underlyingly which is in this case either epenthetic or lexical. Those pairs are all quasi-randomized.

No.	V_2 lexical	V_2 epenthetic
1	[ðahab] 'he went'	[ðahab] 'gold'
2	[Šaraf] 'to spent'	[Šaraf] 'exchanged money'
3	[dakhal] 'to enter'	[dakhal] 'income'
4	[baɣath] 'to send'	[baɣath] 'resurrection'
5	[sahar] 'to charm'	[sahar] twilight'
6	[daraɣ] 'to put into list'	[daraɣ] 'stairs'
7	[ʃaɣar] 'to feel'	[ʃaɣar] 'hair'
8	[faham] 'to make understand'	[faham] 'coals'
9	[ðakar] 'to mention'	[ðakar] 'male'
10	[ʃaʒar] 'to plant trees'	[ʃaʒar] 'tree'

There is a kind of compromise phonologically and lexically. Phonologically , the words of the form CV1CV2C are stressed on V1. And lexically, each pair in the stimulus set is matched for frequency .

This research paper investigates frequency matching based on subjective judgments by ten native speakers of Iraqi Arabic . It is subjective because there is no electronic data base of this colloquial dialect since only standard Arabic is used for written scripts . The situation is more complex in Arabic since there is no way of indicating short vowels and this results in ambiguity as 'bahath' may stand for ' research' or ' he searched' .

7.1.2**Procedures** :

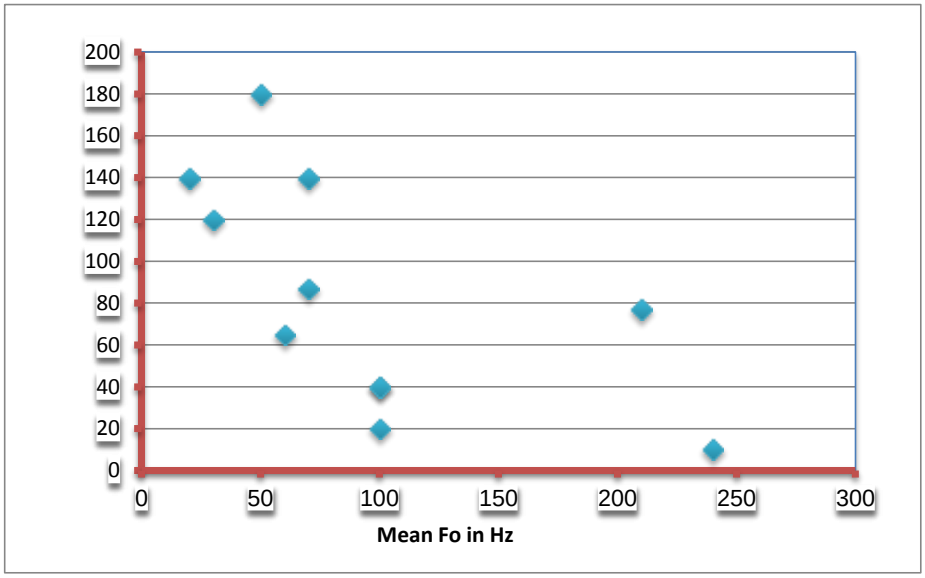
Participants were instructed to read each pair of words separately using mono microphone in the laboratory of phonetics. Recording was then digitized at a sampling rate of 22,oo KHZ using the program of Praat for Sound Analysis.

7.1.3 Results:

Figure 1 and 2 show the mean and the SD values of epenthetics and lexicals as follows:

Mean and SD values of (a)

	[a] lexical	/a/ epenthetic
FO(Hz) 240246		
Duration	84	75
Intensity	62	60.2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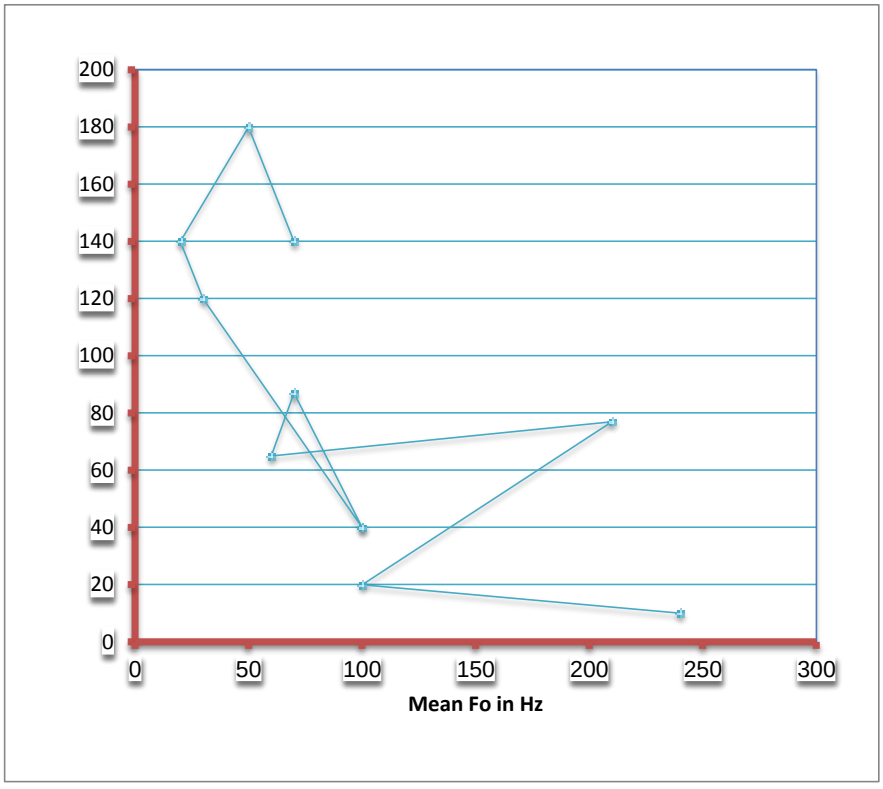
Mean Fo in Hz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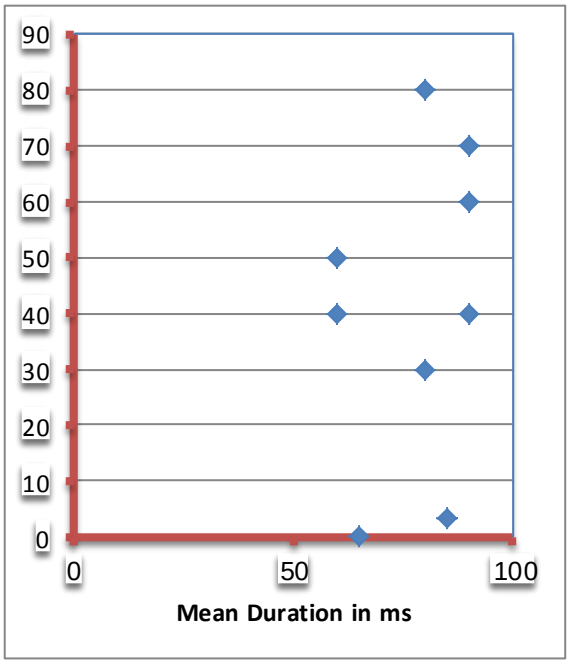

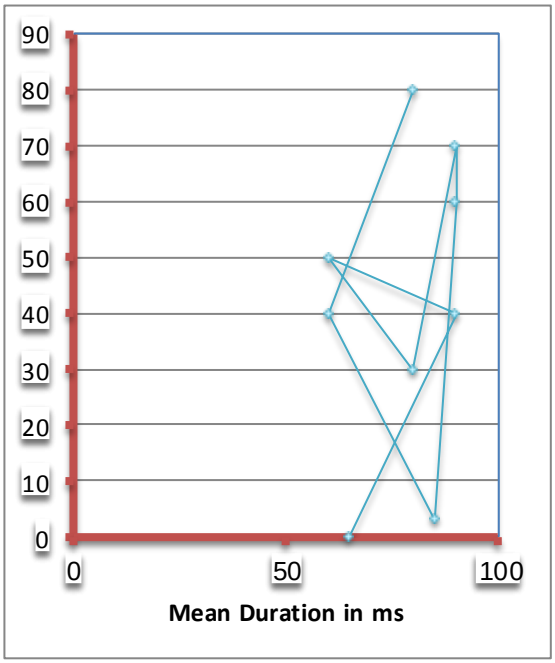

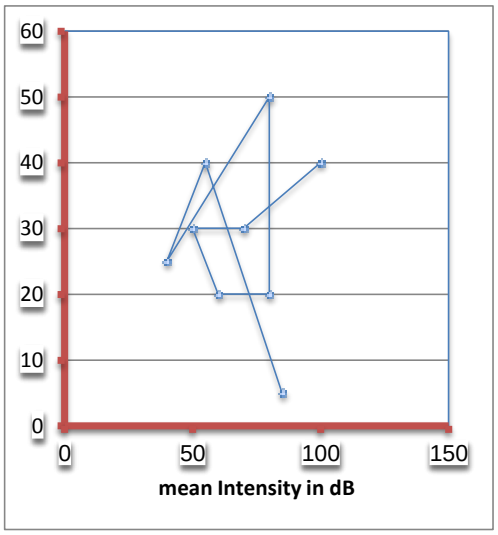

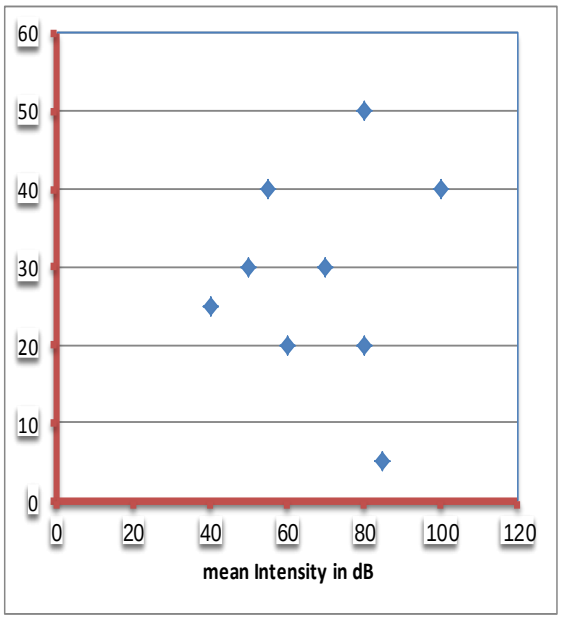

The graphs on the right-hand side show that the mean value is closer to the zero – difference reference line than most individual paired difference . The graphs also show that all speakers produce more intense epenthetic [a] than lexical /a/ .

7.1.4 Discussion :-

The experimental data give an account of the acoustic analysis of vowel/zero neutralization In Iraqi Arabic and show the kind of phonetics – phonology relation .

That there is a statically significant difference in intensity between /a/ and /a/ leads to the conclusion that the vowel / zero contrast is not completely neutralized through [a] – epenthesis . This suggests that neutralisation involving [a] – epenthesis is acoustically incomplete although it is phonologically complete , i.e. the phonetics and phonology of vowel / zero neutralisation in Iraqi Arabic do not mirror each other .

8- conclusion :-

In this paper , I have discussed the phonetics and phonology of neutralization data from colloquial Iraqi Arabic . The results show that there is a statically significant difference in the intensity of [a] and /a/ which leads to the conclusion that the vowel /zero contrast is not completely neutralized through [a] – epenthesis .

This means that thephonetics and phonology of neutralisation is incompatible with each other [a] – epenthesis is acoustically incomplete while phonologically it is complete .

It becomes apparent that a study as such unveils some sort of finding hopefully utilized to build up a picture of how neutralisation is tackled in Iraqi Arabic both phonetically and phonologically .

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استكشاف طبيعة المحايدة في علمي تمثيل الاصوات و الاصوات الكلامية

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الملخص:

المحايدة هو مصطلح صوتي كلامي يشير الى التحديد المشروط لتوزيع قيم النظام المختلفة، ويتطلب هذا المصطلح التقليص الحركي والتحديد الثابت للقيم المختلفة ضمن الصيغ المعجمية ؛ويعّد مصطلح المحايدة مهماً لكونه يخص مكانة المبدأ الفونيمي في النظام الصوتي وبمجرد تحديد ان هناك صوتين مختلفين في التوزيع فيجب ان نتعامل مع الصوتين المذكورين على انهما تمثيلين لفونيمين مختلفين، ويعتمد البحث الحالي على فهم مكانة المحايدة ضمن علم الاصوات الكلامية باعتباره لم يُدرس بشكلٍ وافي في هذا العلم رغم غرازة استخداماته فضلاً عن استكشاف طبيعة العلاقة للمحايدة بين علمي تمثيل الاصوات والاصوات الكلامية . ولقد توصلت الباحثة بأن هناك نوعا من عدم التوافق بين علمي الأصوات والأصوات الكلامية فيما يخص مفهوم المحايدة فقد بين التطبيق العملي للبحث أن صوت الألف المقحم في العربية العراقية لا يبدو مكتملا سمعيا رغم كونه مكتمل بنائيا وتأمل الباحثة أن البحث الحالي سيفتح أفاقا جديدة لدراسة ظاهرة المحايدة في علمي الأصوات والأصوات الكلامية.